



Three Kings Quarry

Fill Management Plan - Annual Compliance Report 02 April 2012 – 31 May 2017

June 2017

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1 Introduction

Winstone Aggregate was granted permit numbers 36221, 36222, 37770 and R/LUC/2009/743 by the Environment Court on 26 July 2011. These consents authorise the rehabilitation of the Three Kings Quarry through filling. The consents were given effect on the 2nd April 2012.

The objective of the fill operation is to rehabilitate ground levels of the Three Kings Quarry and leave the site stable, safe and fit for subsequent use. The material used to fill the site must therefore be able to achieve the objective in a manner which has no more than minor adverse effects on people or the environment, during and after completion of filling.

In conjunction with the fill consents, the Fill Management Plan sets out how the fill material quality is to be managed and includes the monitoring and reporting implemented to ensure ongoing compliance with the above mentioned consents. In accordance with Condition 27 of the consents the monitoring detailed in the Fill Management Plan is to be compiled and reported annually.

Condition 27 reads:

An Annual Compliance Report shall be submitted to the Manager by 30 June each year which provides an analysis of the results of data collected for the Fill Management Plan and an evaluation of the results in respect of compliance levels. The report shall be prepared by a suitably qualified person to a standard acceptable to the Manager and shall consider all data collected from the commencement date of the Resource Consent and up until 31 May prior to reporting. On the basis of this report the Consent Holder may submit recommended changes to the Fill Management Plan to the Manager for certification.

This Fill Management Plan - Annual Compliance Report covers the period from the commencement of fill activities on 2 April 2012 to 31 May 2017. The monitoring completed over this period is detailed in the following sections.

2 Truck Numbers

The rate of importation of fill (as well as the sale of aggregates) is dictated by the market and the factors that drive projects, the productivity of these projects and their preferred tip sites. Condition 50 puts a limit on the number of trucks that can enter the site per day.

Condition 50 reads:

In accordance with the details of the resource consent application, no more than 375 trucks shall enter the site per day. A register shall be kept on site which records all truck movements to and from the site, and shall include the

category of vehicle, i.e. identification as a four, six or eight wheeler, articulated truck or truck and trailer heavy vehicles and a copy of it shall be submitted to the Manager on a quarterly basis to certify compliance with this condition.

2.1 Results

Refer to Appendix A for the total number of trucks (both fill and aggregate trucks) that entered site during each day of operation since 2 April 2012. It should be noted that as of the 3rd December 2015 the sale of imported aggregate was discontinued, therefore the total number of trucks that entered site thereafter are fill trucks only. A tally of the classification of each fill truck to enter site per day is provided quarterly to Council and has not been repeated in this report.

2.2 Analysis and Evaluation

The limit of 375 trucks has not been reached or exceeded since the commencement of filling. It has been agreed that the limit of 375 movements into site per day is applied to both fill and aggregate related trucks.

The measures in place to ensure the limit is not exceeded are considered appropriate to manage this requirement over the next 12 months.

3 Weighted Rolling Mean Results

The fill acceptance criteria are split into two threshold groups, both of which must be met. These two groups are the Weighted Rolling Mean Criteria and the Maximum Criteria. These two groups are further divided into two categories: material being placed as deeper fill (greater than 2m from finished level) and that placed as shallow fill (less than 2m from finished level).

Condition 16 provides the specific limits of each criterion. However it is Condition 19 which specifies the required monitoring and compliance standards.

Condition 19 reads:

The weighted rolling 12-month mean will be updated continuously as sample results are received. If the data reveals that the fill is above 85% of the weighted 12-month mean, the consent holder will report immediately to the Council and continue to report on a monthly basis while the data shows that the fill remains above 85% of the weighted 12-month mean. The consent holder shall take action to ensure that the fill reduces below 85% of the weighted 12-month mean as soon as possible. Once the fill reduces below 85% of the weighted 12-month mean, annual reporting to the Council shall resume.

3.1 Results

The 12-month weighted rolling mean results for deep fill and shallow fill are provided in Appendix B. For ease of compliance auditing, a percentage of the actual value compared to the Weighted Rolling Mean Criteria is plotted for each parameter for each month since the commencement of filling. The trigger level for each parameter is set at 85% as per Condition 19.

3.2 Analysis and Evaluation

Since the commencement of filling operations fill that had been placed was only classified as deeper fill (greater than 2m from finished level). As of April 2017, pre-approved material from specific sites which meet the shallow fill acceptance criteria have been stockpiled on site separately and classified as shallow fill (less than 2m from finished level). Additional sampling of shallow fill is conducted weekly at the testing station and results are added to the 12-month weighted rolling mean.

The results show that each parameter continues to be managed well below the trigger stated in Condition 19.

Careful management of the material accepted against the Weighted Rolling Mean Criteria will see to the ongoing compliance with Condition 19 over the next 12 months.

4 Additional Analytical Testing Results

Fill transported to the Three Kings site is classified as either pre-approved material or non-pre-approved material. As of September 2016 only pre-approved material has been accepted to the Three Kings site.

In general terms, pre-approved material is that which comes from a site providing more than 200m³, is a known ex-horticultural site, is on the Ministry for the Environment Hazardous Activities and Industries List or is from the Auckland City District Plan Central Area Section. Such sources are subject to soil testing and analysis which demonstrates compliance prior to the acceptance of the material onsite. The soil testing provided for pre-approved sites are uploaded into the weighted rolling mean to ensure compliance prior to the approval being issued. Non-pre-approved material is that which has not been subject to pre-approval as less than 200m³ of material is to be placed onsite from a single source and the source does not fall under any of the other categories provided above.

Each load of fill is inspected prior to the material being placed onsite. The inspection procedure varies depending on if the load is classified as pre-approved or non-pre-approved. Material classified as non-pre-approved is subject to additional analytical testing. Condition 15 specifies the details of this additional testing requirement.

Condition 15 reads:

If the fill has not previously been tested to at least the same extent by the fill generator as detailed in Condition 14 then the consent holder shall undertake analytical testing of imported fill for the chemical parameters set out in Table 1 at a rate of not less than 1 in every 150 incoming trucks or every 1400 tonnes (whichever comes first).

In addition, Section 4.3 of the Fill Management Plan details that duplicated sampling is to be undertaken for every tenth load tested under Condition 15 above.

An excerpt of Section 4.3 of the Fill Management Plan in relation to this additional requirement reads:

A duplicated set of samples will be collected and tested for every tenth load quarantined for analytical testing. The relative percent differences will be calculated between the duplicated samples for each parameter tested.

Furthermore, additional random analytical testing is completed by Council as per Condition 25.

Condition 25 reads:

The Consent Holder shall meet the cost of full sampling tests (of no more than two core samples or composite samples on each occasion) to be undertaken twice a year at random intervals by council officers or an independent consultant approved by the Council...

4.1 Results

4.1.1 Additional Sampling of Non-Pre-Approved Loads

To date, two hundred and sixty-four loads have been sampled and sent for analytical testing as required by Condition 15. The results of these tests are provided in Appendix C. Appendix C is made up of a series of graphs (one graph for each parameter tested) and the results for each test are plotted against a trigger. The trigger is set as the Maximum Criteria for Deeper Fill as defined in Condition 16 for each parameter. Where results have been reported by the laboratory analysis as less than laboratory detection these results have been plotted as half of the laboratory detection value for that parameter; this is a function of the weighted rolling mean calculation. All other results (which are on or above laboratory detection) are plotted as the exact value reported by the laboratory analysis.

4.1.2 Duplicate Sampling

The results of each duplicate sample and the relative percent difference as required by Section 4.3 of the Fill Management Plan are provided in Appendix D.

4.1.3 Council Random Sampling

Council has coordinated ten instances of random sampling since the commencement of fill operations. The results of this sampling are provided in Appendix E.

4.2 Analysis and Evaluation

4.2.1 Additional Sampling of Non-Pre-Approved Loads

The fill associated with this monitoring period is classified as deeper fill as it has been placed greater than two meters from finished level. All the results (as shown in Appendix C) have been compliant with the exception of six loads. In each instance the steps detailed in Section 4.6 of the Fill Management Plan were followed.

The six non-compliant loads are test load numbers 004, 108, 127, 245, 246 and 258. Test load number 004 exceeded the triggers for lead and mercury while test load numbers 108, 127, 245, 246 and 258 exceeded the trigger for the benzo(a)pyrene equivalence factor. All instances of non-compliant loads were reported in previous Fill Management Plan - Annual Compliance Reports.

The Fill Management Plan clearly layouts the steps to be followed as well as the reporting requirements if the analytical results of a test load are found to be above the acceptance criteria. This system ensures the effects are appropriately managed should such an incident occur in the next 12 months.

4.2.2 Duplicate Sampling

The analysis of the relative percent difference from duplicate sampling of test loads has been variable. The observed variability is as expected. This is because the material being disposed at the site is heterogeneous in nature even within a single load. However, the actual results of each duplicated sample have been compliant with the acceptance criteria.

Duplicate sampling as per Section 4.3 of the Fill Management Plan will continue to be undertaken over the next 12 months. The results are expected to remain variable in line with those recorded to date.

4.2.3 Council Random Sampling

The results from the random sampling (as shown in Appendix E) have been compliant with the acceptance criteria for the deeper fill with the exception of one composite taken on the 3rd December 2014 and one composite taken on the 10th November 2015.

Both non-compliant composites (on the 3rd December 2014 and on the 10th November 2015 sampling rounds) exceeded the trigger for the benzo(a)pyrene equivalence factor. The

steps detailed in Section 4.6 of the Fill Management Plan were generally followed in both cases and an investigation of each incident was completed by an independent expert. The resulting reports *Three Kings Quarry Failed Biannual Sampling Assessment and Report - 14 January 2015* and *Investigation of Three Kings Quarry Biannual Random Sampling Exceedance November 2015* were provided to Council. Council reviewed these documents and as a result of the minor nature of the exceedances, no further action was required.

With the ongoing management of the acceptance of fill in accordance with the consent conditions and the Fill Management Plan it is expected that the random monitoring result in the next 12 months will continue to be compliant. However, Section 4.6 of the Fill Management Plan details the steps to be followed as well as the reporting requirements should another result be recorded above the acceptance criteria. This system ensures the effects are appropriately managed should such an incident occur in the next 12 months.

5 Groundwater Monitoring

Several conditions within the consents detail the groundwater monitoring requirements in relation to fill activities. The most relevant conditions are Conditions 30, 31 and 75.

Condition 30 reads:

The consent holder shall install a continuous electrical conductivity and pH meter at the dewatering well head and report the results to the Council as part of the Annual Compliance Report. The independent expert who is appointed to undertake audit sampling in accordance with condition 25 shall review the conductivity and pH results to identify and report on any undesirable trends.

Condition 31 reads:

Groundwater monitoring shall be carried out at both the dewatering well and monitoring well BH7 at 109 Landscape Road (i.e. the existing borehole in the network that is used for monitoring groundwater behavior for Auckland Regional Council dewatering permit 12977) in the following way:

- a) For the first two years after the commencement of the consent, the samples shall be analysed for the chemical constituents listed in Table 3 Condition 32 at quarterly intervals, commencing within three months of the commencement of consent.*
- b) If after the first two years after the commencement of consent no groundwater trigger level has been exceeded then the samples shall be analysed for the chemical constituents listed in Table 3 Condition 32 at six monthly intervals for the remainder of the term of the consent.*

Condition 75 reads:

Groundwater pumped from the site shall be monitored for suspended solids and turbidity, as part of the contaminant monitoring regime of the associated discharge permit. The concentration of suspended solids in the groundwater being discharged from the site shall not exceed 30 mg/l, and turbidity shall not exceed 30NTU. The results of this sampling shall be provided to the Council on a quarterly basis. Provided that if the groundwater is ever to be used as potable water, that portion being used as potable water shall be subject to a limit of 5mg/l TSS and a turbidity of no more than 5 NTU.

5.1 Results

5.1.1 Continuous Monitoring - Dewatering Well Head

The electrical conductivity (EC) and pH results from the continuous monitoring at the Dewatering Well Head are provided in Appendix F. The results have been presented as a daily average of the five minute readings. The full data set is available in electronic copy on request. The consent does not set a trigger for EC but Condition 32 details a trigger of below 7 or greater than 8.5 for pH. In addition to the continuous monitoring the results of water sampling for EC and pH at the Dewatering Well Head have also been plotted on the graphs provided in Appendix F.

5.1.2 Quarterly/Biannual Monitoring - Dewatering Well Head and Borehole 7

The required sampling of the groundwater at the Dewatering Well Head and Borehole 7 was undertaken quarterly between December 2011 and March 2014. Following the March 2014 sampling round approval was granted by Council to reduce the monitoring frequency to biannual as allowed for by Condition 31.

The results of the groundwater sampling are provided in Appendix G.

5.2 Analysis and Evaluation

5.2.1 Continuous Monitoring - Dewatering Well Head

Historically the continuous pH probe recorded an undesirable reducing trend and increasing drift in the pH value. Ongoing liaison with the external technician who supplied and maintains the pH and EC probes found a number of issues relating to the probes themselves as well as the setup in which the probes were housed.

In early 2015, as a result of the abovementioned issues, weekly physical sampling of the bore water in addition to the continuous monitoring commenced.

Winstone Aggregates installed new pH and EC probes in mid-August 2015. In late-October 2015, following over 2 months of consistent results from the new pH and EC probes, weekly physical water sampling was discontinued.

The new pH and EC probes are checked and cleaned on a monthly basis internally and are calibrated by an external technician every 3 months. Following the 3-monthly calibration conducted on 7 December 2015, an upward trend in pH value was observed. For this reason, weekly physical water sampling recommenced for 3 consecutive weeks in March 2016 which all showed a consistent pH result of 8.0. The consistent pH results of the weekly water sampling indicated that the pH probe had an upward drift. Subsequently, the pH electrode was replaced in July 2016 which is showing much more consistent results.

The EC probe recorded a downward spike in October 2016 which was investigated by the external technician and found to be a result of too high a flow rate in the sampling vessel.

5.2.2 Quarterly/Biannual Monitoring - Dewatering Well Head and Borehole 7

Thirteen zinc triggers have been recorded as a result of the sampling undertaken since the issuing of fill consents. Each of these triggers were related to zinc levels in Borehole 7 with the exception of one zinc trigger at the Dewatering Well in March 2016.

There was no identified reason for the zinc trigger at the Dewatering Well, it may have been related to sampling. Upon re-sampling of the Dewatering Well, Zinc results were compliant and therefore no further action was required.

Borehole 7 currently has no direct groundwater link to Three Kings Quarry. The results associated with the monitoring of Borehole 7 are considered ambient / background water quality. As such, the recorded triggers are not related to filling operations. Furthermore, two of the triggers (December 2011 and January 2012) occurred prior to the commencement of fill activities.

Following the March 2014 round of monitoring and in accordance with Condition 31, monitoring required by this condition has continued at six monthly intervals.

6 Air Quality Monitoring

Condition 47 required the installation of a BAM monitor at the southern boundary of site prior to the commencement of filling. This unit is in addition to the air monitor required by the discharge to air consent held by the site for quarry activities.

It is noted that on 11 February 2015 a new discharge to air consent (40041) was granted. To reflect the conditions of the new consent, The Air Quality Management Plan was revised in consultation with the Three Kings Site Liaison Group and approved by Auckland Council in September 2015. The primary changes were the removal of HiVol monitoring and a decrease in the trigger level for the BAMs from 80µg/m³ per 24 hour average to 60µg/m³.

The results of air quality monitoring are provided to Council quarterly. Condition 59(g) of the fill consents specifically details that quarterly submission of the air quality monitoring to Council is to continue.

6.1 Results

A summary of the results of monitoring since the commencement of fill operations on 2 April 2012 to 31 May 2017 is provided in Appendix H.

6.2 Analysis and Evaluation

Since the commencement of fill activities seven events were recorded by the HiVol monitors above the trigger limit of $80\mu\text{g}/\text{m}^3$ as a 24 hour average. Since the granting of the new discharge to air consent there was one exceedance at the Southern Boundary BAM for the new trigger level of $60\mu\text{g}/\text{m}^3$ as a 24 hour average. In accordance with the discharge to air consent held by the site each trigger was investigated and a report submitted to Council. It is noted that a number of these triggers were a result of activities unrelated to those undertaken onsite and came from outside of the site boundary.

The seven exceedances recorded by the HiVol monitors above the trigger limit of $80\mu\text{g}/\text{m}^3$ as a 24 hour average were reported in previous Fill Management Plan - Annual Compliance Reports. Two instances of exceedance of the new trigger level of $60\mu\text{g}/\text{m}^3$ as a 24 hour average recorded by the office BAM unit occurred during the last 12 months being 1 June 2016 to 31 May 2017. The resulting reports *Investigation of Total Suspended Particulate Trigger at Three Kings Quarry 16 December 2016* and *Investigation of Total Suspended Particulate Trigger at Three Kings Quarry 16 January 2017* were provided to Council.

The ongoing implementation of dust prevention measures and use of early warning monitoring alarms will ensure dust as a result of activities undertaken onsite are appropriately managed.

7 Compaction Requirements

Condition 9 states the obligation in regards to compaction requirements.

Condition 9 reads:

The controlled fill in the upper 5m layer shall be engineered to a compaction and stability standard in accordance with NZS 4431:1989 (Code of practice for Earth Fill for Residential Development) that enables future residential use of the finished landform no longer than 5 years after cessation of filling. This condition may be reviewed where a proposed Plan Change or review (or any resource consent addressing the use of the site as a whole) indicates that future uses will demand a lesser standard of compaction. The consent holder shall provide an annual report to the Manager, or his or her nominee, which contains sufficient detail to confirm the engineering standards required to meet NZS 4431:1989 have been achieved for the fill.

7.1 Results

Geotechnical advice has been sought for guidance into the appropriate placement of fill. Such input will continue as required as filling progresses.

Confirmation of earth fill monitoring, testing and results for the 2016/2017 earthworks season have been provided by Tonkin & Taylor Ltd in Appendix I.

8 Noise Monitoring

Any activity onsite associated with fill operations is not to exceed the noise limits specified in the consent. Monitoring to demonstrate compliance is required by Conditions 52, 53 and 54.

Condition 52 reads:

Within 3 months of the commencement of the fill activity the consent holder shall submit to Manager a report demonstrating that the activity meets the noise standards outlined in this condition.

Condition 53 reads:

The consent holder shall undertake further monitoring confirming compliance with the noise limits when the majority of the fill operation is occurring above RL 70m and following this at a 6 monthly interval.

Condition 54 reads:

Should the consent holder propose to use self-propelled compaction equipment, a suitably qualified acoustical consultant shall, prior to the equipment use, undertake noise modelling to predict noise levels to demonstrate that the revised fill procedure will not generate noise in excess of the noise limits in Condition 51. Monitoring confirming compliance with the noise limits shall be conducted within one month of implementation of the revised procedures.

8.1 Results

The noise monitoring and reporting required as per Condition 52 was undertaken in July 2012 by an acoustic consultant. The monitoring demonstrated that the fill activities were compliant with the stated noise standard. These details were provided to Council on 26 July 2012.

In regards to Condition 53, the majority of fill levels are expected to continue to be below RL 70m over the next 12 months. Therefore, no further action is required in this regard at this time.

Compaction equipment was anticipated to be utilised during the summer of 2015, therefore additional noise modelling was undertaken in accordance with Condition 54. This modelling was submitted to Council on 24 February 2014 to demonstrate that compliance with the noise limits will be maintained. Additional noise monitoring was then undertaken on 27 February 2015 within one month of the implementation of compaction equipment onsite and these results which showed compliance with the stated noise standard were submitted to Council.

In order to ensure site operations are compliant with the consented noise limits, Winstone Aggregates engage a suitably qualified acoustical consultant to conduct environmental noise monitoring at two identified monitoring positions adjacent to Three Kings Quarry twice per year. The latest noise compliance assessments were completed by Marshall Day Acoustics on the 14th November 2016 and 20th December 2016, respectively. Sound generating activity from the quarry during both survey periods consisted of general fill operations. On the 14th November 2016, the sound levels measured at the Fyvie Avenue position were compliant with the consented noise limits. However, there was an exceedance at the Grahame Breed Drive monitoring position. In the weeks following, Winstone Aggregates implemented a review of the operation and moved specific large/noisy plant to the North end of the site and repositioned internal vehicle routes where the noise may impact surrounding neighbours. The follow up noise compliance survey completed by Marshall Day Acoustics on 20th December 2016 recorded compliant noise levels at both monitoring positions.

9 Conclusion

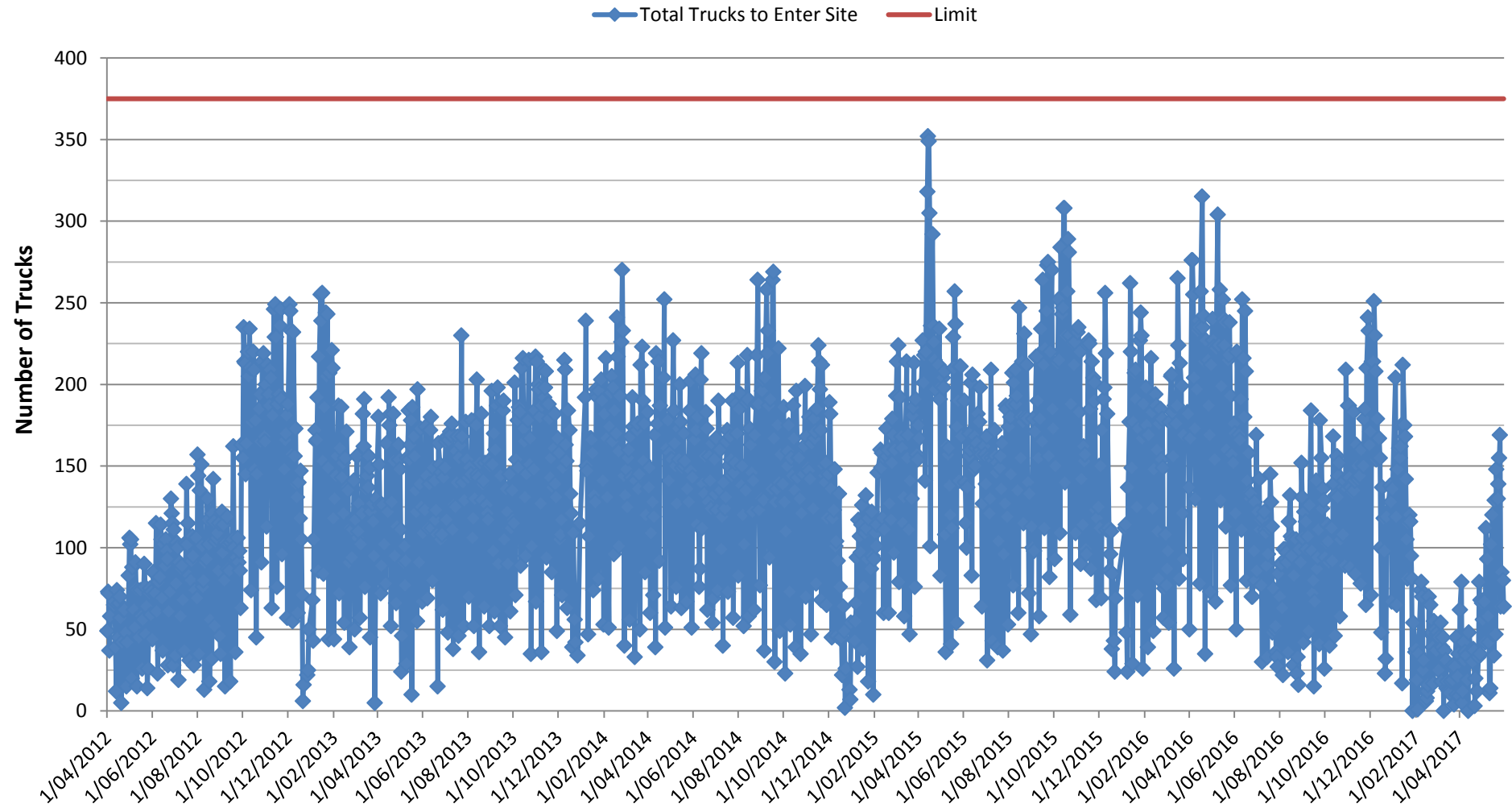
This Fill Management Plan - Annual Compliance Report covering the period 2 April 2012 to 31 May 2017 has been prepared in accordance with permit numbers 36221, 36222, 37770 and R/LUC/2009/743 which authorise the rehabilitation of Three Kings Quarry.

The results and assessments provided since the commencement of filling are in general accordance with the conditions of consent and associated Fill Management Plan. Therefore, as a result of this Fill Management Plan – Annual Compliance Report no changes are recommended to the current version of the Fill Management Plan (Revision dated 4 April 2012). However, in order to ensure consistency between all the management plans that the site operate under and to ensure these plans are well aligned with all the consents held by the site, a full review of the plans including the Fill Management Plan (Revision dated 4 April 2012) may be undertaken in the next 12 months as resourcing allows. Any changes to the plans are subject to consultation with the Three Kings Site Liaison Group and Council. Final versions of any updates would then be submitted to Council for review.

APPENDIX A

Total Number of Trucks Per Working Day

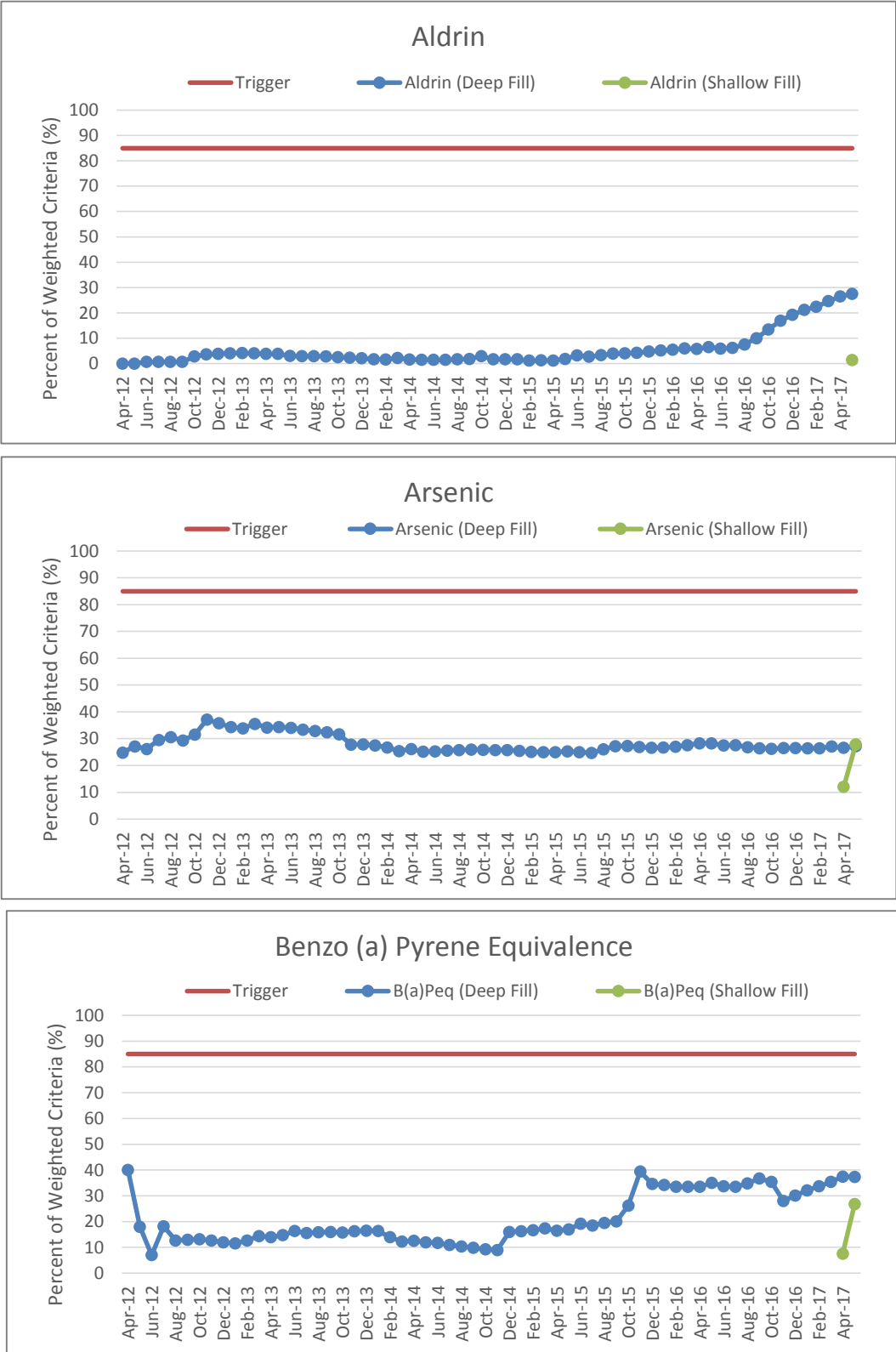
Total Number of Trucks to Enter Site Per Workings Day



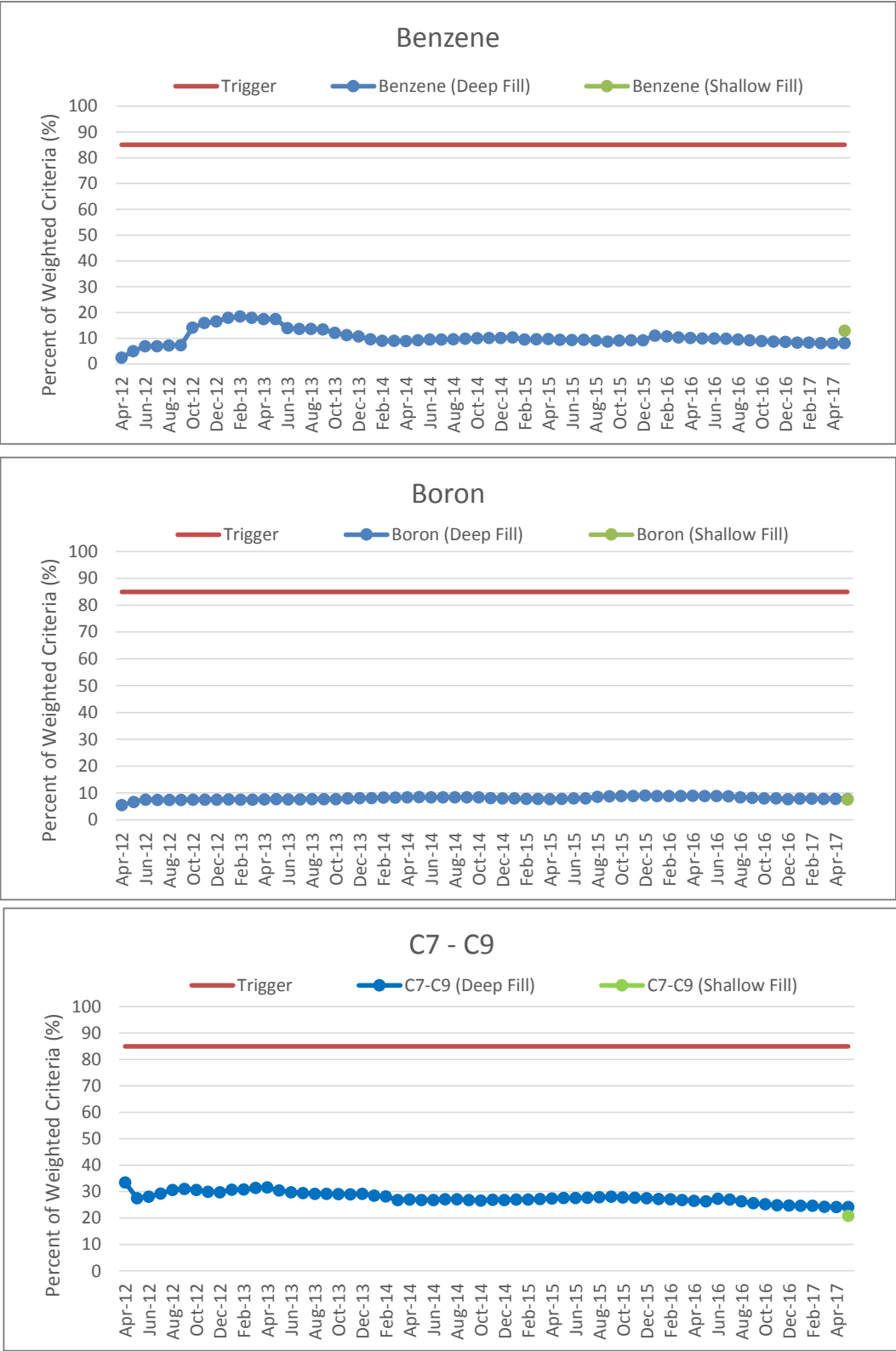
APPENDIX B

Weighted Rolling Mean Values – 12 Month Results

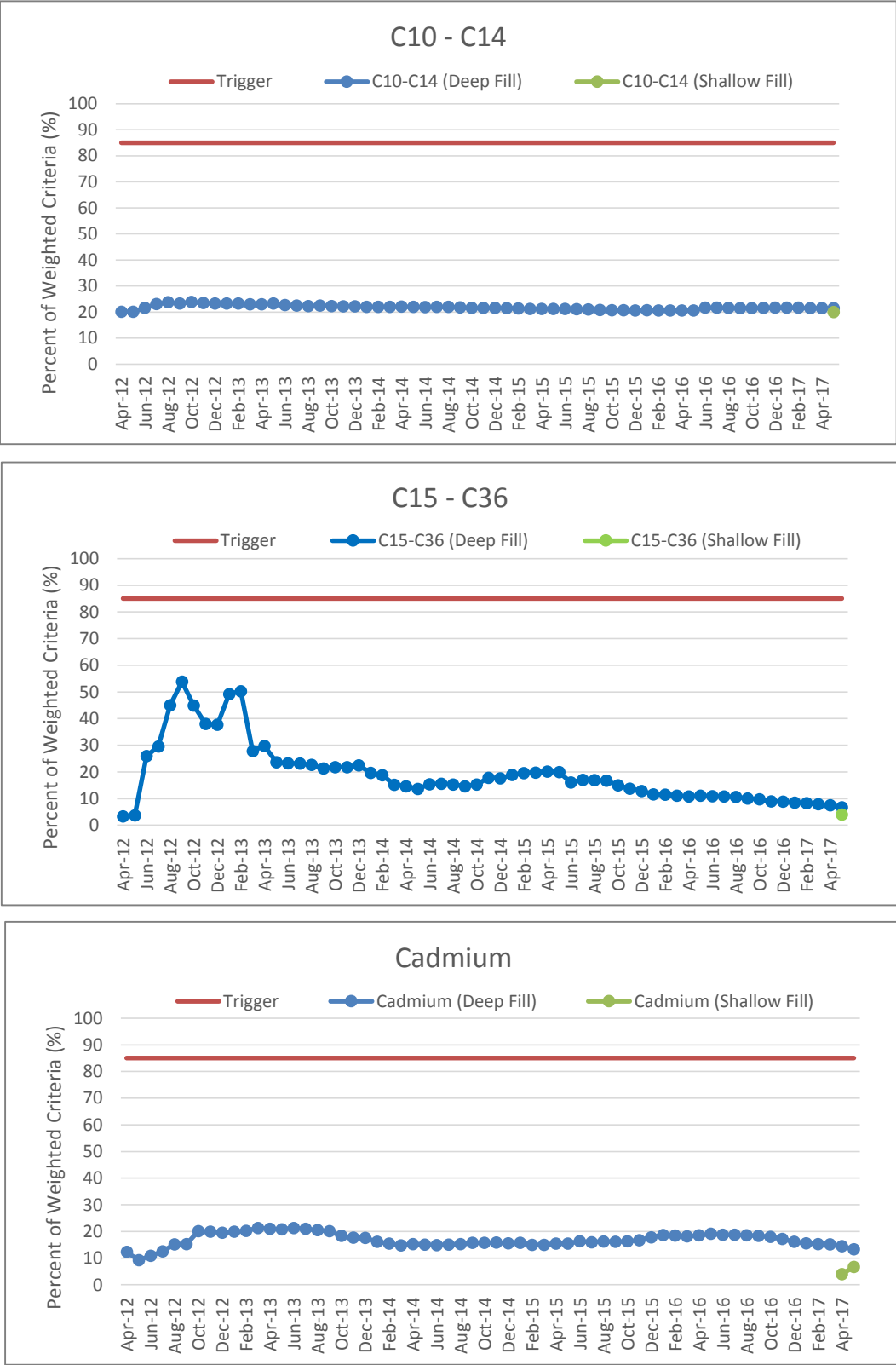
Graphical representation of the 12 month weighted rolling mean results for each of the parameters listed in condition 16 for the period 01 April 2012 to 31 May 2017.



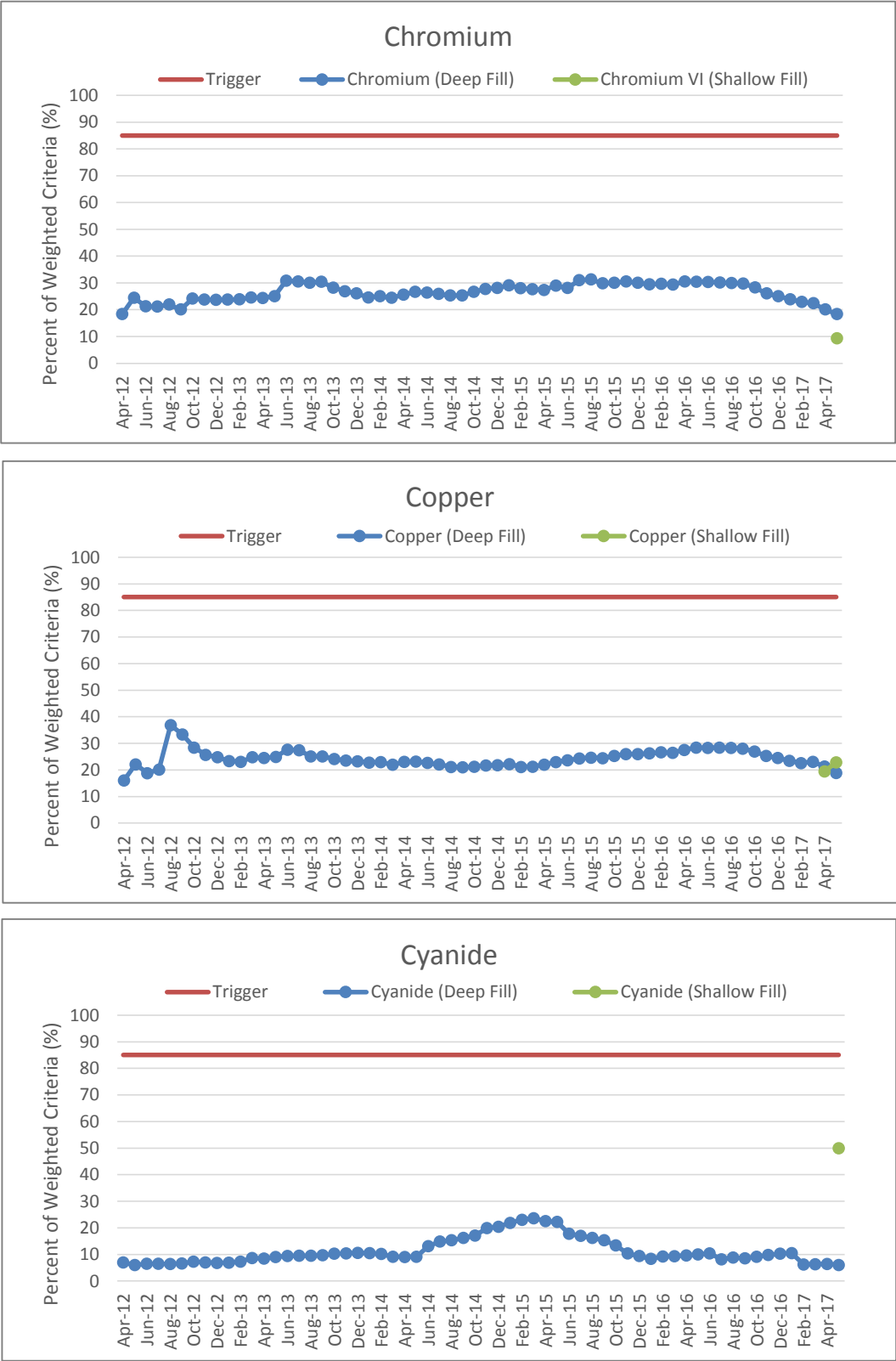
Graphical representation of the 12 month weighted rolling mean results for each of the parameters listed in condition 16 for the period 01 April 2012 to 31 May 2017.



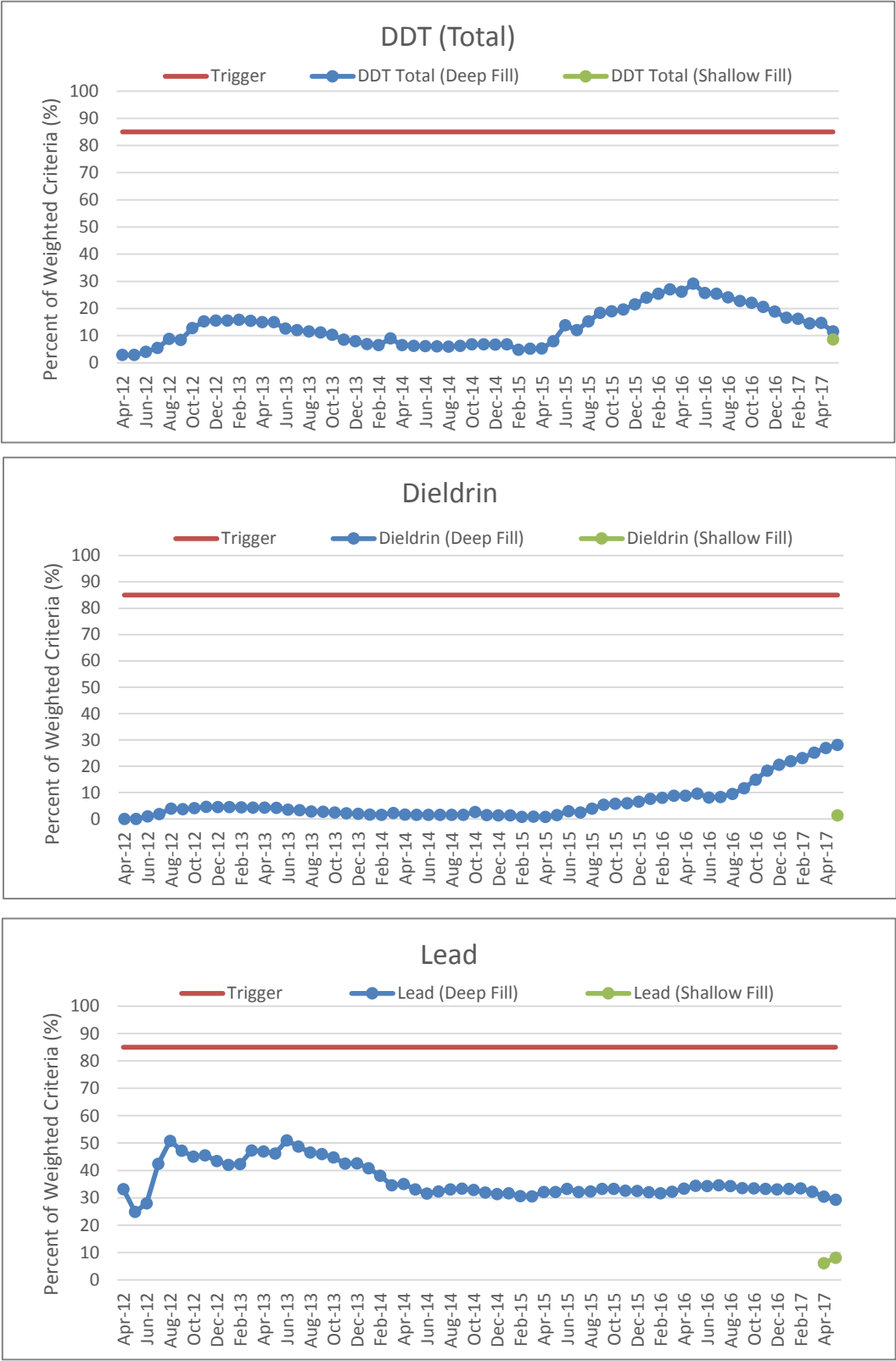
Graphical representation of the 12 month weighted rolling mean results for each of the parameters listed in condition 16 for the period 01 April 2012 to 31 May 2017.



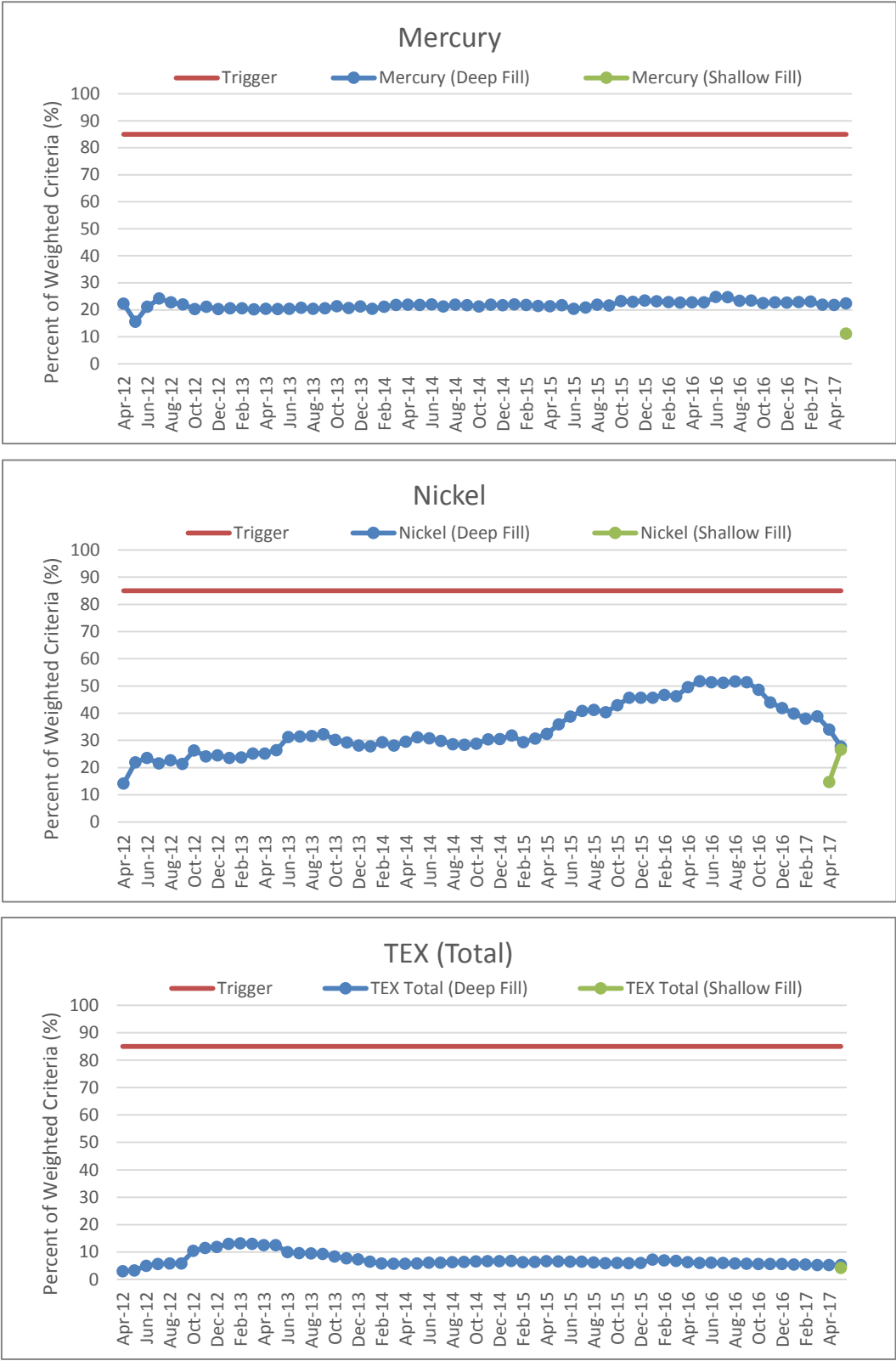
Graphical representation of the 12 month weighted rolling mean results for each of the parameters listed in condition 16 for the period 01 April 2012 to 31 May 2017.



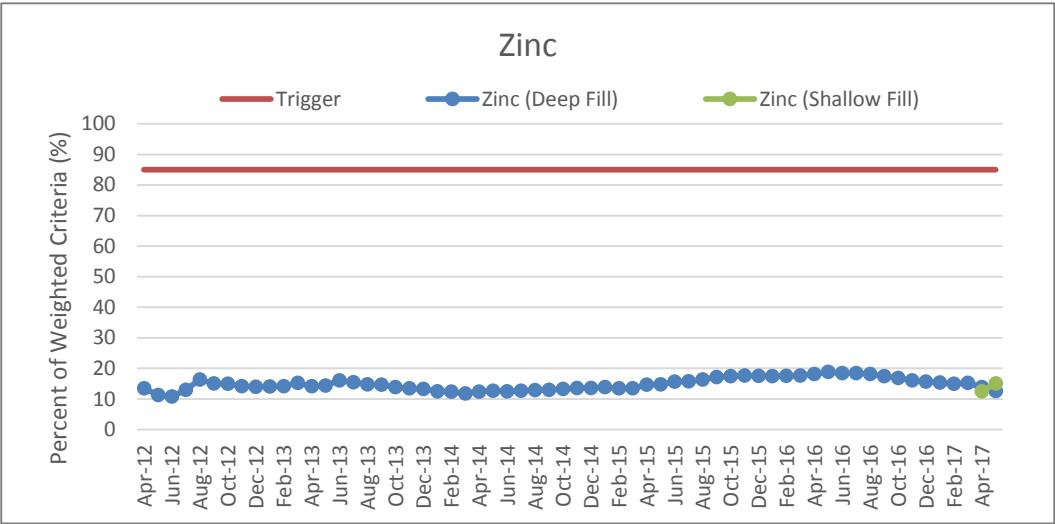
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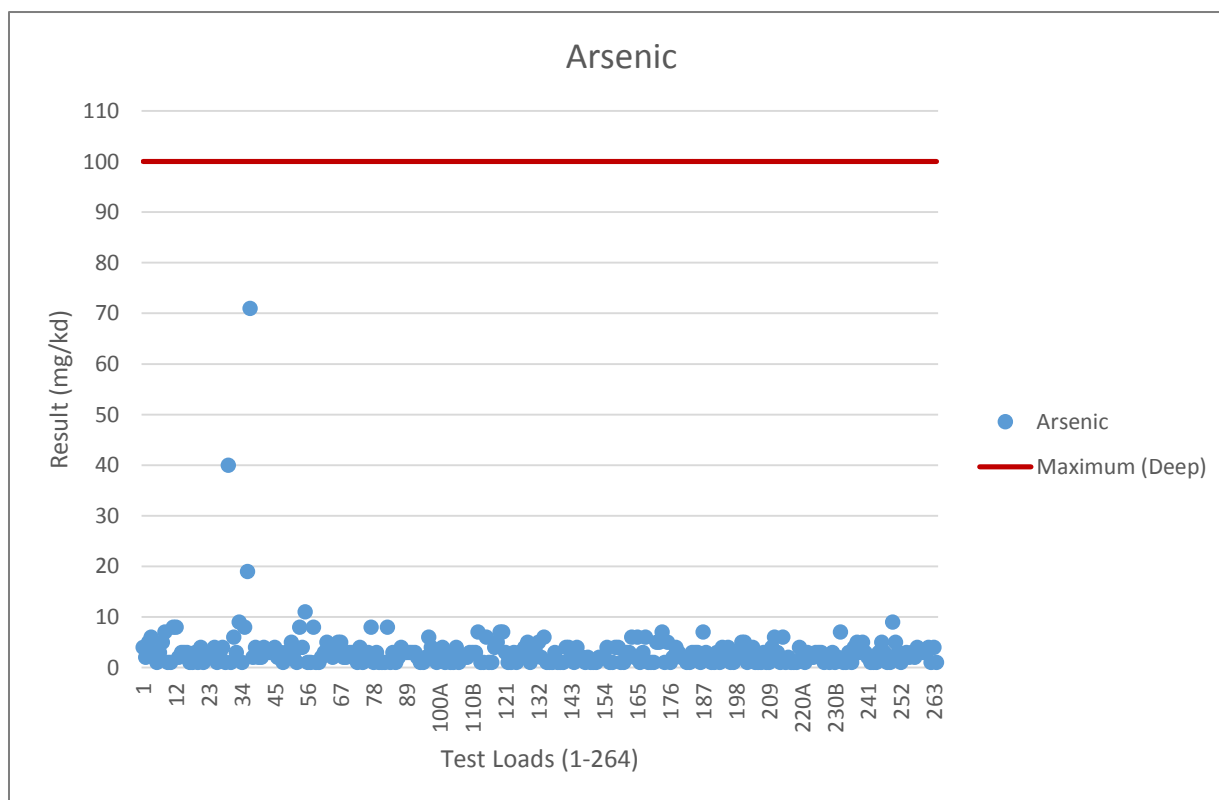
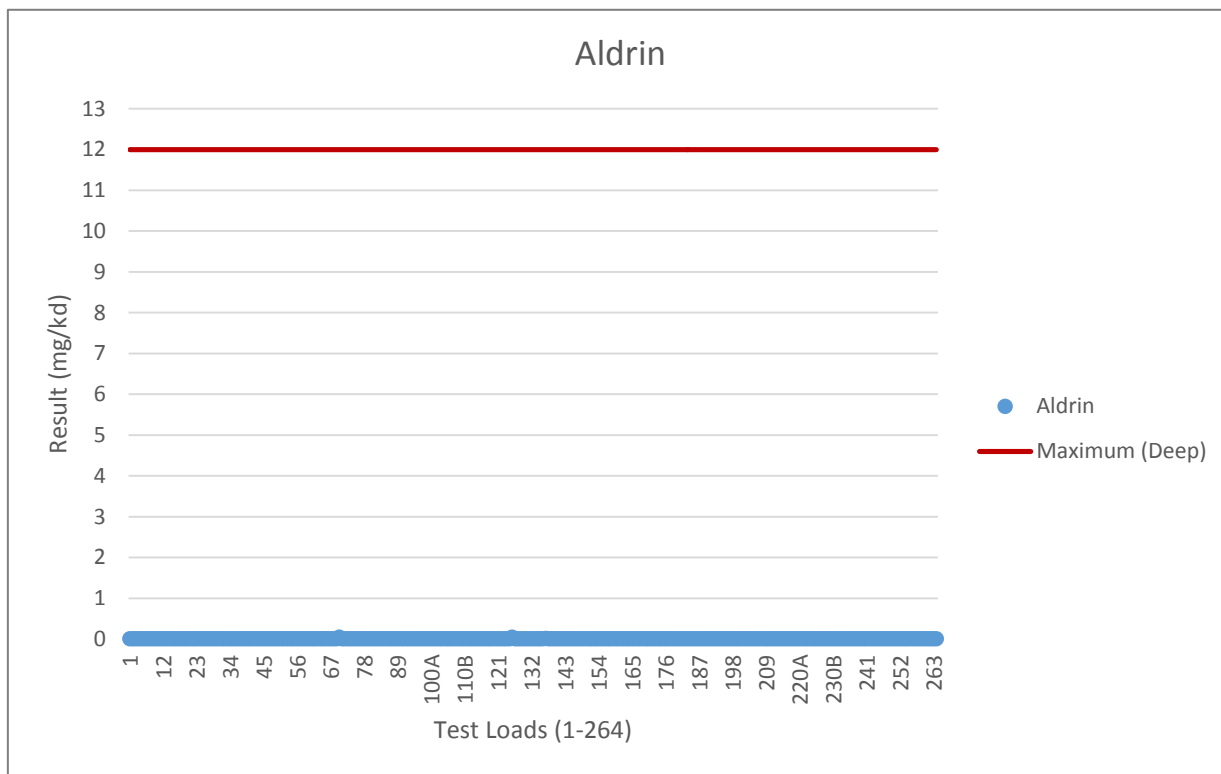
Graphical representation of the 12 month weighted rolling mean results for each of the parameters listed in condition 16 for the period 01 April 2012 to 31 May 2017.



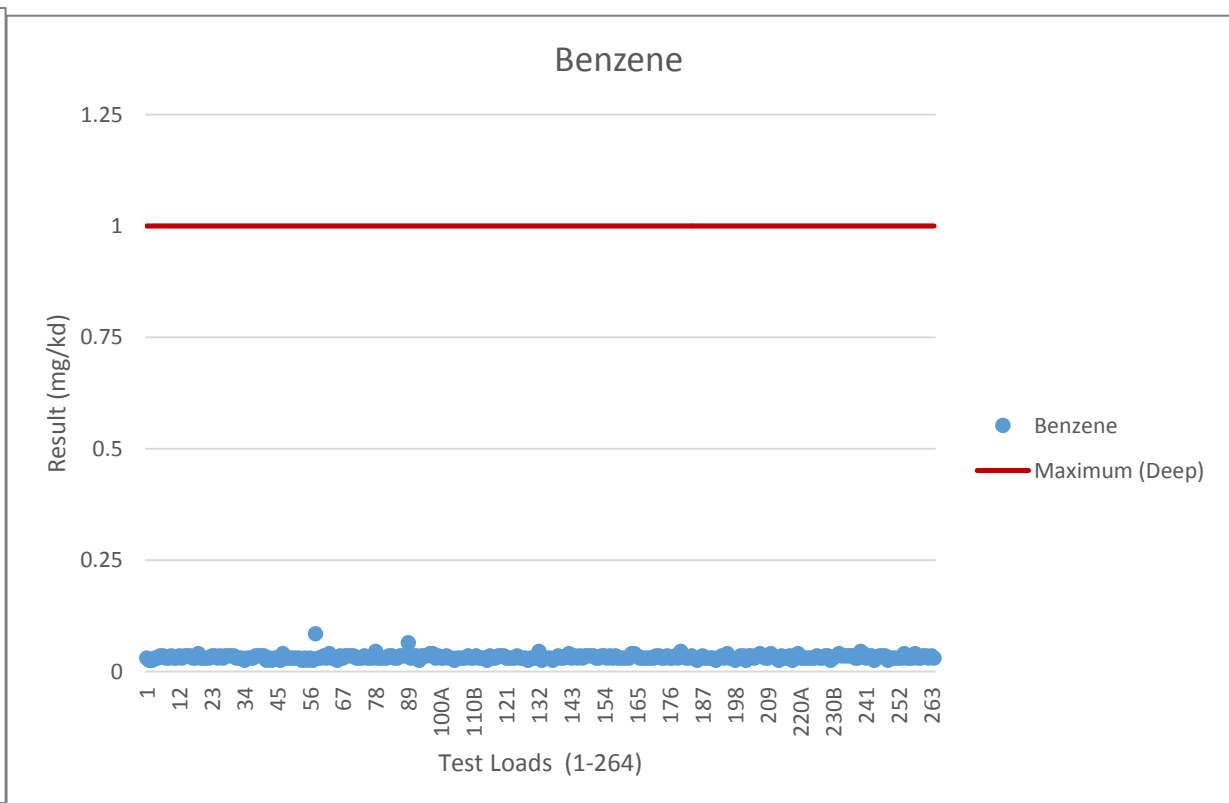
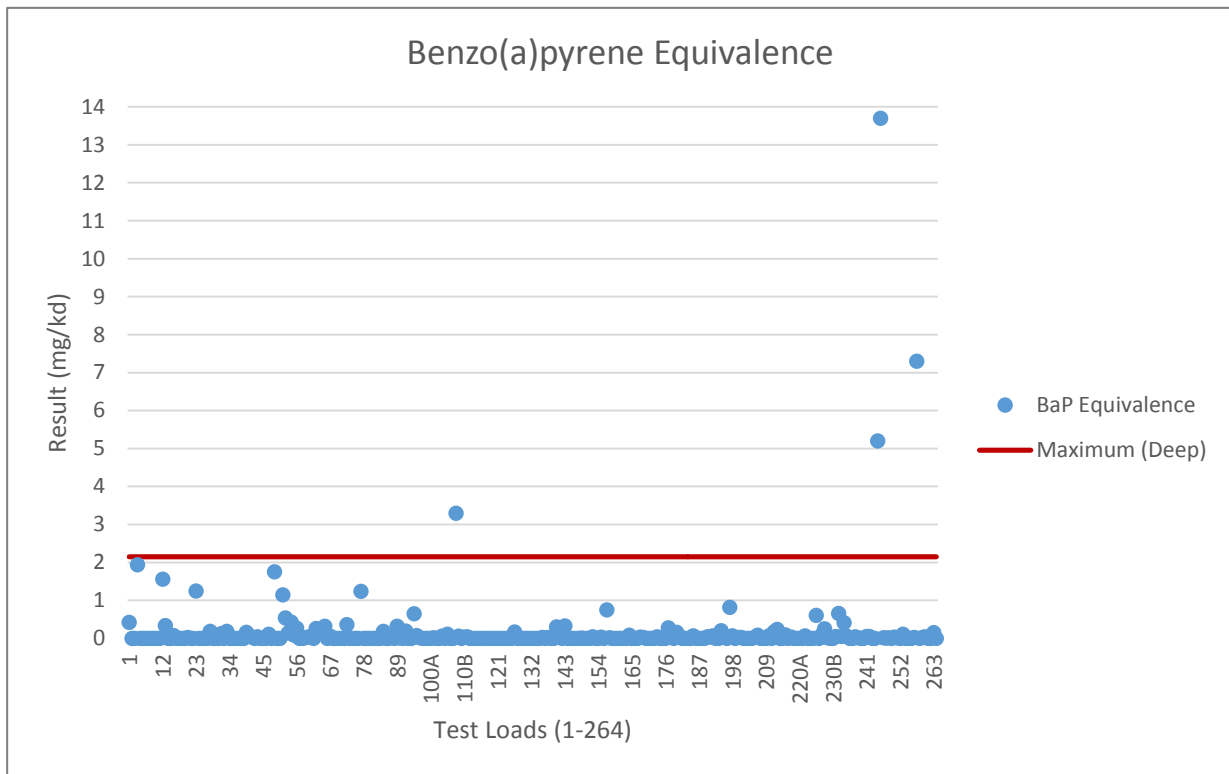
APPENDIX C

Summary of Analytical Test Results

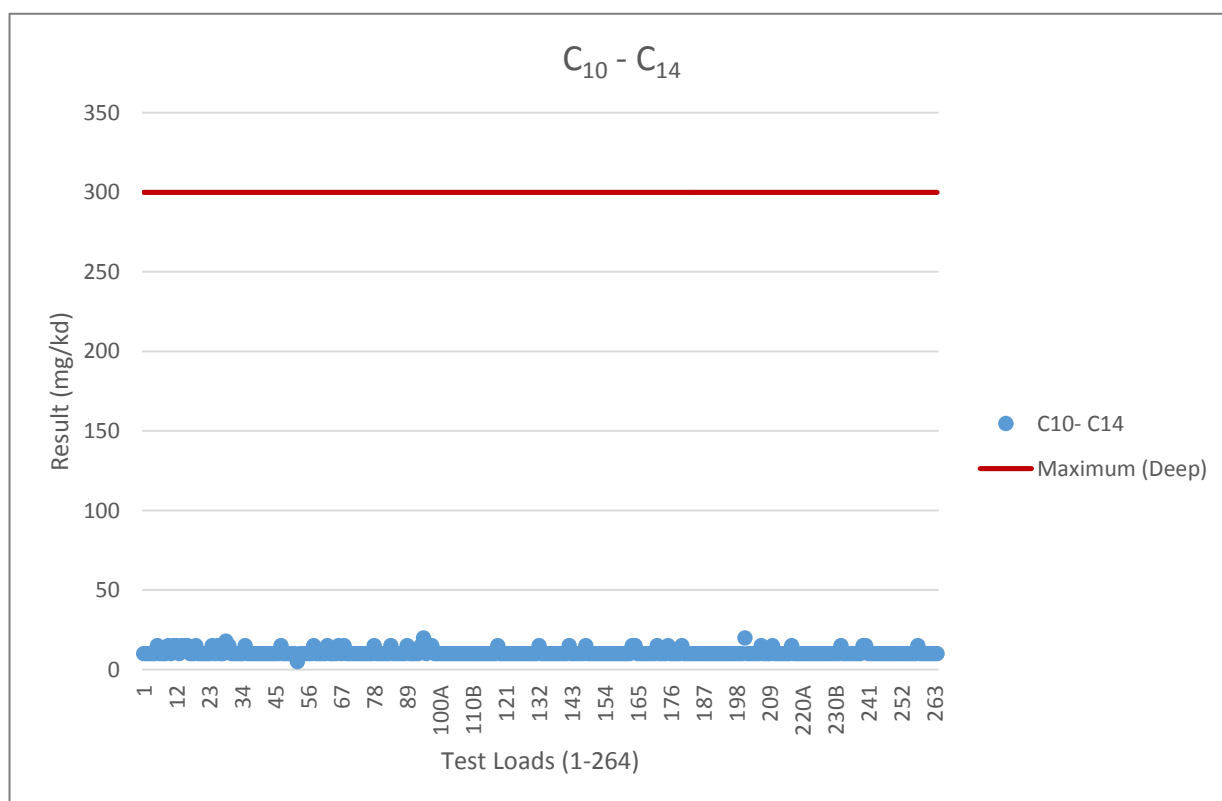
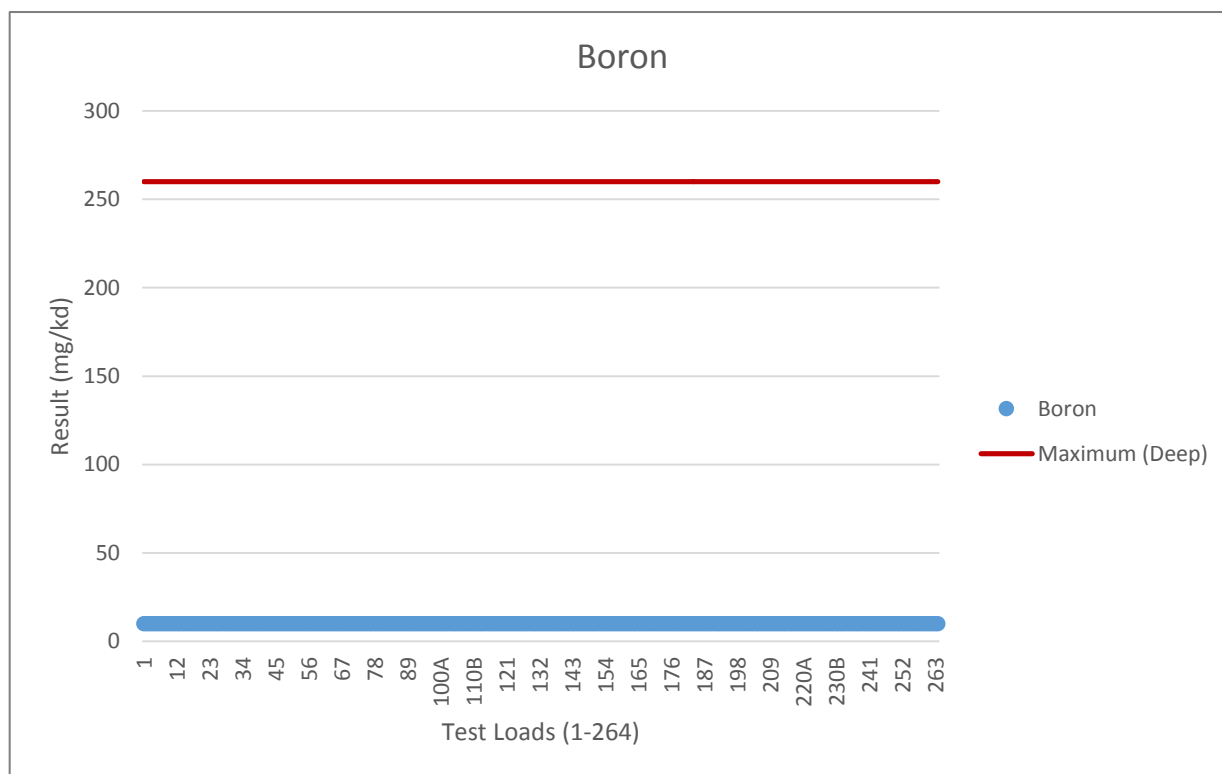
Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



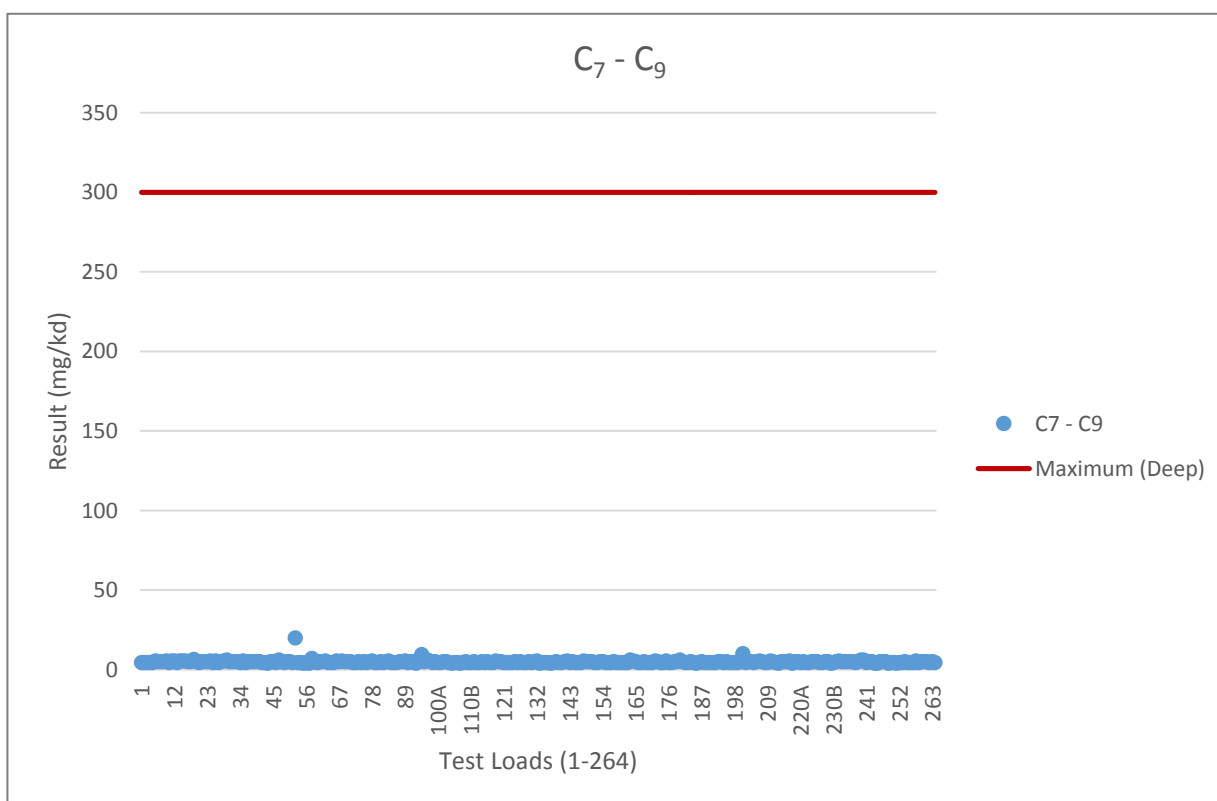
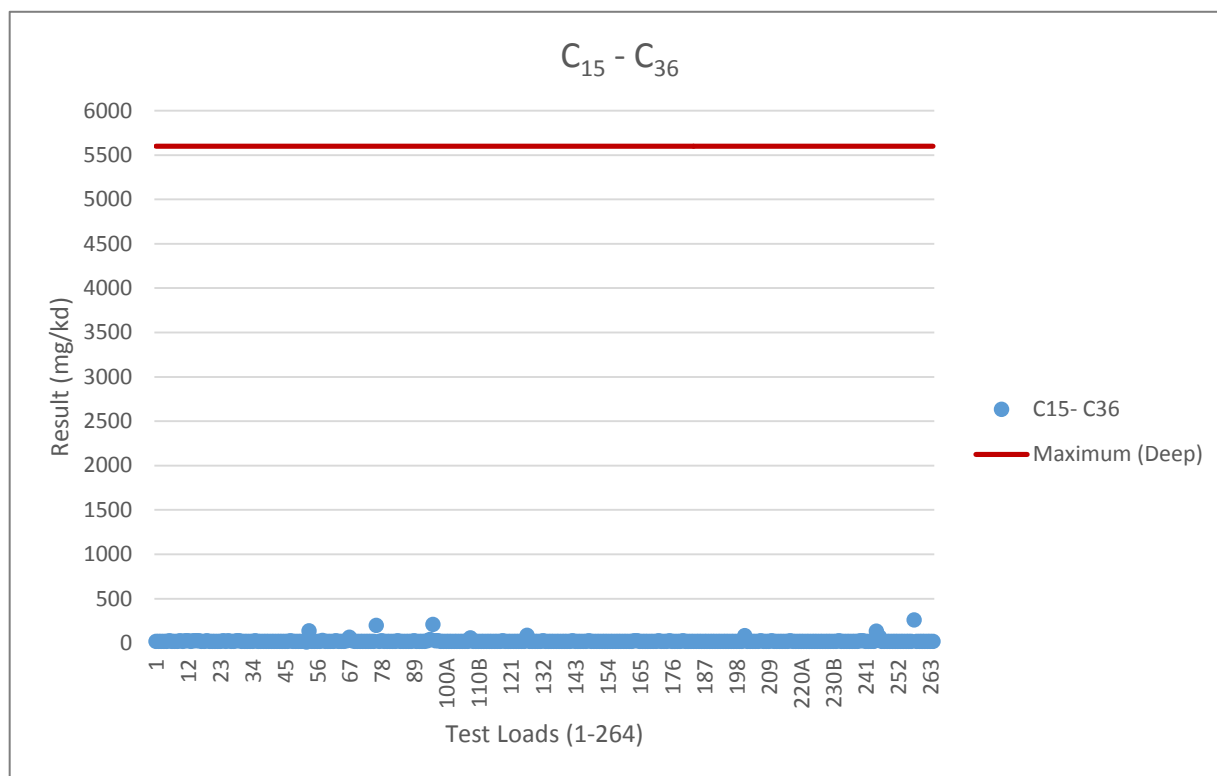
Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



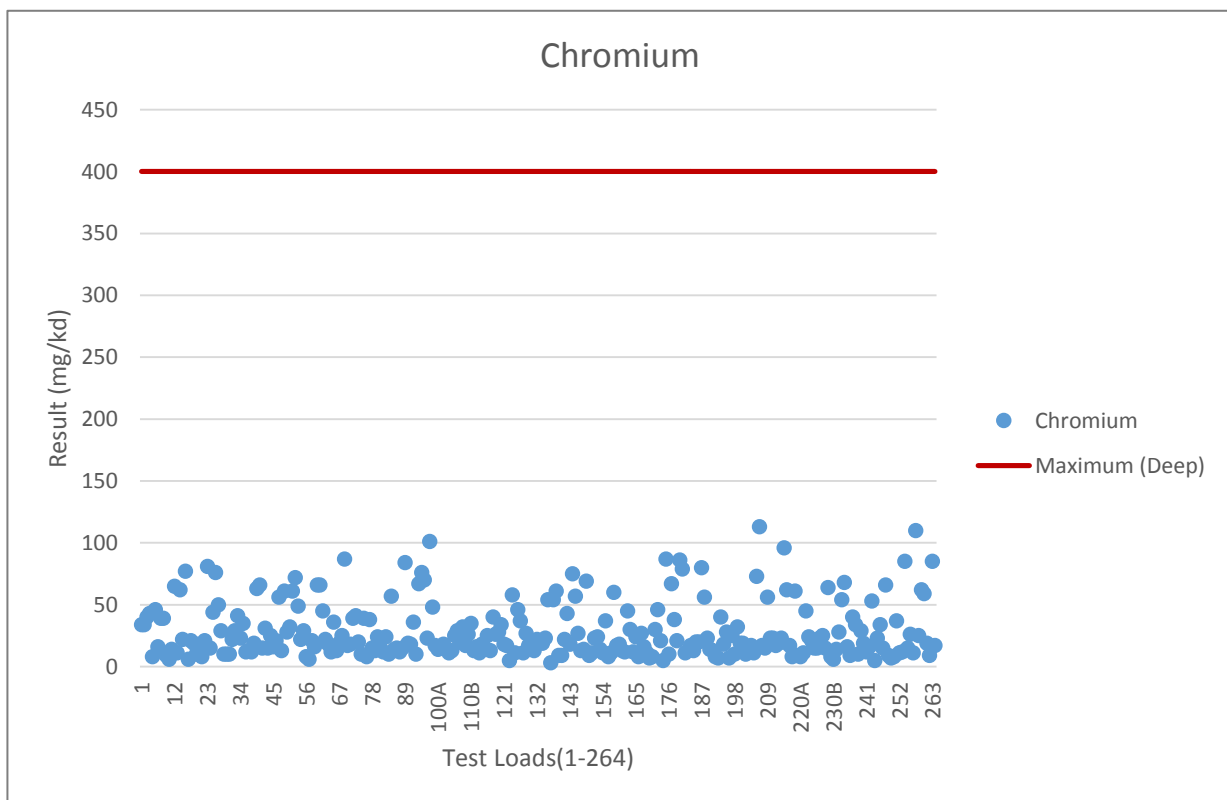
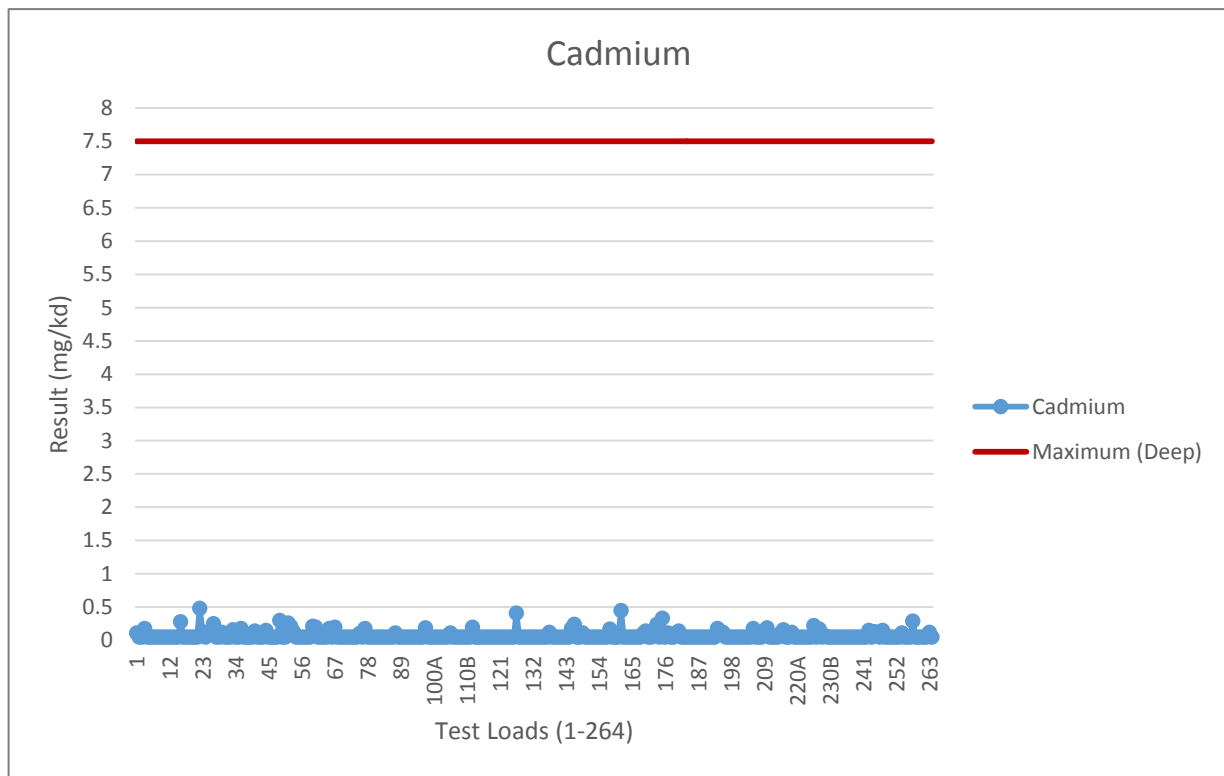
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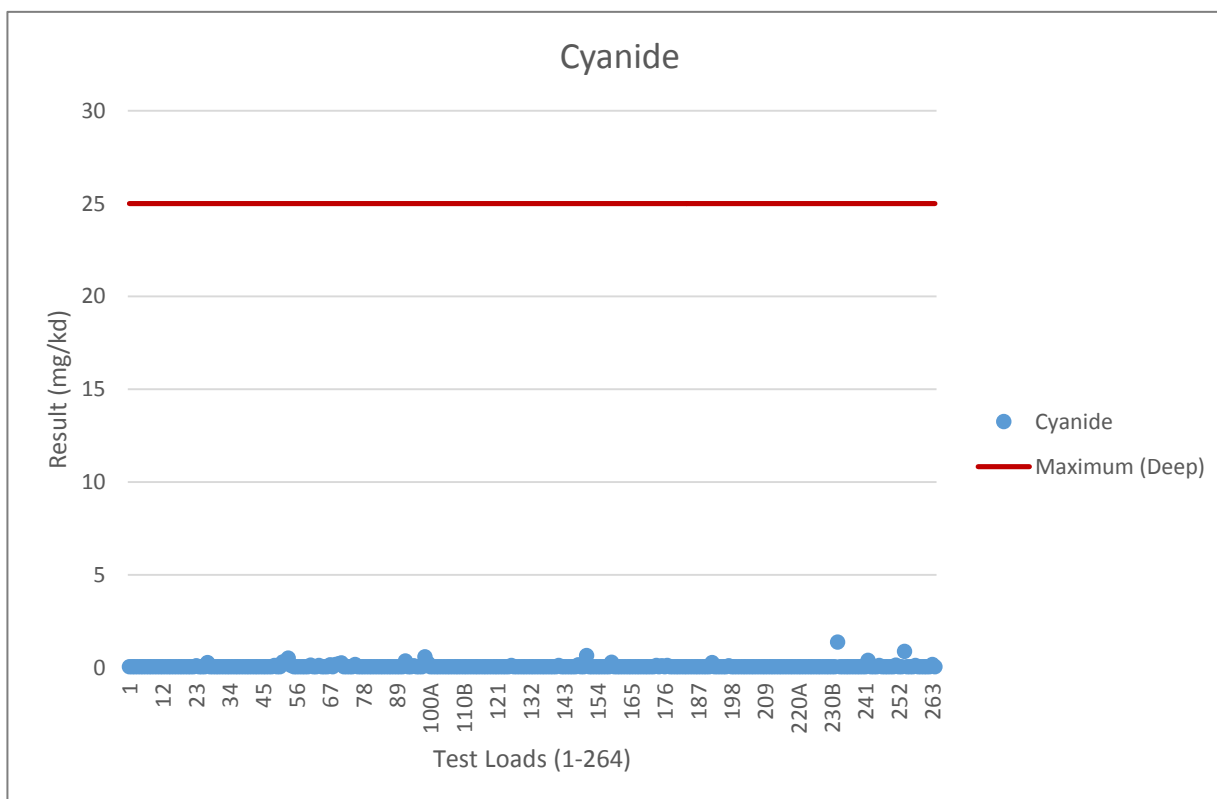
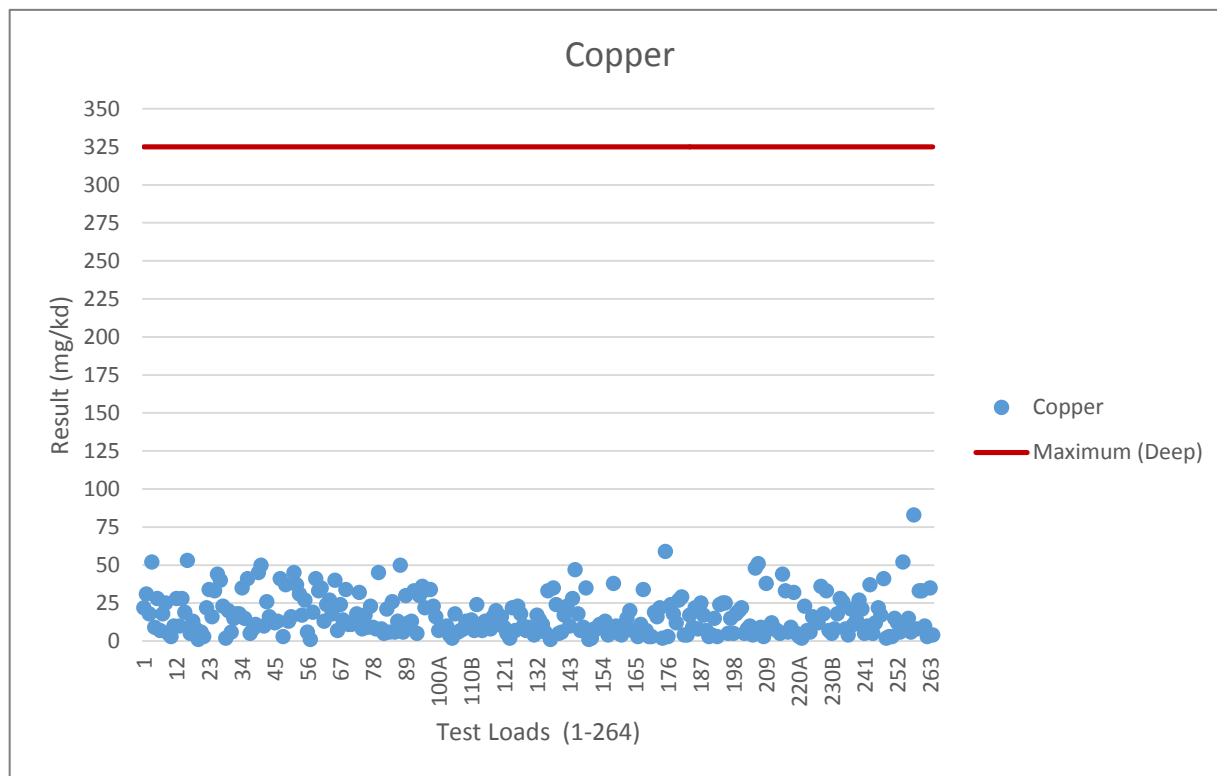
Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



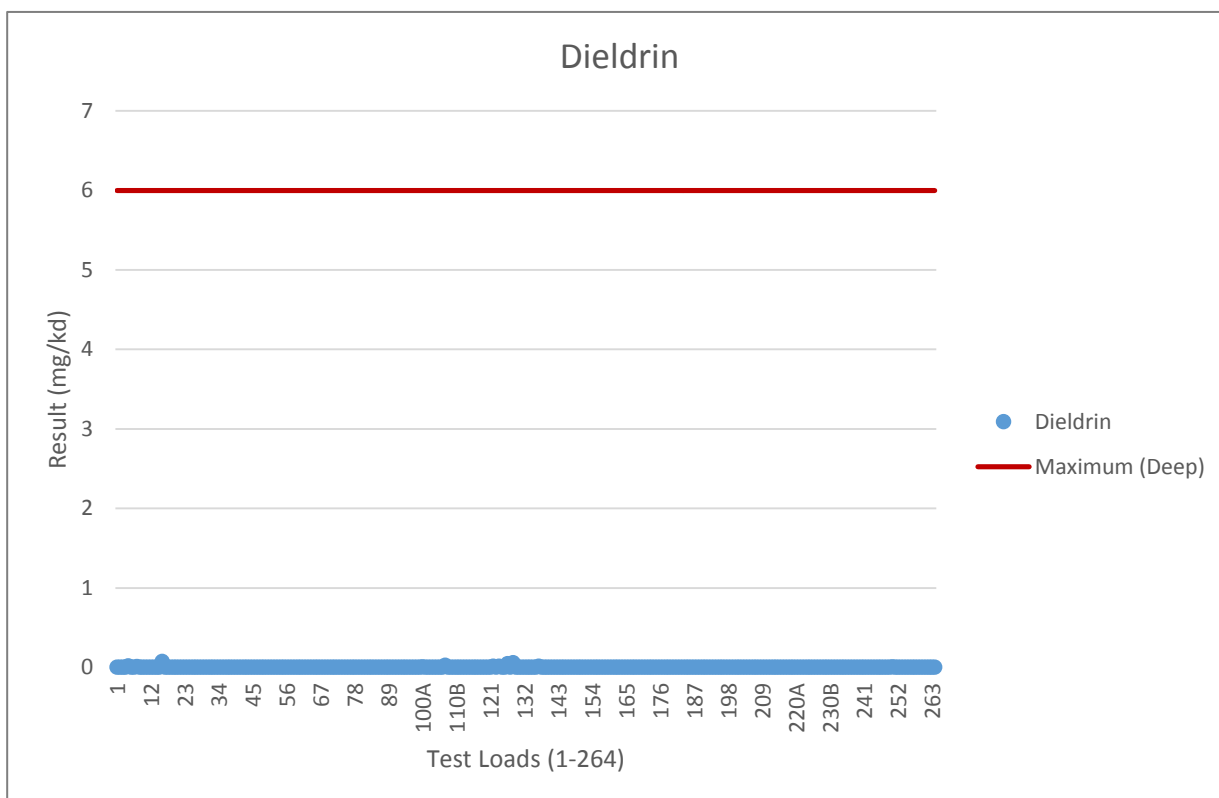
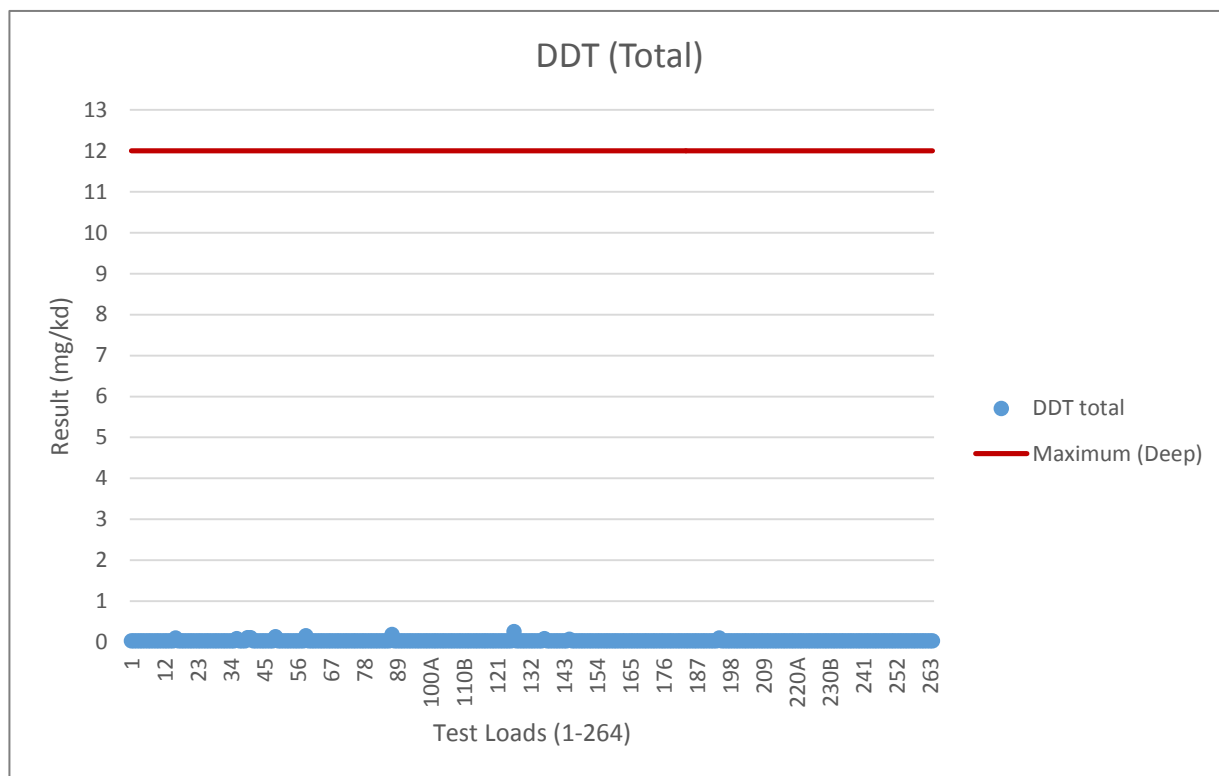
Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



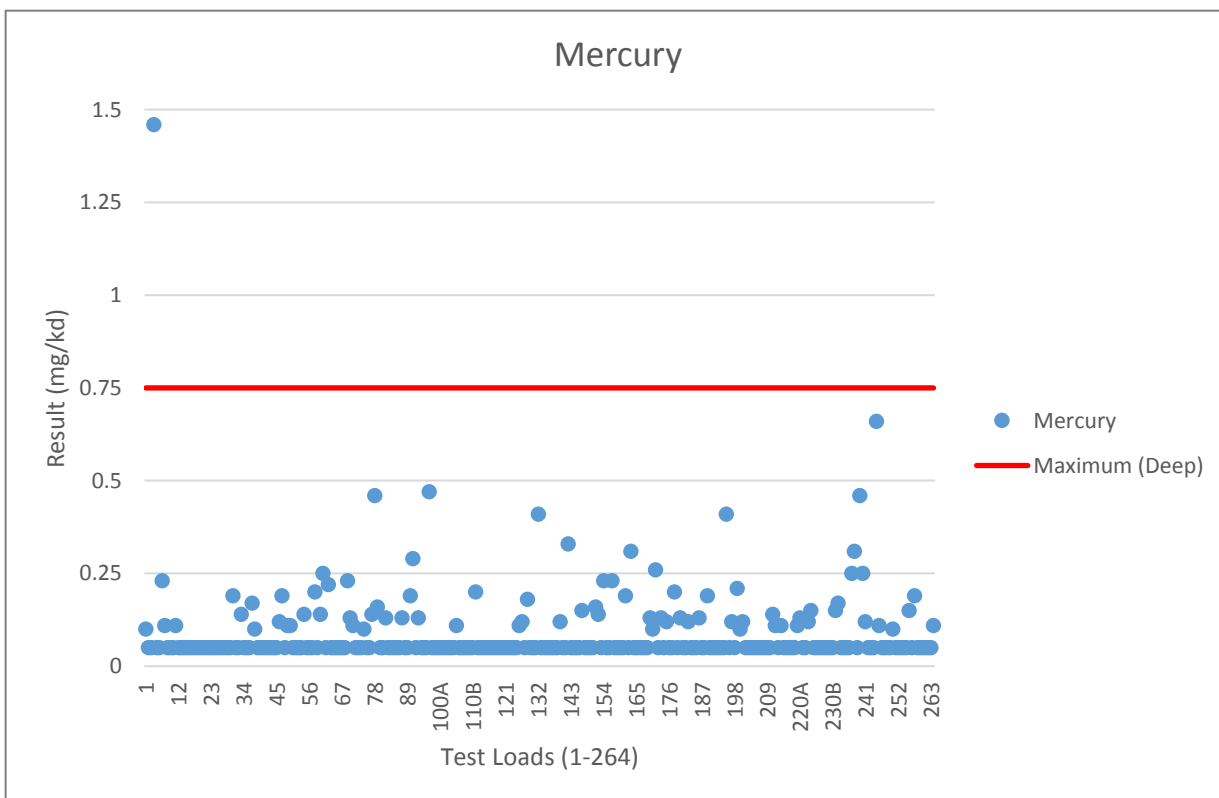
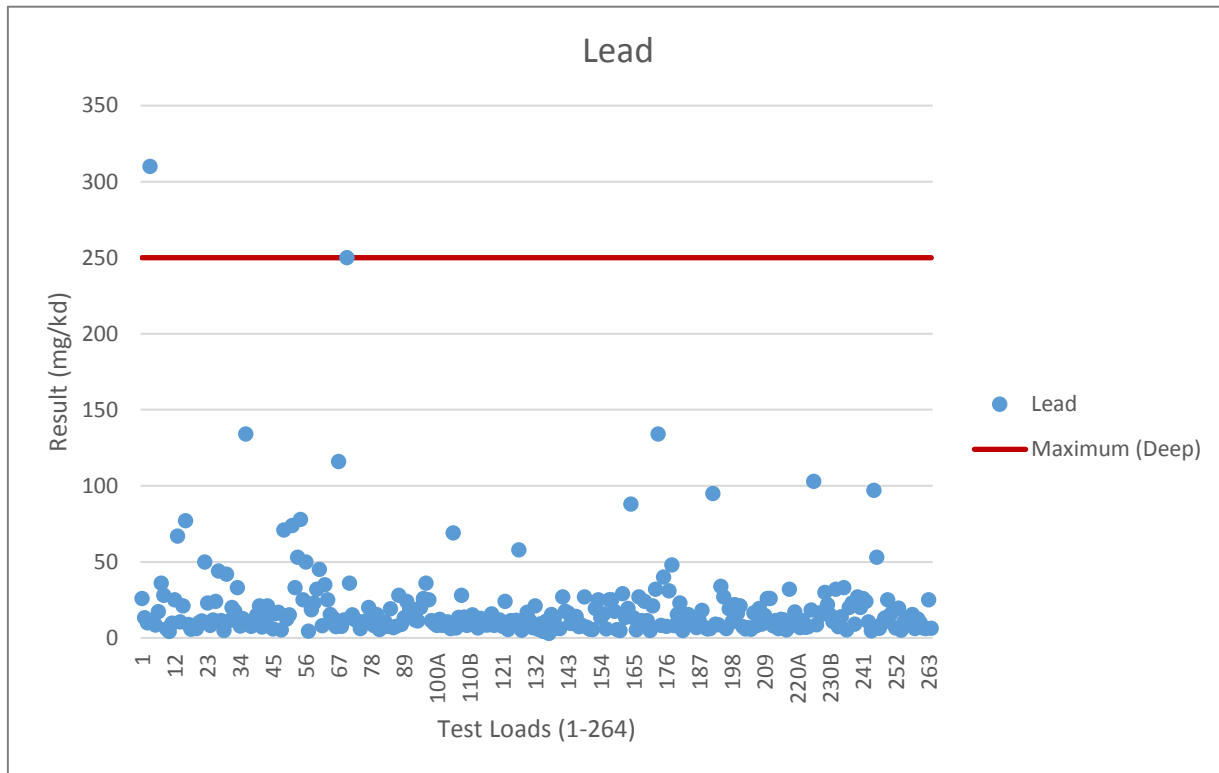
Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



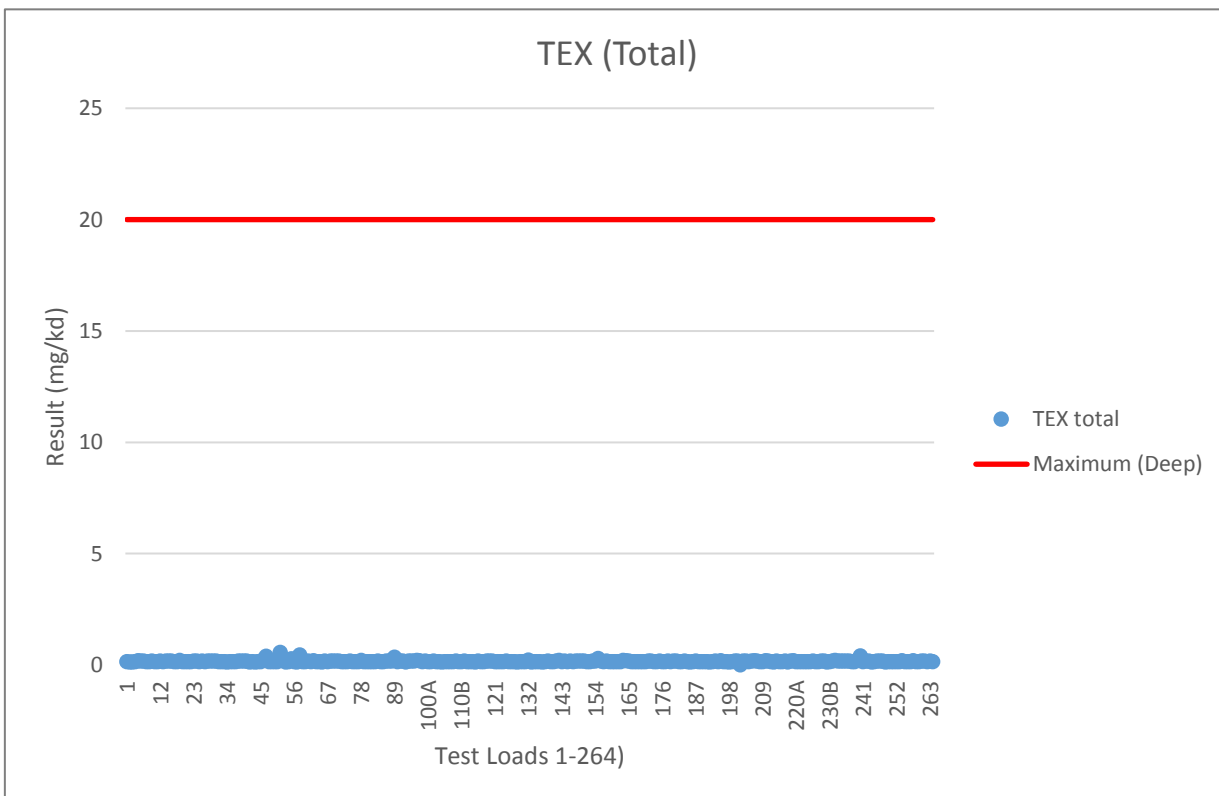
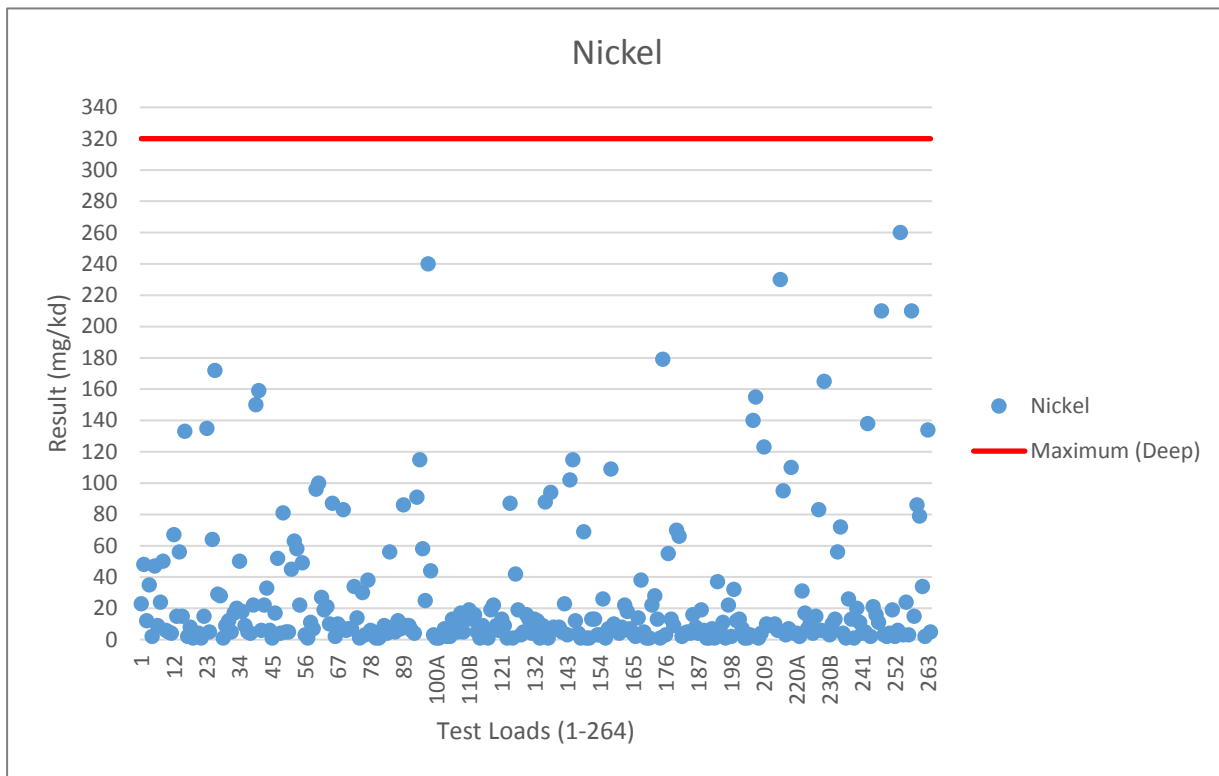
Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



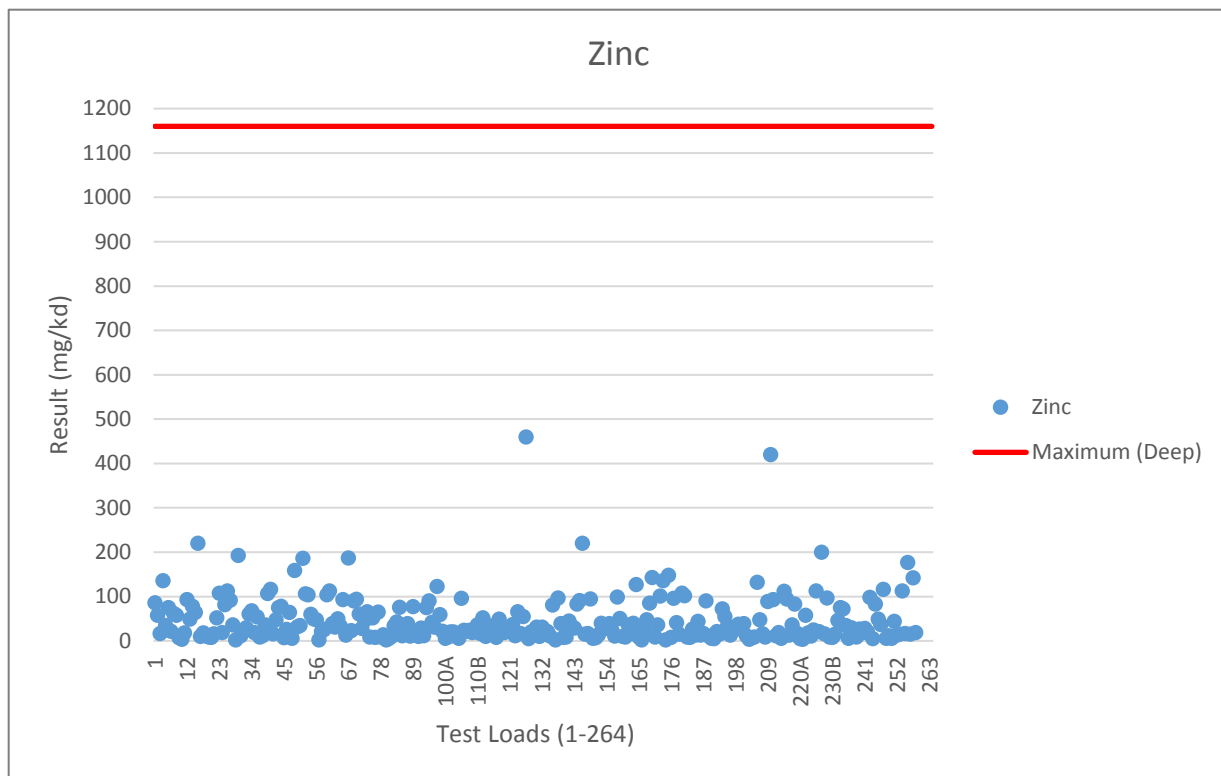
Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



Plotted results of the additional analytical sampling undertaken between 01 April 2012 to 31 May 2017 for each of the parameters listed in condition 16.



APPENDIX D

Summary of Duplicate Sample Results

SUMMARY OF PERCENT COMPARISON OF DUPLICATE ANALYTICAL RESULTS: 010-040

Parameters	3KTL-010A	3KTL-010B	% Comparison of 3KTL-010	3KTL-020A	3KTL-020B	% Comparison of 3KTL-020	3KTL-030A	3KTL-030B	% Comparison of 3KTL-030	3KTL-040A	3KTL-040B	% Comparison of 3KTL-040
Aldrin	<0.010	<0.010	nc	<0.010	<0.011	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Arsenic	<2	<2	nc	<2	4	67	40	<2	181	2	2	0
Benzo(a)pyrene Equivalence	<0.002	<0.002	nc	<0.002	0.024	169	<0.002	<0.002	nc	0.157	0.064	84
Benzene	<0.07	<0.07	nc	<0.06	<0.06	nc	<0.07	<0.07	nc	<0.07	<0.07	nc
Boron	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C10-C14	<30	<20	nc	<20	<20	nc	<30	<20	nc	<20	<20	nc
C15-C36	<50	<40	nc	<40	<40	nc	<50	<40	nc	<40	<40	nc
C7-C9	<11	<9	nc	<10	<9	nc	<12	<10	nc	<10	<10	nc
Cadmium	<0.10	<0.10	nc	<0.10	<0.10	nc	0.12	<0.10	18	<0.10	0.14	33
Chromium	9	6	40	10	11	10	10	10	0	63	66	5
Copper	5	3	50	<2	6	100	20	6	108	45	50	11
Cyanide	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc
DDT Total	<0.06	<0.06	nc	<0.06	<0.07	nc	<0.06	<0.06	nc	0.11	0.11	0
Dieldrin	<0.010	<0.010	nc	<0.010	<0.011	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Lead	6	4.3	33	6.1	10.1	49	42	11.5	114	14.9	21	34
Mercury	<0.1	<0.1	nc	<0.10	<0.10	nc	<0.10	0.19	62	<0.10	<0.10	nc
Nickel	6	5	18	2	4	67	9	12	29	150	159	6
TEX Total	<0.35	<0.29	nc	<0.29	<0.3	nc	<0.35	<0.34	nc	<0.34	<0.34	nc
Zinc	7	4	55	9	8	12	193	12	177	107	116	8

Note:

1. 'nc' (not calculated) is reported if both the results for the parameter has been reported as less than laboratory detection
2. If a result for one of the duplicate samples is given as less than laboratory detection and the other is above laboratory detection the % Comparison reported is calculated by using the value of laboratory detection to the other reported value.

SUMMARY OF PERCENT COMPARISON OF DUPLICATE ANALYTICAL RESULTS: 050-080

Parameters	3KTL-050A	3KTL-050B	% Comparison of 3KTL-050	3KTL-060A	3KTL-060B	% Comparison of 3KTL-060	3KTL-070A	3KTL-070B	% Comparison of 3KTL-070	3KTL-080A	3KTL-080B	% Comparison of 3KTL-080
Aldrin	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Arsenic	3	5	50	1	2	67	3	3	0	<2	<2	nc
Benzo(a)pyrene Equivalence	<0.002	<0.002	nc	0.03	0.05	50	<0.002	<0.002	nc	<0.002	<0.002	nc
Benzene	<0.06	<0.06	nc	<0.06	<0.07	nc	<0.07	<0.07	nc	<0.06	<0.06	nc
Boron	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C10-C14	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C15-C36	<40	<40	nc	<40	<40	nc	<40	<40	nc	<40	<40	nc
C7-C9	<10	<10	nc	<9	<10	nc	<10	<10	nc	<9	<10	nc
Cadmium	<0.10	<0.10	nc	0.21	0.2	5	<0.10	<0.10	nc	<0.10	<0.10	nc
Chromium	28	32	13	66	66	0	17	18	6	24	15	46
Copper	13	16	21	33	35	6	11	11	0	45	8	140
Cyanide	<0.10	<0.10	nc	<0.10	0.14	33	0.2	0.26	26	<0.10	<0.10	nc
DDT Total	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc
Dieldrin	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Lead	12.4	15.2	20	32	45	34	250	36	150	15.4	5.5	95
Mercury	0.11	<0.10	10	0.14	0.25	56	0.13	0.11	17	<0.10	<0.10	nc
Nickel	5	5	0	96	100	4	6	7	15	<2	<2	nc
TEX Total	<0.30	<0.30	nc	<0.29	<0.35	nc	<0.35	<0.35	nc	<0.30	<0.30	nc
Zinc	32	35	9	104	113	8	94	61	43	<4	5	22

Note:

1. 'nc' (not calculated) is reported if both the results for the parameter has been reported as less than laboratory detection
2. If a result for one of the duplicate samples is given as less than laboratory detection and the other is above laboratory detection the % Comparison reported is calculated by using the value of laboratory detection to the other reported value.

SUMMARY OF PERCENT COMPARISION OF DUPLICATE ANALYTICAL RESULTS: 090-120

Parameters	3KTL-090A	3KTL-090B	% Comparison of 3KTL-090	3KTL-100A	3KTL-100B	% Comparison of 3KTL-100	3KTL-110A	3KTL-110B	% Comparison of 3KTL-110	3KTL-120A	3KTL-120B	% Comparison of 3KTL-120
Aldrin	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Arsenic	3	3	0	3	4	29	3	3	0	7	7	0
Benzo(a)pyrene Equivalence	0.008	<0.002	120	<0.002	0.02	164	<0.002	0.033	177	<0.002	<0.002	nc
Benzene	<0.06	<0.07	nc	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.07	<0.07	nc
Boron	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C10-C14	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C15-C36	<40	<40	nc	<40	<40	nc	<40	<40	nc	<40	<40	nc
C7-C9	<9	<10	nc	<9	<9	nc	<9	<9	nc	<10	<10	nc
Cadmium	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc
Chromium	19	18	5	14	15	7	26	35	30	28	34	19
Copper	12	13	8	7	8	13	10	14	33	11	16	37
Cyanide	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc
DDT Total	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc
Dieldrin	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Lead	24	19.2	22	8.3	12.2	38	8.2	11.6	34	11.9	11.8	1
Mercury	0.19	0.29	42	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.1	<0.1	nc
Nickel	9	9	0	<2	<2	nc	13	19	38	9	6	40
TEX Total	<0.30	<0.34	nc	<0.29	<0.29	nc	<0.30	<0.30	nc	<0.35	<0.34	nc
Zinc	19	10	62	6	9	40	23	36	44	19	24	23

Note:

1. 'nc' (not calculated) is reported if both the results for the parameter has been reported as less than laboratory detection
2. If a result for one of the duplicate samples is given as less than laboratory detection and the other is above laboratory detection the % Comparison reported is calculated by using the value of laboratory detection to the other reported value.

SUMMARY OF PERCENT COMPARISION OF DUPLICATE ANALYTICAL RESULTS: 130-160

Parameters	3KTL-130A	3KTL-130B	% Comparison of 3KTL-130	3KTL-140A	3KTL-140B	% Comparison of 3KTL-140	3KTL-150A	3KTL-150B	% Comparison of 3KTL-150	3KTL-160A	3KTL-160B	% Comparison of 3KTL-160
Aldrin	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Arsenic	<2	2	0	<2	<2	nc	<2	<2	nc	<2	<2	nc
Benzo(a)pyrene Equivalence	<0.002	<0.002	nc	<0.002	0.3	197	<0.002	<0.002	nc	<0.002	<0.002	nc
Benzene	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.07	<0.07	nc	<0.06	<0.06	nc
Boron	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C10-C14	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C15-C36	<40	<40	nc	<40	<40	nc	<40	<40	nc	<40	<40	nc
C7-C9	<10	<9	nc	<9	<9	nc	<10	<10	nc	<9	<9	nc
Cadmium	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc
Chromium	17	15	13	9	9	0	9	11	20	18	13	32
Copper	9	8	12	5	6	18	<2	2	0	5	4	22
Cyanide	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	0.65	147	<0.10	<0.10	nc
DDT Total	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc
Dieldrin	0.014	<0.010	33	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.01	<0.01	nc
Lead	16.8	11.3	39	6.4	6.2	3	6.9	5.7	19	5.6	4.9	13
Mercury	<0.10	<0.10	nc	0.12	<0.10	18	<0.10	<0.10	nc	<0.10	<0.10	nc
Nickel	16	13	21	7	8	13	<2	<2	nc	6	4	40
TEX Total	<0.30	<0.29	nc	<0.29	<0.30	nc	<0.35	<0.35	nc	<0.30	<0.30	nc
Zinc	23	31	30	8	9	12	6	7	15	10	9	11

Note:

1. 'nc' (not calculated) is reported if both the results for the parameter has been reported as less than laboratory detection
2. If a result for one of the duplicate samples is given as less than laboratory detection and the other is above laboratory detection the % Comparison reported is calculated by using the value of laboratory detection to the other reported value.

SUMMARY OF PERCENT COMPARISON OF DUPLICATE ANALYTICAL RESULTS: 170-200

Parameters	3KTL-170A	3KTL-170B	% Comparison of 3KTL-170	3KTL-180A	3KTL-180B	% Comparison of 3KTL-180	3KTL-190A	3KTL-190B	% Comparison of 3KTL-190	3KTL-200A	3KTL-200B	% Comparison of 3KTL-200
Aldrin	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Arsenic	<2	<2	nc	2	2	0	<2	<2	nc	5	5	0
Benzo(a)pyrene Equivalence	<0.002	<0.002	nc	0.157	0.052	100	0.043	0.038	12	0.027	0.025	8
Benzene	<0.06	<0.06	nc	<0.09	<0.07	nc	<0.06	<0.06	nc	<0.07	<0.07	nc
Boron	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C10-C14	<20	<20	nc	<30	<20	nc	<20	<20	nc	<20	<20	nc
C15-C36	<40	<40	nc	<50	<40	nc	<40	<40	nc	<40	<40	nc
C7-C9	<9	<9	nc	<12	<10	nc	<9	<9	nc	<10	<10	nc
Cadmium	0.14	<0.10	33	0.11	0.14	24	<0.10	<0.10	nc	<0.10	<0.10	nc
Chromium	7	8	13	86	79	8	14	13	7	19	19	0
Copper	3	3	0	27	29	7	3	4	29	20	22	10
Cyanide	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc
DDT Total	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc
Dieldrin	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc
Lead	11.4	4.9	80	15.3	23	40	6	6.2	3	16.3	21	25
Mercury	0.13	0.1	26	0.13	<0.10	26	<0.10	<0.10	nc	0.1	0.12	18
Nickel	<2	<2	nc	70	66	6	<2	<2	nc	12	13	8
TEX Total	<0.30	<0.30	nc	<0.44	<0.34	nc	<0.29	<0.29	nc	<0.35	<0.35	nc
Zinc	143	9	176	108	102	6	6	5	18	35	39	11

Note:

1. 'nc' (not calculated) is reported if both the results for the parameter has been reported as less than laboratory detection
2. If a result for one of the duplicate samples is given as less than laboratory detection and the other is above laboratory detection the % Comparison reported is calculated by using the value of laboratory detection to the other reported value.

SUMMARY OF PERCENT COMPARISION OF DUPLICATE ANALYTICAL RESULTS: 210-240

Parameters	3KTL-210A	3KTL-210B	% Comparison of 3KTL-210	3KTL-220A	3KTL-220B	% Comparison of 3KTL-220	3KTL-230A	3KTL-230B	% Comparison of 3KTL-230	3KTL-240A	3KTL-240B	% Comparison of 3KTL-240
Aldrin	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.01	<0.01	nc
Arsenic	4	6	40	2	<2	0	3	<2	40	5	3	50
Benzo(a)pyrene Equivalence	0.069	<0.002	189	<0.002	<0.002	nc	<0.002	<0.002	nc	<0.002	<0.002	nc
Benzene	<0.08	<0.07	nc	<0.06	<0.06	nc	<0.05	<0.06	nc	<0.09	<0.08	nc
Boron	<20	<20	nc	<20	<20	nc	<20	<20	nc	<20	<20	nc
C10-C14	<30	<20	nc	<20	<20	nc	<20	<20	nc	<30	<30	nc
C15-C36	<50	<40	nc	<40	<40	nc	<40	<40	nc	<50	<50	nc
C7-C9	<11	<10	nc	<9	<10	nc	<8	<9	nc	<12	<12	nc
Cadmium	0.19	<0.10	62	<0.10	<0.10	nc	<0.1	<0.1	nc	<0.1	<0.1	nc
Chromium	23	23	0	8	11	32	8	6	29	29	19	42
Copper	10	12	18	3	2	40	7	5	33	27	21	25
Cyanide	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.1	<0.1	nc	<0.1	<0.1	nc
DDT Total	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc	<0.06	<0.06	nc
Dieldrin	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc	<0.01	<0.01	nc
Lead	26	26	0	9.7	6.8	35	22	14.9	38	27	20	30
Mercury	<0.10	0.14	33	0.13	<0.10	26	<0.1	<0.1	nc	0.46	0.25	59
Nickel	10	9	11	4	2	67	5	3	50	20	11	58
TEX Total	<0.39	<0.35	nc	<0.29	<0.30	nc	<0.25	<0.29	nc	<0.45	<0.4	nc
Zinc	420	93	127	5	4	22	9	8	12	27	18	40

Note:

1. 'nc' (not calculated) is reported if both the results for the parameter has been reported as less than laboratory detection
2. If a result for one of the duplicate samples is given as less than laboratory detection and the other is above laboratory detection the % Comparison reported is calculated by using the value of laboratory detection to the other reported value.

SUMMARY OF PERCENT COMPARISON OF DUPLICATE ANALYTICAL RESULTS: 250-260

Parameters	3KTL-250A	3KTL-250B	% Comparison of 3KTL-250	3KTL-260A	3KTL-260B	% Comparison of 3KTL-260
Aldrin	<0.01	<0.01	nc	<0.01	<0.01	nc
Arsenic	9	5	57	3	3	0
Benzo(a)pyrene Equivalence	<0.002	0.037	179	0.026	0.044	51
Benzene	<0.06	<0.06	nc	<0.06	<0.07	nc
Boron	<20	<20	nc	<20	<20	nc
C10-C14	<20	<20	nc	<20	<20	nc
C15-C36	<40	<40	nc	<40	<40	nc
C7-C9	<9	<9	nc	<10	<10	nc
Cadmium	<0.1	<0.1	nc	<0.1	<0.1	nc
Chromium	7	8	13	62	59	5
Copper	3	3	0	33	33	0
Cyanide	<0.1	<0.1	nc	<0.1	<0.1	nc
DDT Total	<0.06	<0.06	nc	<0.06	<0.06	nc
Dieldrin	<0.01	<0.01	nc	<0.01	<0.01	nc
Lead	25	15.1	49	12.5	10	22
Mercury	<0.1	0.1	0	<0.10	<0.10	nc
Nickel	2	4	67	86	79	8
TEX Total	<0.29	<0.29	nc	<0.30	<0.34	nc
Zinc	12	6	67	77	71	8

Note:

1. 'nc' (not calculated) is reported if both the results for the parameter has been reported as less than laboratory detection
2. If a result for one of the duplicate samples is given as less than laboratory detection and the other is above laboratory detection the % Comparison reported is calculated by using the value of laboratory detection to the other reported value.

APPENDIX E

Summary of Council Random Sampling Results

SUMMARY OF COUNCIL BIANNUAL RANDOM SAMPLING RESULTS

Parameters	Weighted Rolling 12- Month DEEP Criteria	Maximum DEEP Criteria	16/11/2012		26/04/2013		25/11/2013		7/05/2014	
Aldrin	0.7	12	<0.010	<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Arsenic	12	100	2	3	7	<2	4	6	4	4
Benzo(a)pyrene Equivalence	1	2.15	0.26	0.56	<0.09	<0.08	0.2	0.83	0.93	0.35
Benzene	0.4	1	<0.06	<0.05	<0.07	<0.07	<0.05	<0.05	<0.06	<0.07
Boron	130	260	<20	<20	<20	<20	<20	<20	<20	<20
C10-C14	50	300	<20	<20	<30	<20	<20	<20	<20	<20
C15-C36	500	5600	<40	<40	<50	<40	<40	<40	47	<40
C7-C9	20	300	<10	<9	<11	<10	<8	<8	<9	<8
Cadmium	0.65	7.5	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10	0.11
Chromium	125	400	35	21	na	na	16	23	50	45
Copper	90	325	21	17	8	7	19	23	31	32
Cyanide	1	25	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.16	<0.10
DDT Total	0.7	12	<0.060	<0.066	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Dieldrin	0.7	6	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010
Lead	65	250	16.9	22	9.2	13.2	14.6	27	28	34
Mercury	0.45	0.75	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10
Nickel	105	320	31	15	3	4	21	32	65	63
TEX Total	3	20	<0.29	<0.25	<0.35	<0.34	<0.25	<0.25	<0.29	<0.34
Zinc	400	1160	49	42	8	9	56	69	88	81

Notes:

- 1 All values are in mg/kg.
- 2 na = no result provided
- 3 Red are results above the trigger limit (based on the deeper >2m criteria)

SUMMARY OF COUNCIL BIANNUAL RANDOM SAMPLING RESULTS

Parameters	Weighted Rolling 12- Month DEEP Criteria	Maximum DEEP Criteria	3/12/2014		19/05/2015		10/11/2015		13/07/2016	
Aldrin	0.7	12	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Arsenic	12	100	3	5	3	3	3	4	3	3
Benzo(a)pyrene Equivalence	1	2.15	3.1	0.29	0.85	0.25	1.06	2.8	0.19	0.24
Benzene	0.4	1	<0.06	<0.05	<0.06	<0.07	<0.05	<0.05	<0.06	<0.06
Boron	130	260	<20	<20	<20	<20	<20	<20	<20	<20
C10-C14	50	300	<20	<20	<20	<20	<20	<20	<20	<20
C15-C36	500	5600	89	<40	76	<40	79	240	<40	<40
C7-C9	20	300	<9	<8	<10	<10	<8	<8	<9	<9
Cadmium	0.65	7.5	<0.10	0.13	<0.10	<0.10	0.1	<0.10	<0.1	<0.1
Chromium	125	400	65	44	47	66	47	44	22	32
Copper	90	325	28	30	31	32	26	28	18	27
Cyanide	1	25	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
DDT Total	0.7	12	<0.060	<0.060	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Dieldrin	0.7	6	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	65	250	14.1	25	14.5	12.9	37	29	11.2	15.4
Mercury	0.45	0.75	<0.10	<0.10	na	na	<0.10	<0.10	<0.10	<0.10
Nickel	105	320	43	39	79	83	78	60	35	55
TEX Total	3	20	<0.29	<0.25	<0.30	<0.34	<0.20	<0.20	<0.29	<0.30
Zinc	400	1160	47	68	72	76	66	67	30	61

Notes:

- 1 All values are in mg/kg.
- 2 na = no result provided
- 3 Red are results above the trigger limit (based on the deeper >2m criteria)

SUMMARY OF COUNCIL BIANNUAL RANDOM SAMPLING RESULTS

Parameters	Weighted Rolling 12- Month DEEP Criteria	Maximum DEEP Criteria	11/11/2016		28/04/2017	
Aldrin	0.7	12	<0.010	<0.010	<0.010	<0.010
Arsenic	12	100	4	4	3	4
Benzo(a)pyrene Equivalence	1	2.15	<0.07	<0.07	<0.07	<0.07
Benzene	0.4	1	<0.05	<0.05	<0.05	<0.05
Boron	130	260	<20	<20	<20	<20
C10-C14	50	300	<20	<20	<20	<20
C15-C36	500	5600	<70	<70	<40	<40
C7-C9	20	300	<9	<9	<8	<9
Cadmium	0.65	7.5	<0.10	<0.10	<0.10	<0.10
Chromium	125	400	17	16	18	17
Copper	90	325	21	22	19	22
Cyanide	1	25	<0.10	<0.10	<0.10	<0.10
DDT Total	0.7	12	<0.06	<0.06	<0.06	<0.06
Dieldrin	0.7	6	<0.010	<0.010	<0.010	<0.010
Lead	65	250	7.7	8.7	7	7.4
Mercury	0.45	0.75	<0.10	<0.10	<0.10	<0.10
Nickel	105	320	20	20	20	23
TEX Total	3	20	<0.25	<0.25	<0.25	<0.29
Zinc	400	1160	55	59	46	84

Notes:

- 1 All values are in mg/kg.
- 2 na = no result provided
- 3 Red are results above the trigger limit (based on the deeper >2m criteria)

APPENDIX F

Summary of Continuous Monitoring Data

Average Daily EC Graph

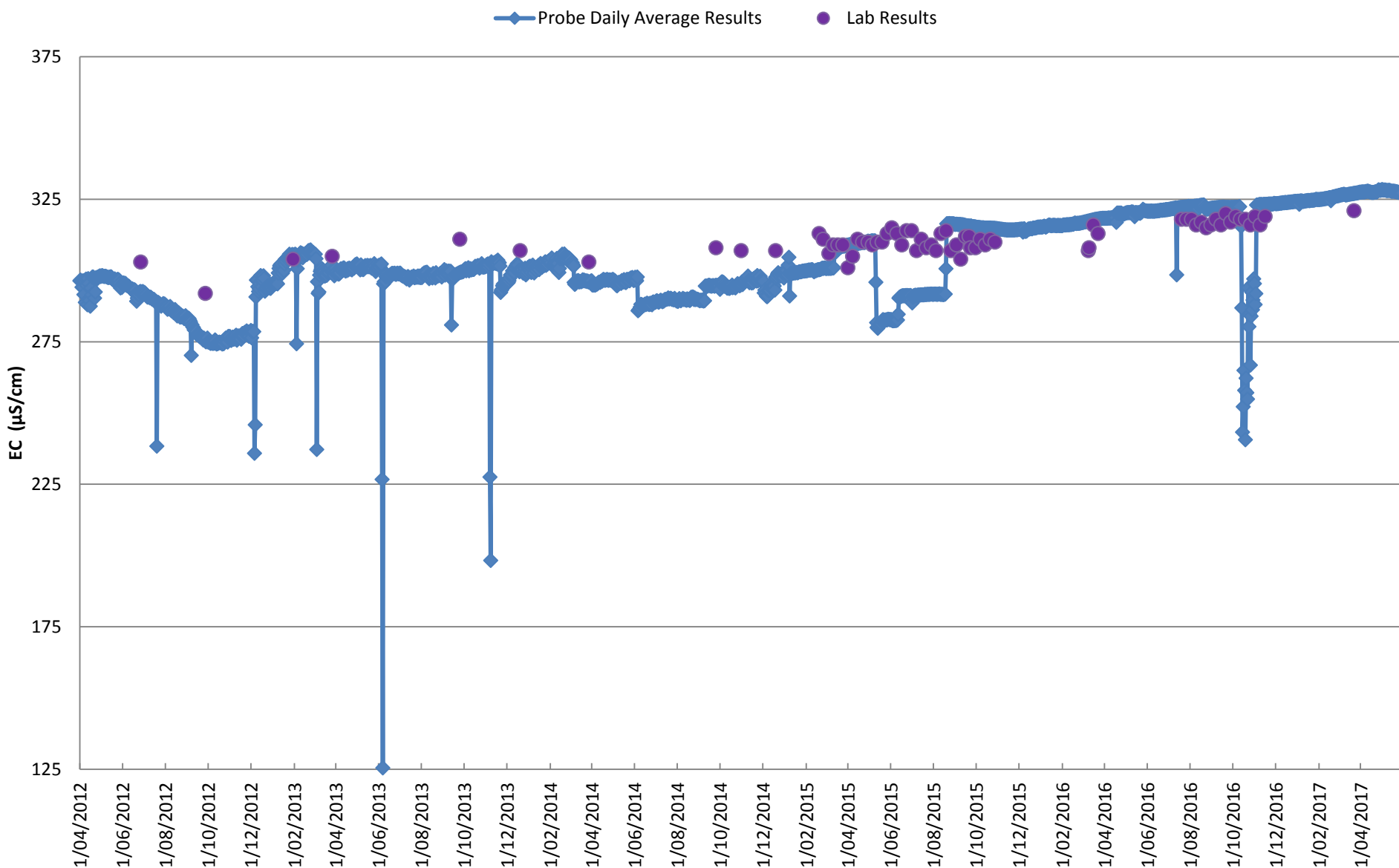


Figure 1. This figure illustrates the average daily electrical conductivity of the water monitored at the dewatering well head as required by condition 30. The daily average is based on the readings logged at 5 minute intervals for each day between 01/04/2012 and 31/05/2017. Also plotted are the laboratory results from additional monitoring undertaken at the dewatering well head.

Average Daily pH Graph

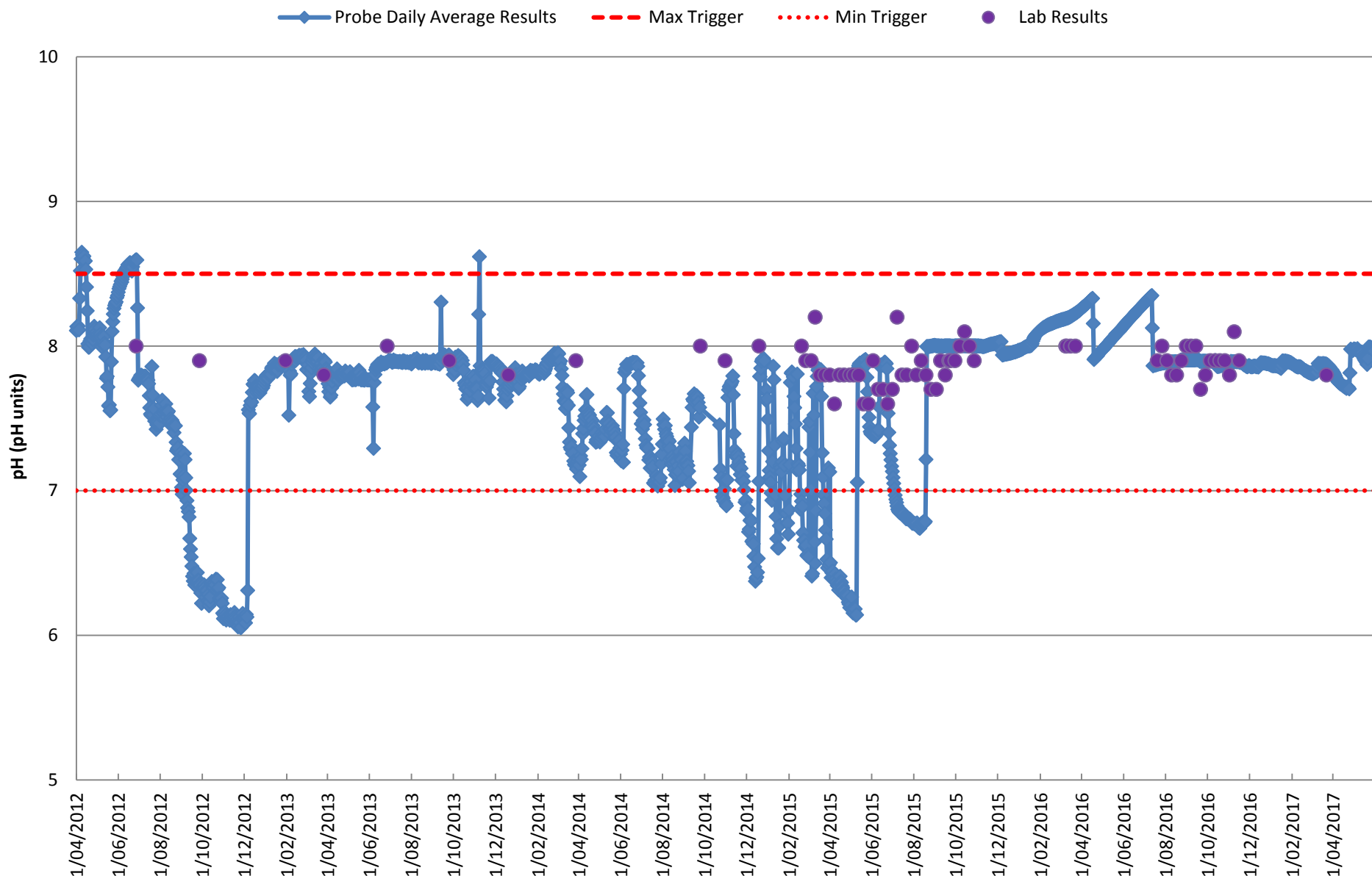
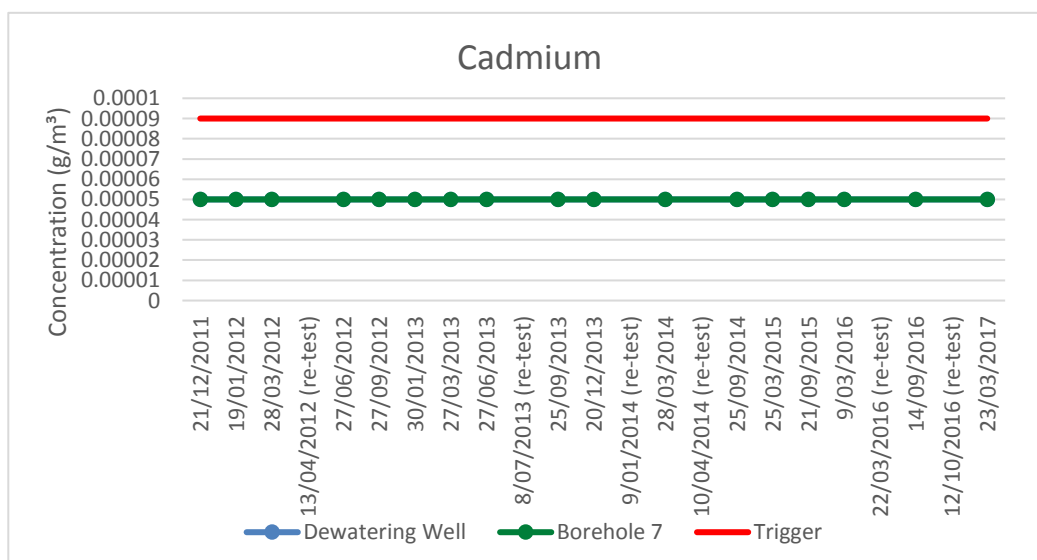
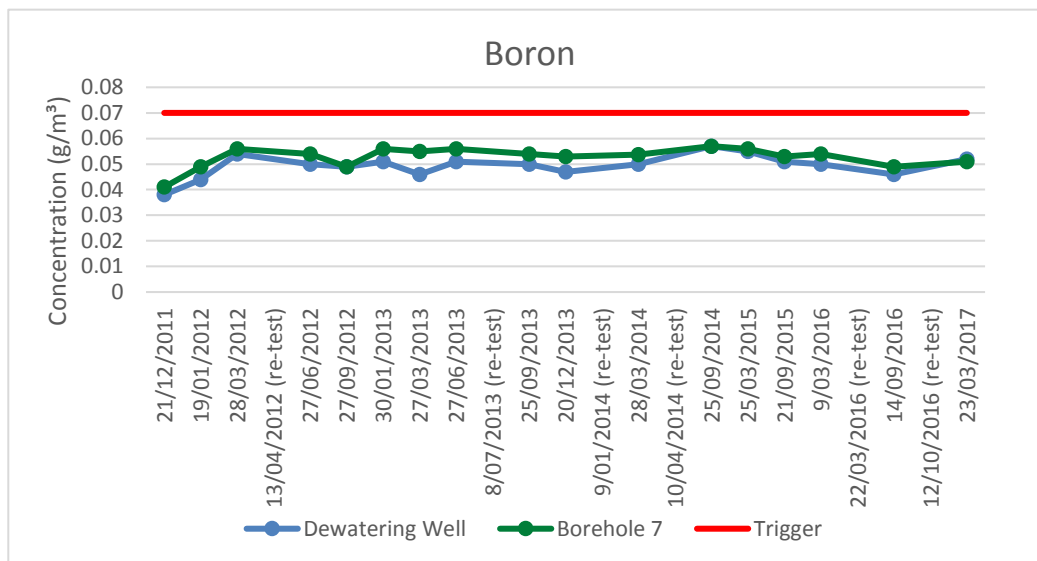
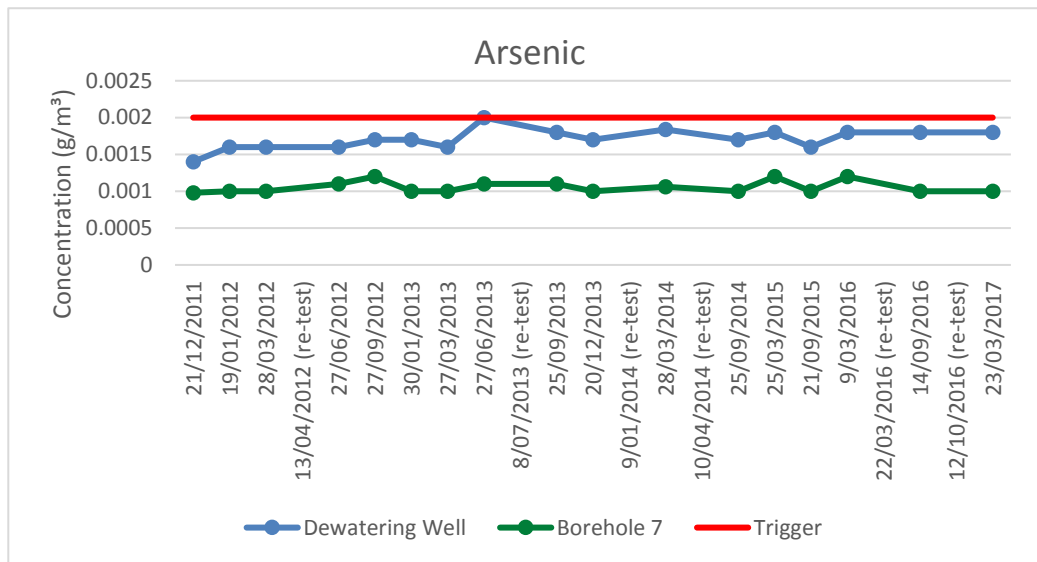


Figure 2. This figure illustrates the average daily pH of the water monitored at the dewatering well head as required by condition 30. The daily average is based on the readings logged at 5 minute intervals for each day between 01/04/2012 and 31/05/2017. Also plotted are the laboratory results from additional monitoring undertaken at the dewatering well head.

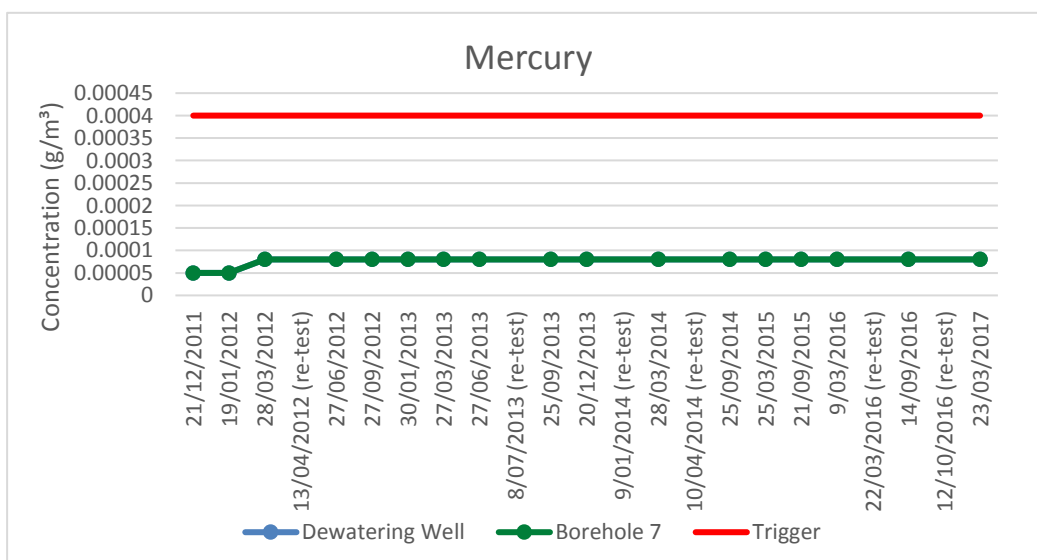
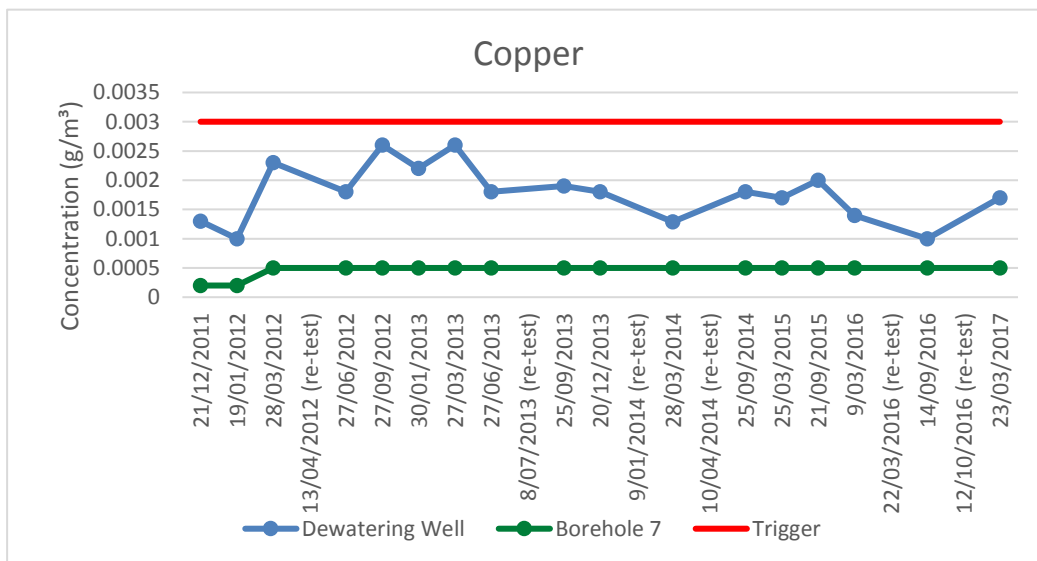
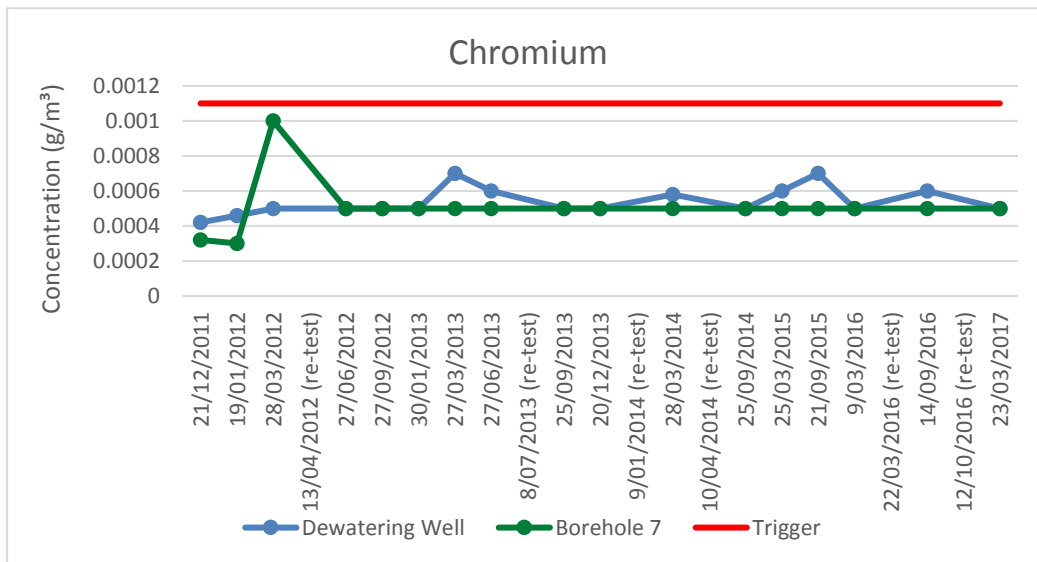
APPENDIX G

Groundwater Monitoring Data

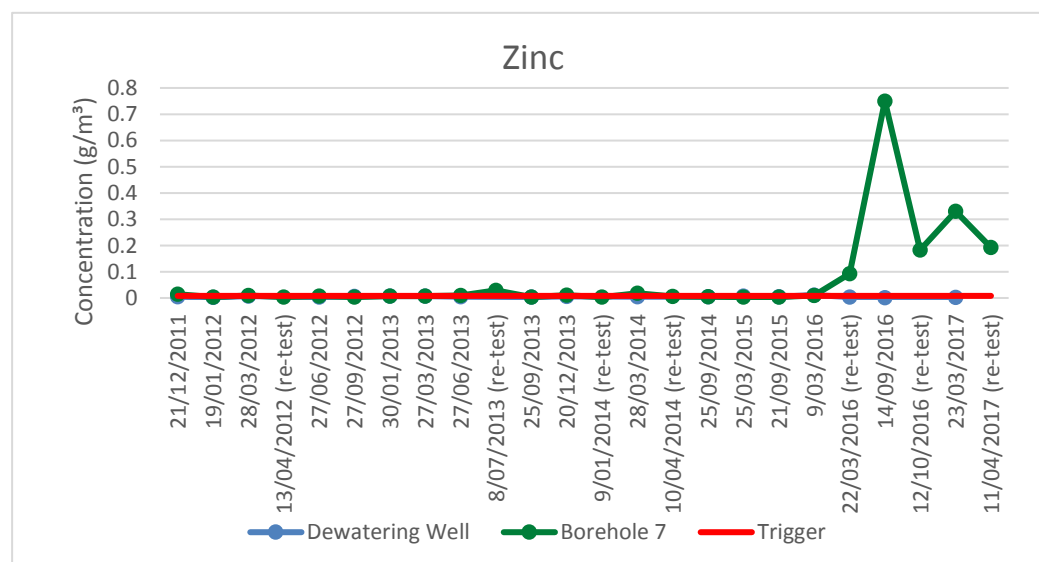
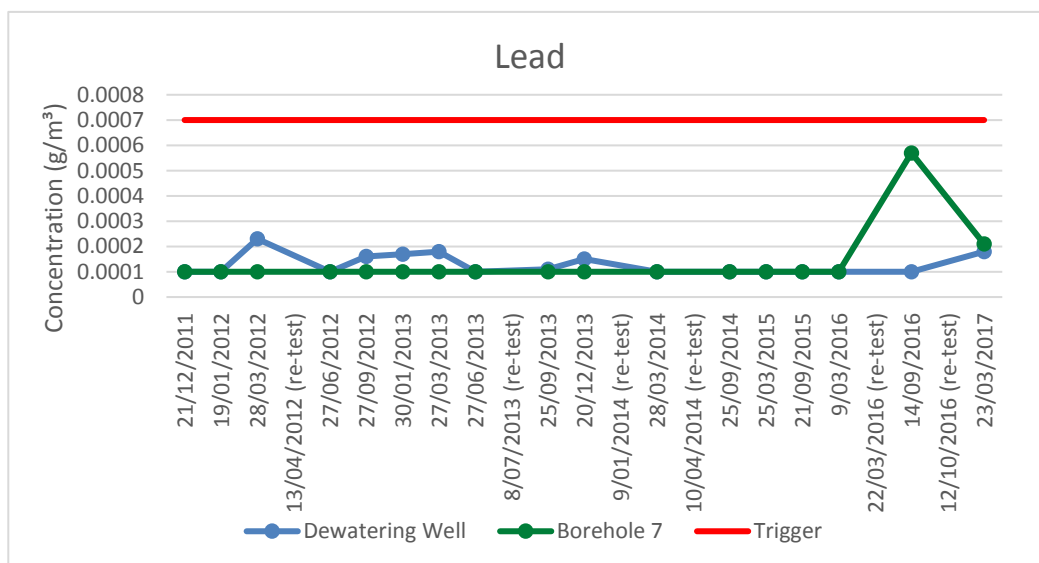
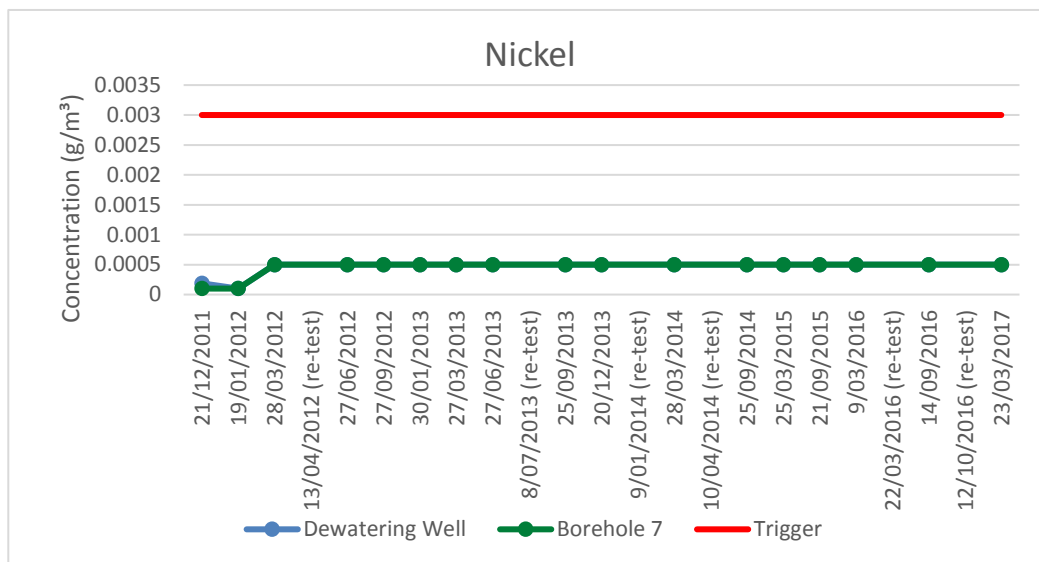
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



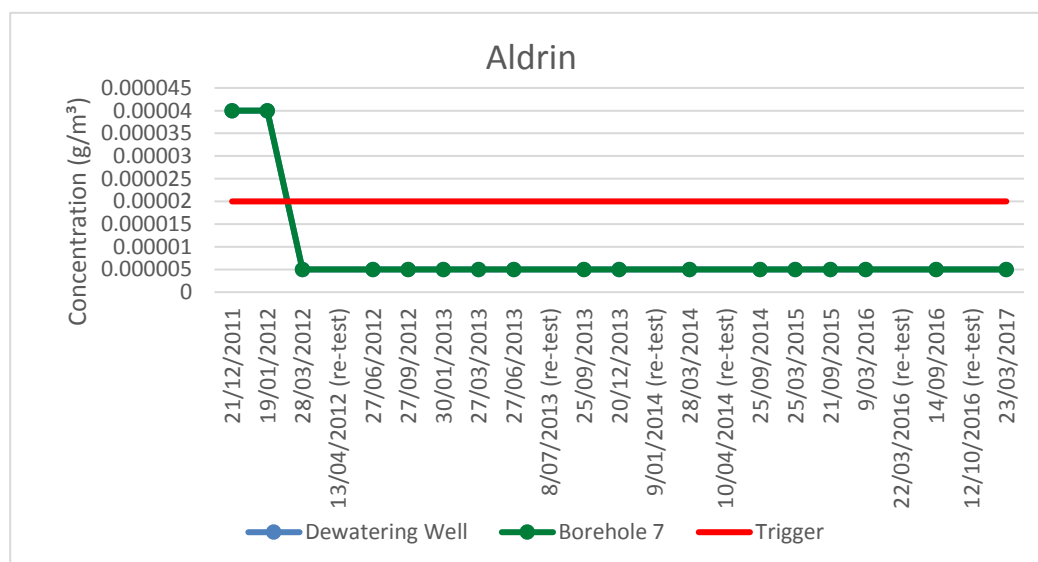
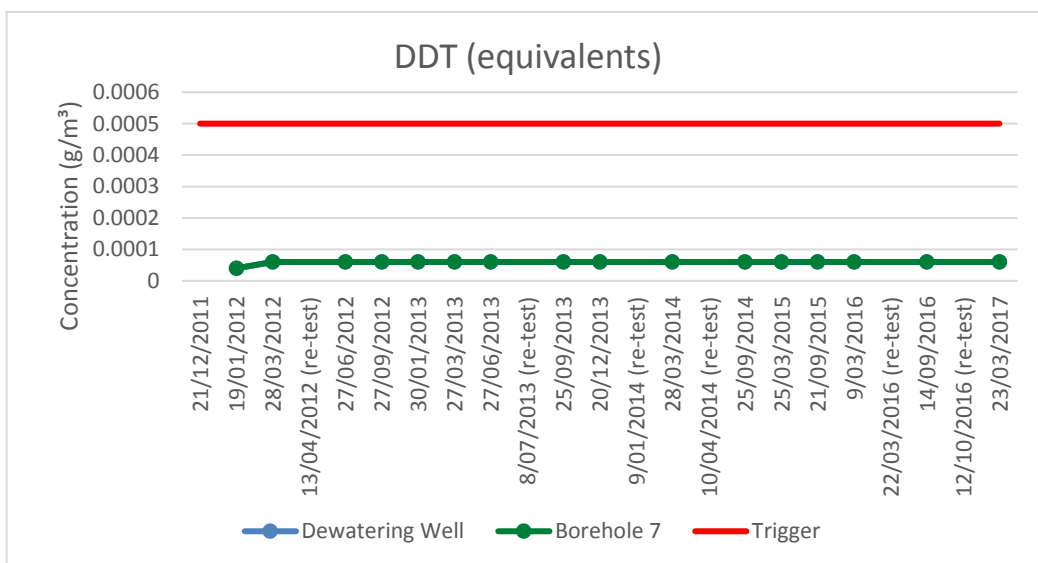
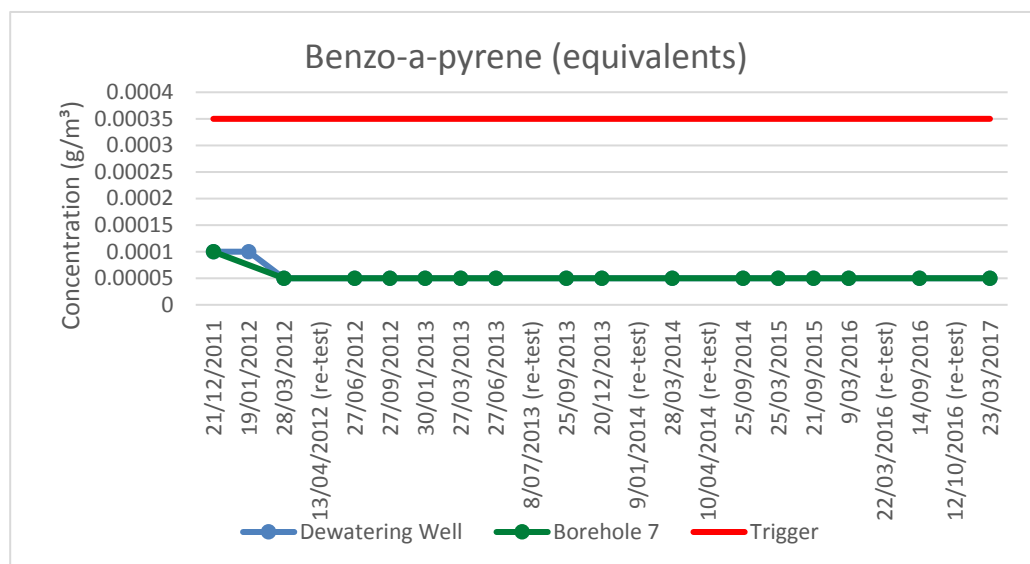
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



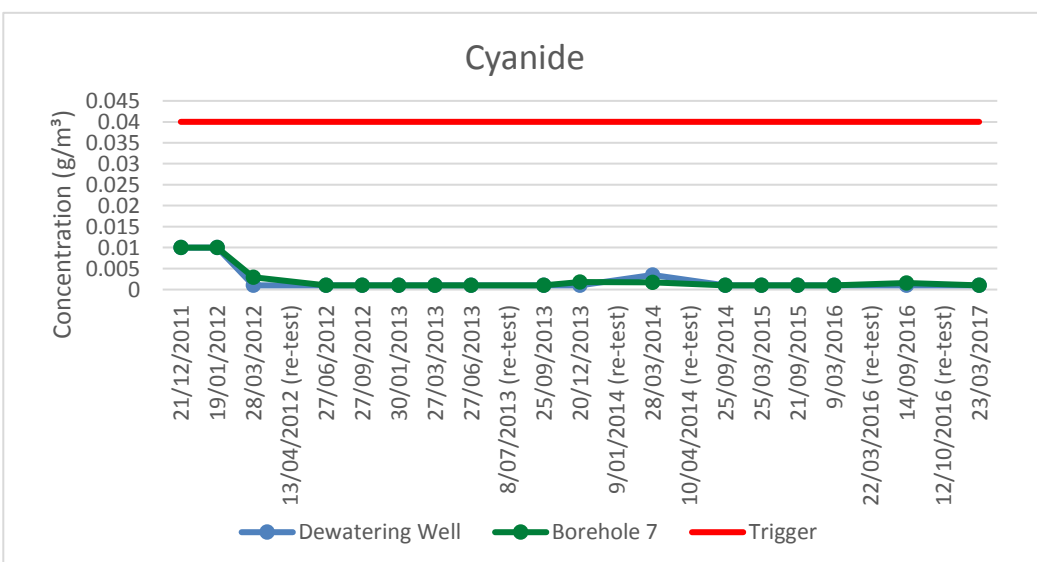
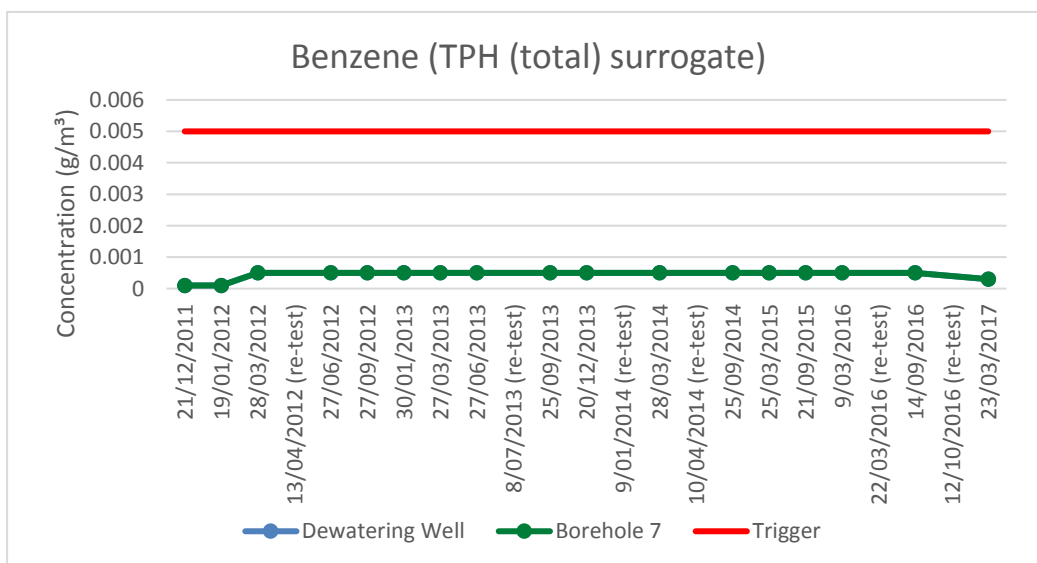
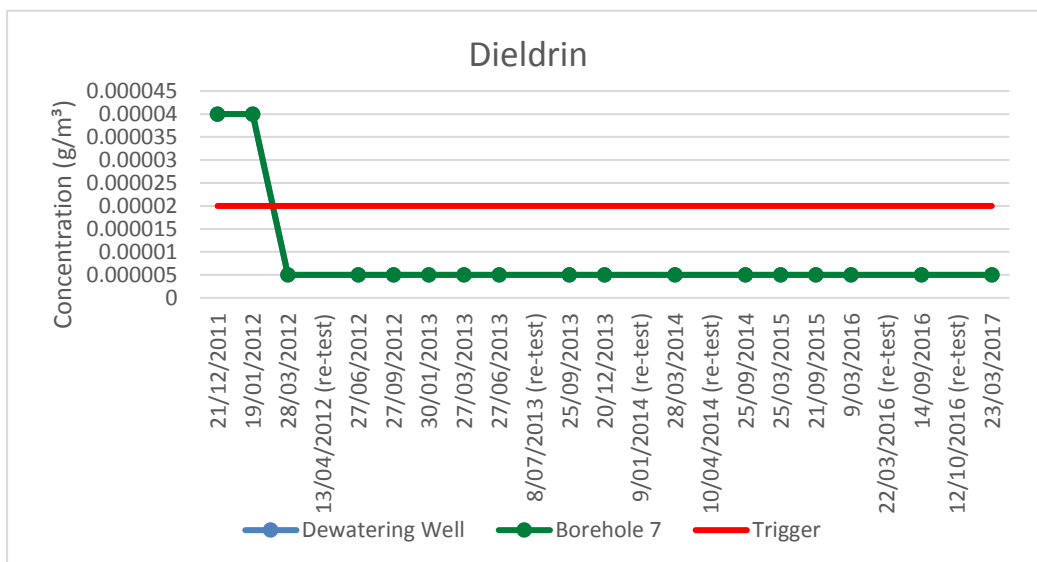
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



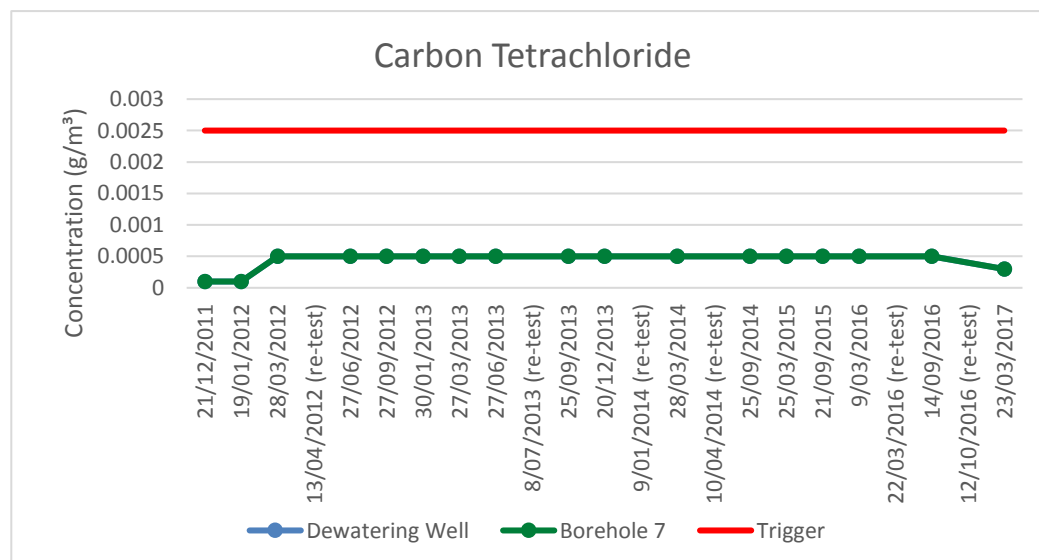
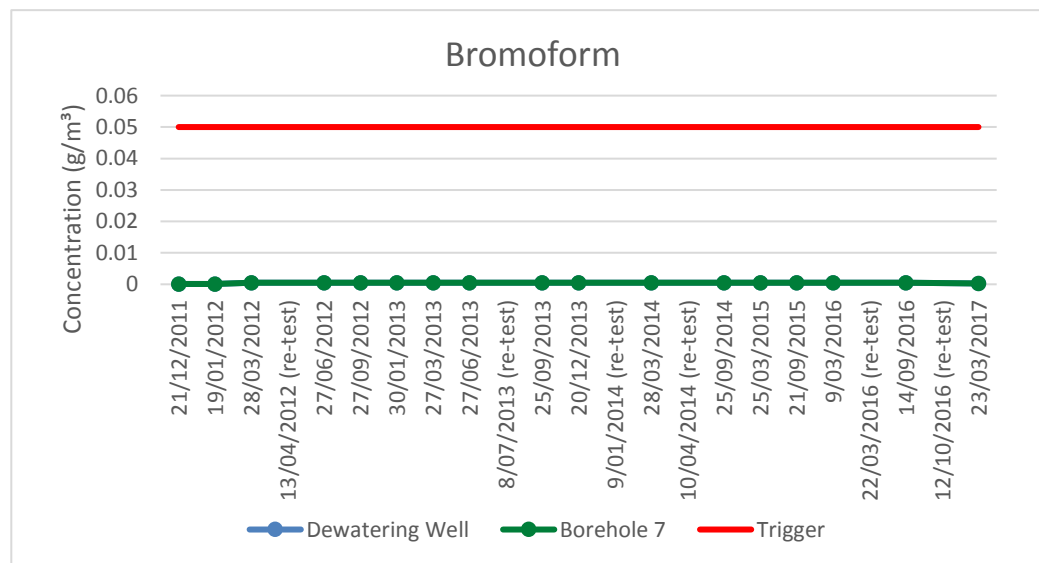
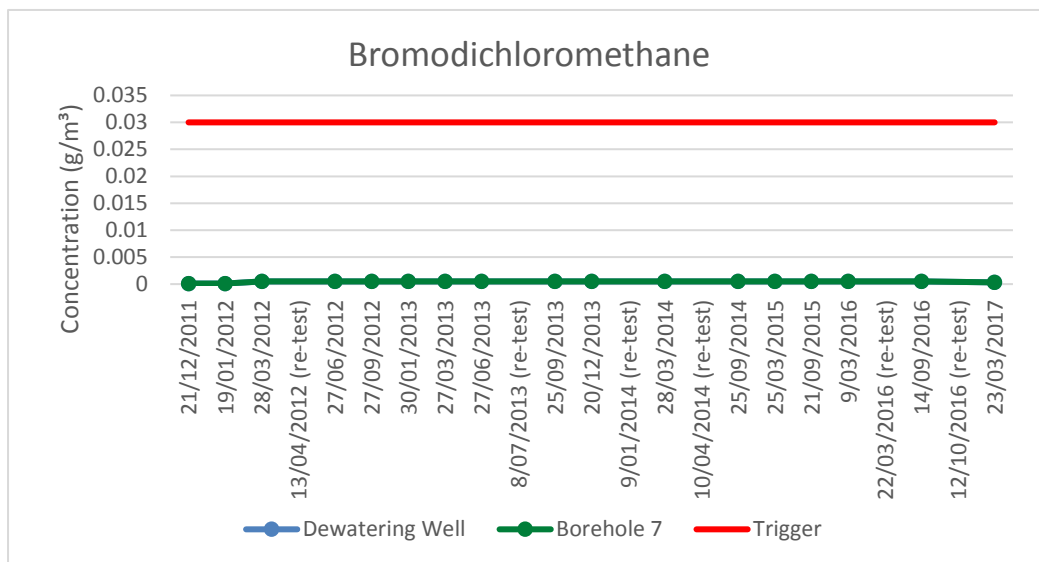
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



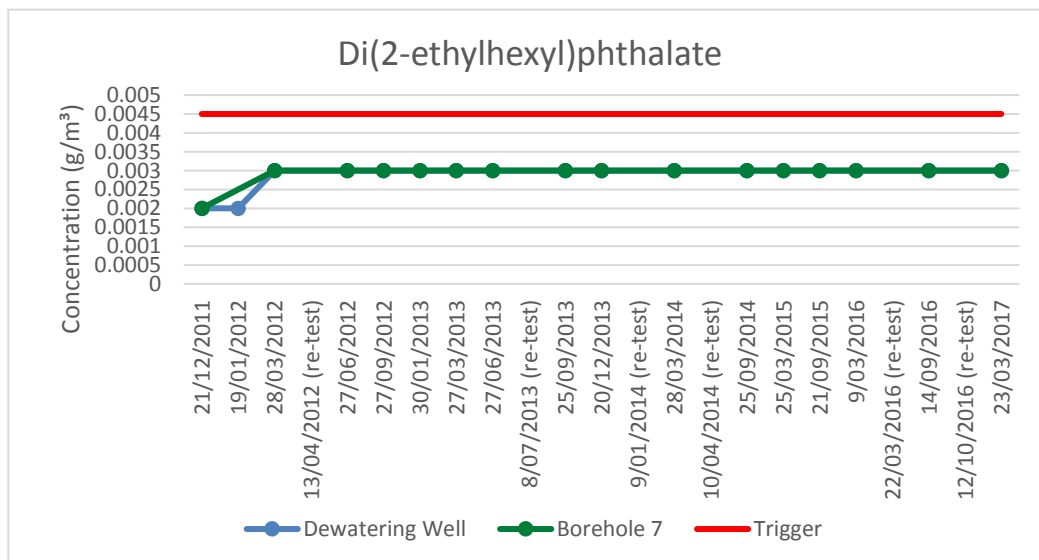
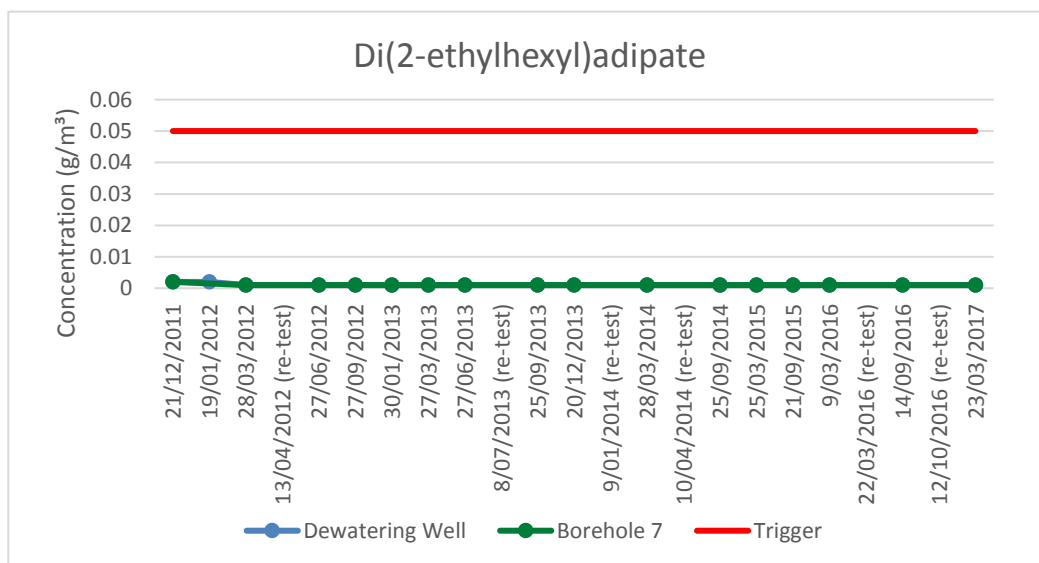
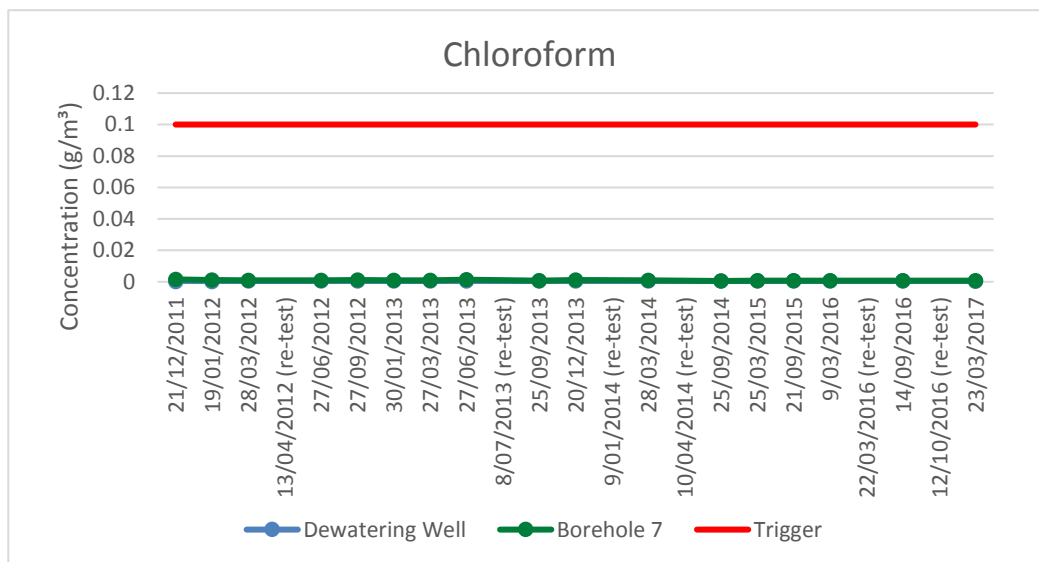
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



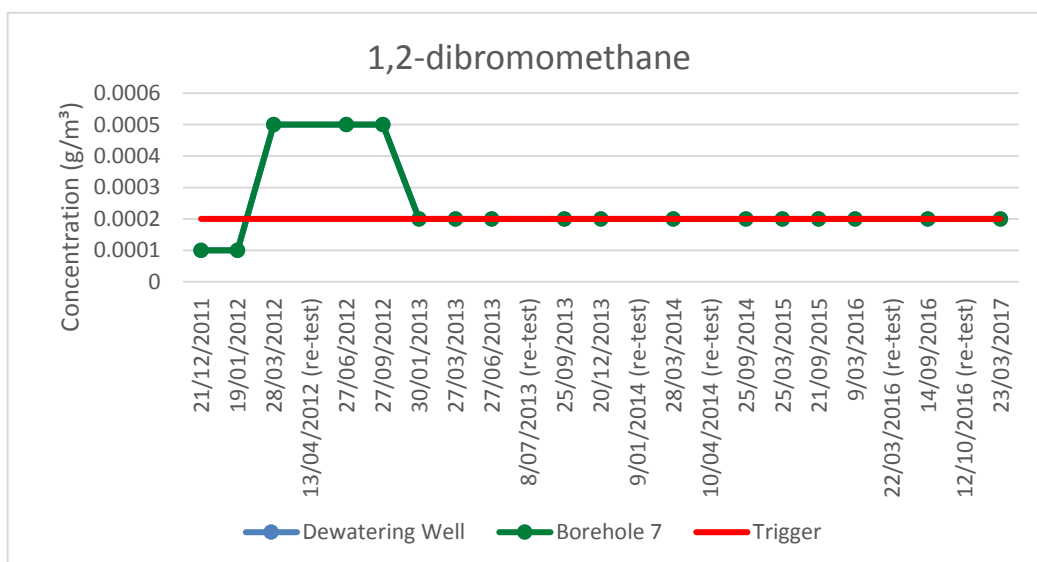
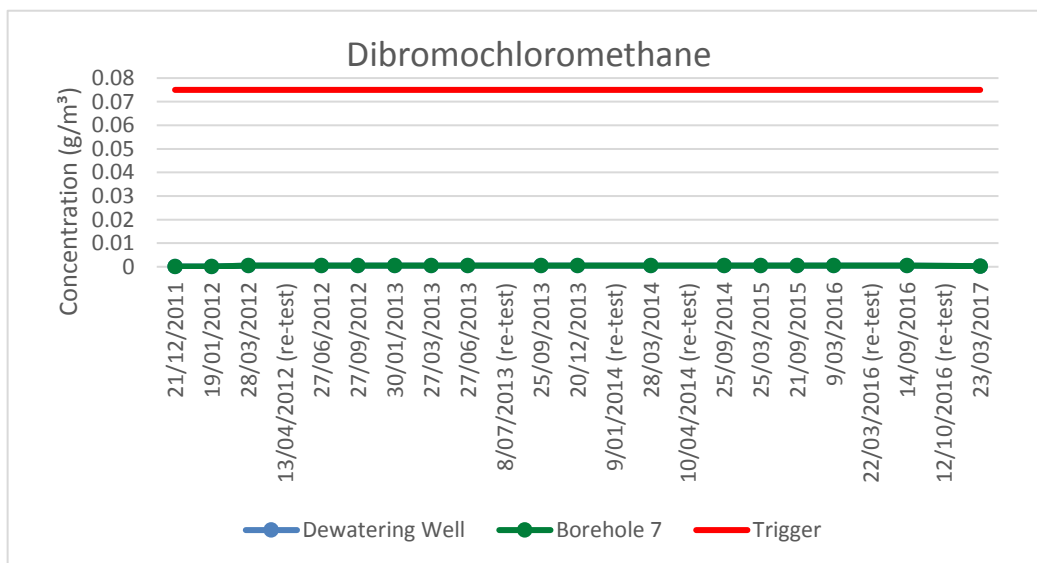
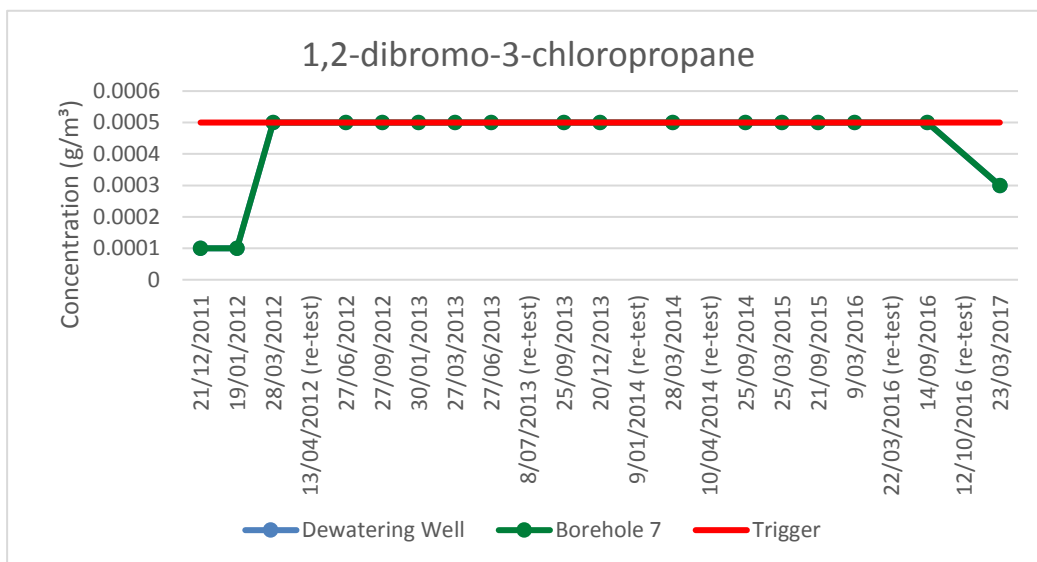
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



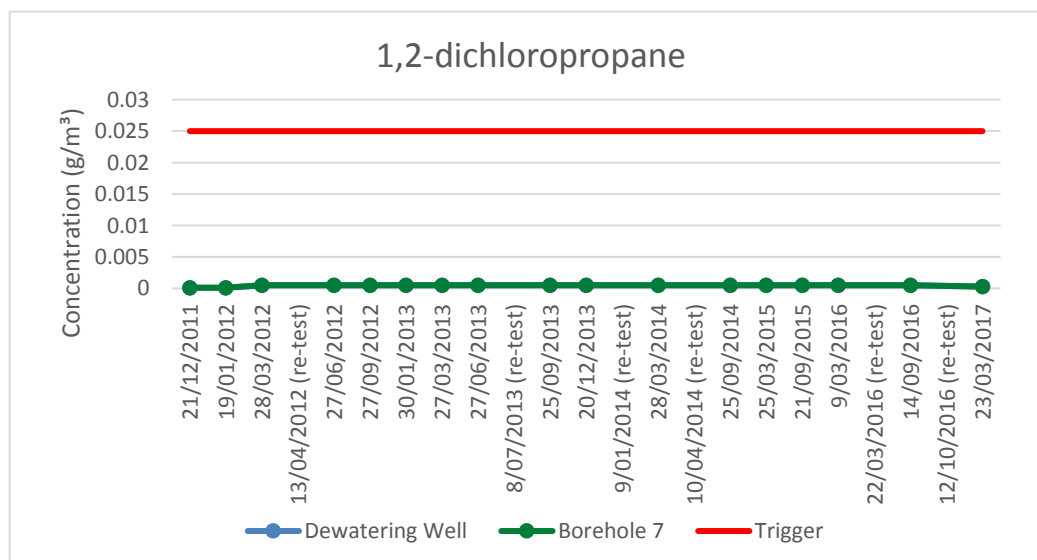
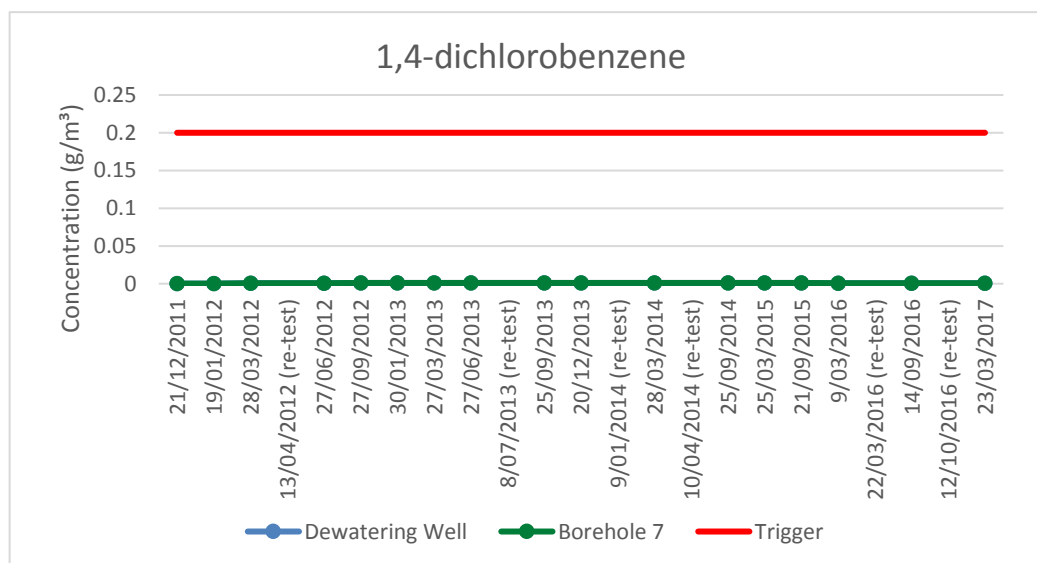
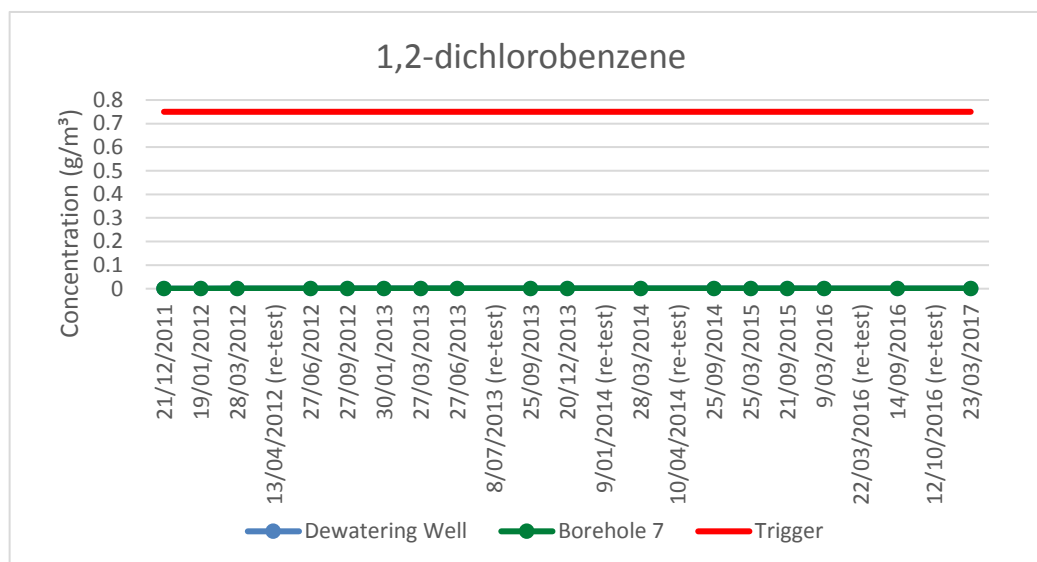
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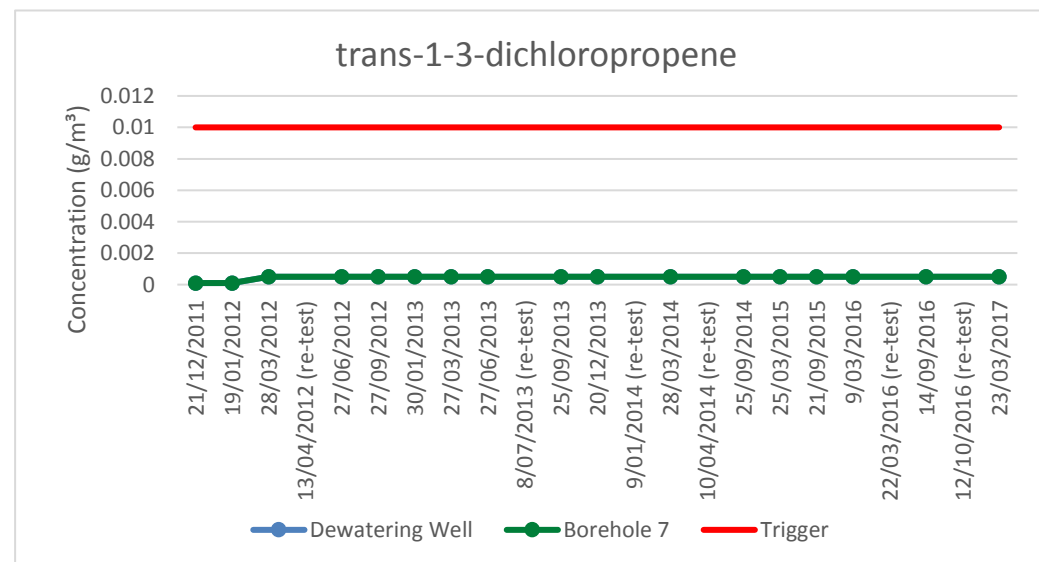
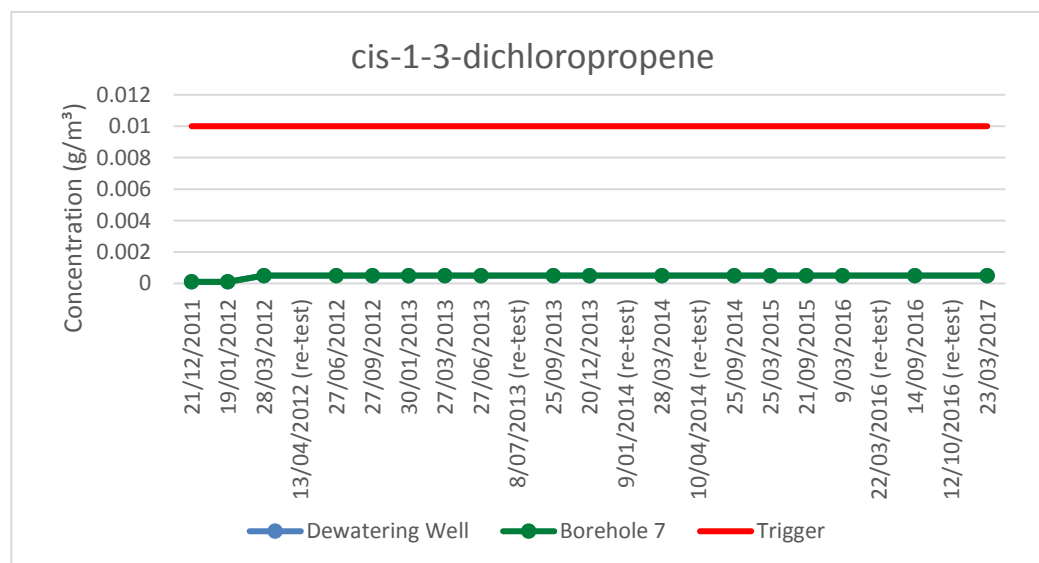
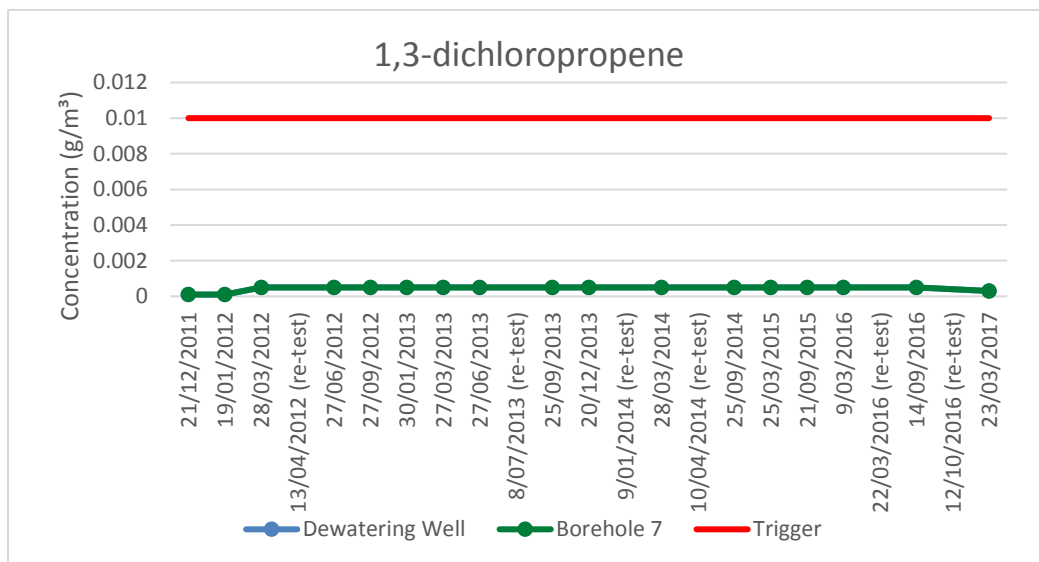
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



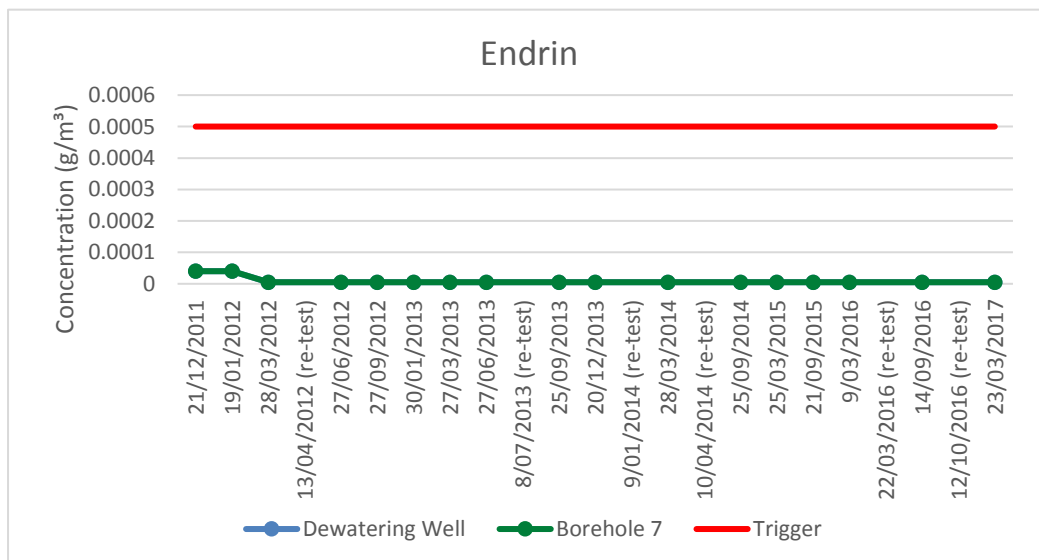
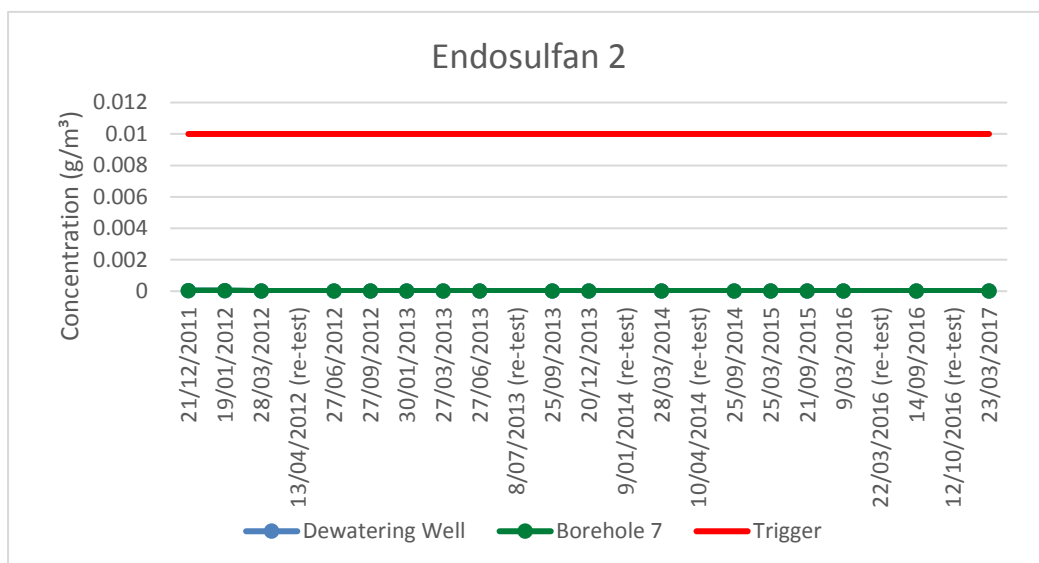
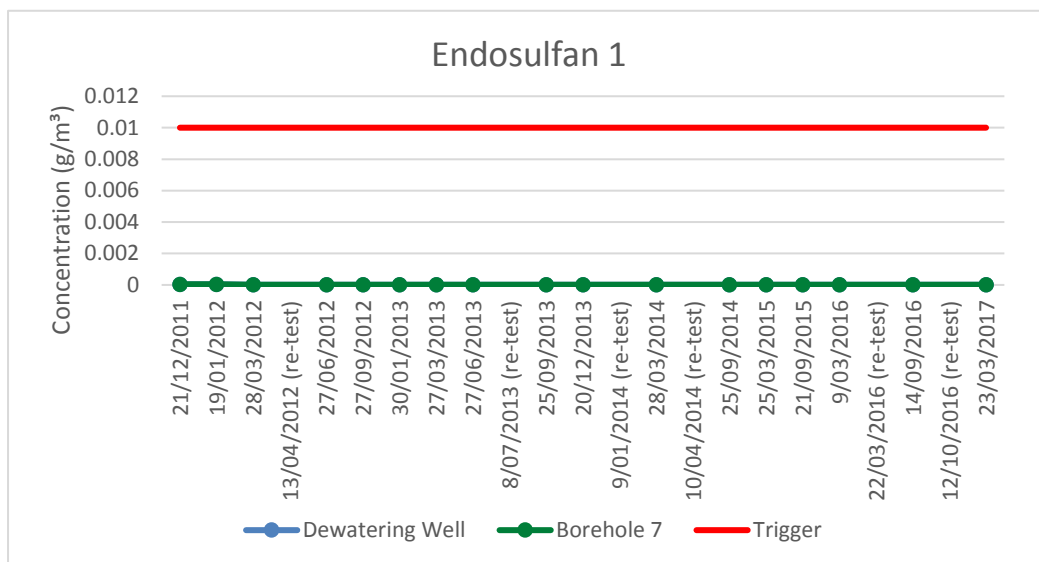
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



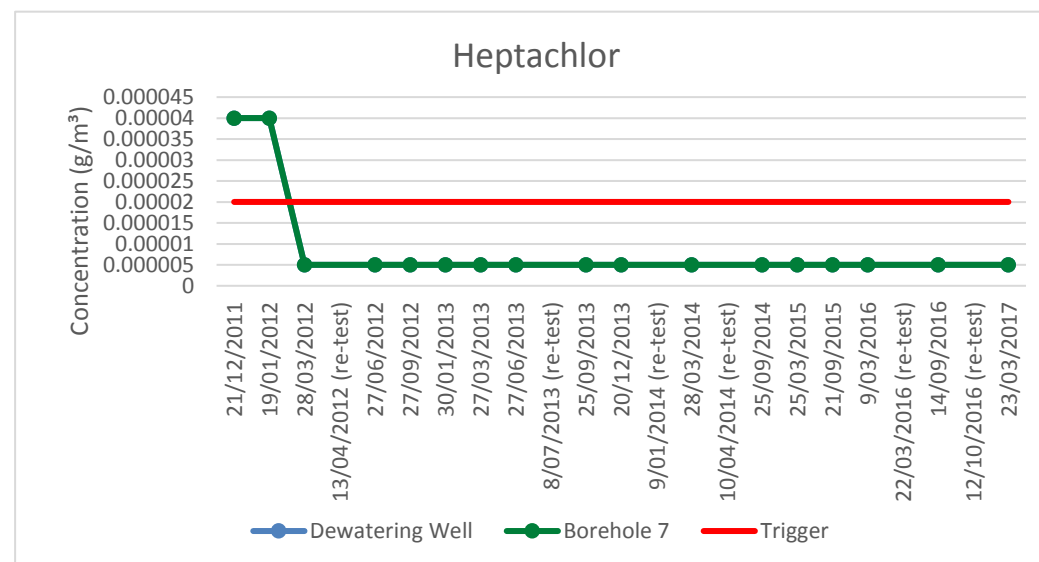
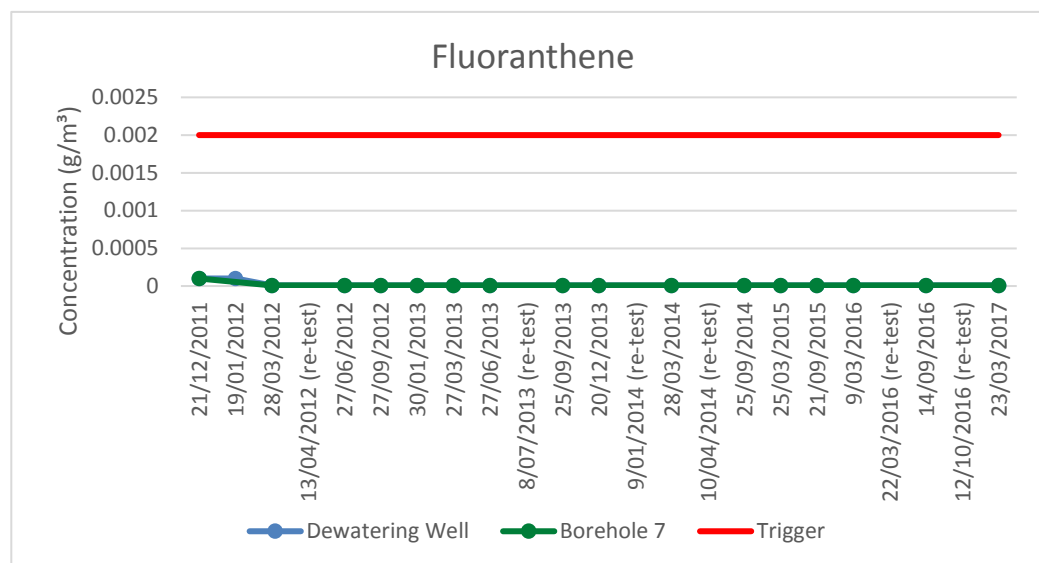
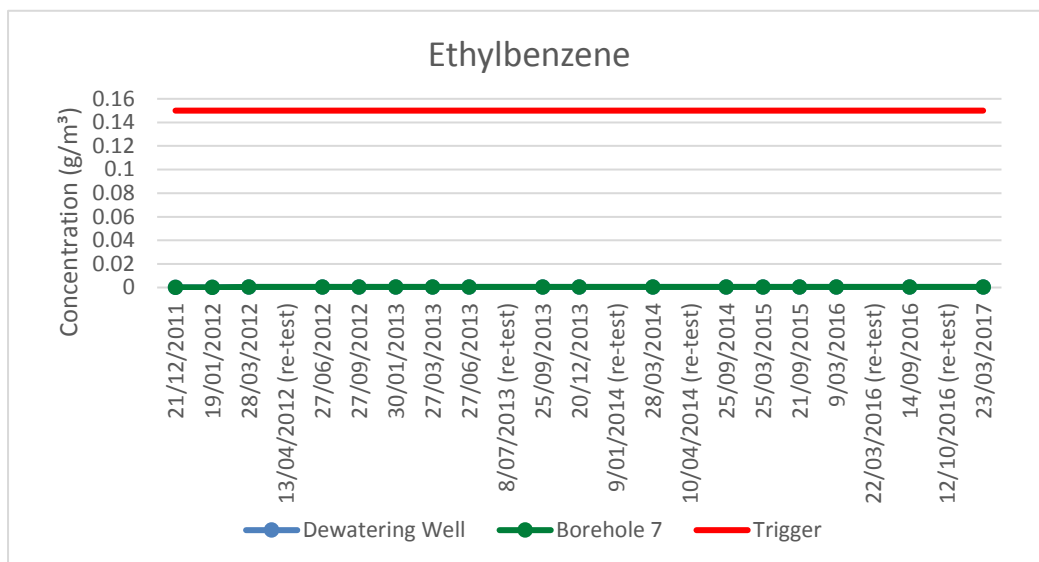
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



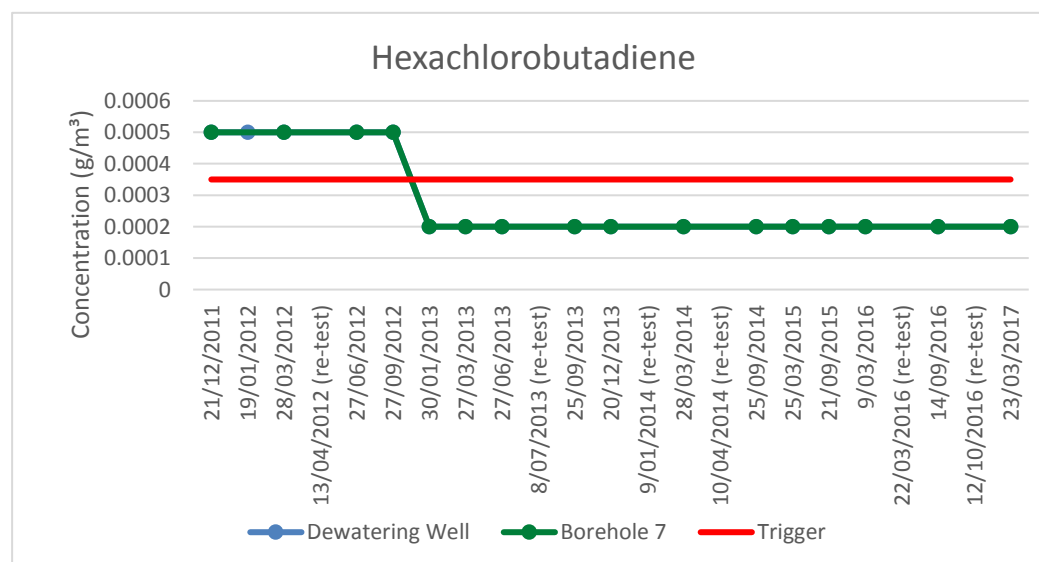
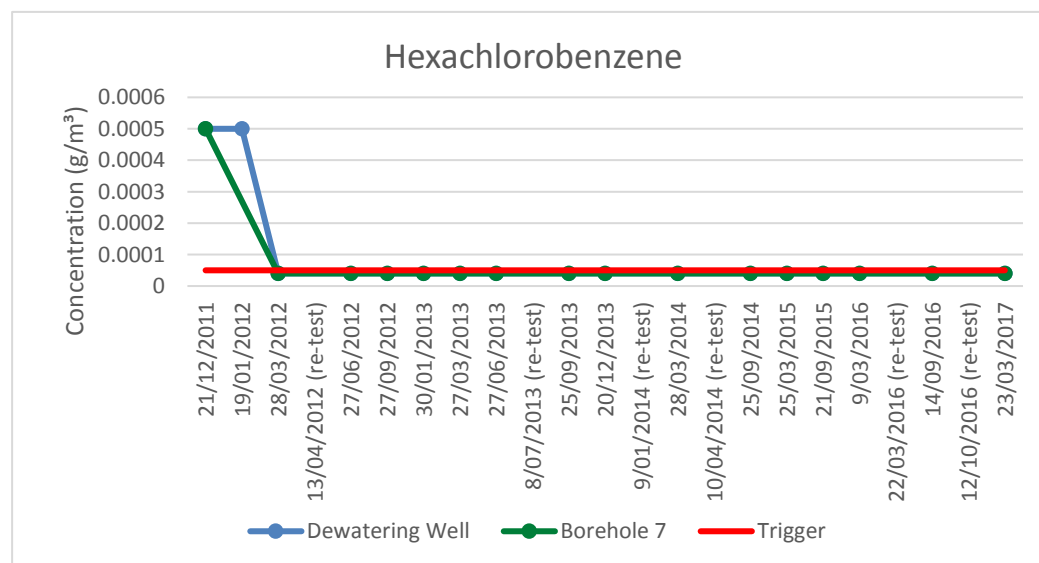
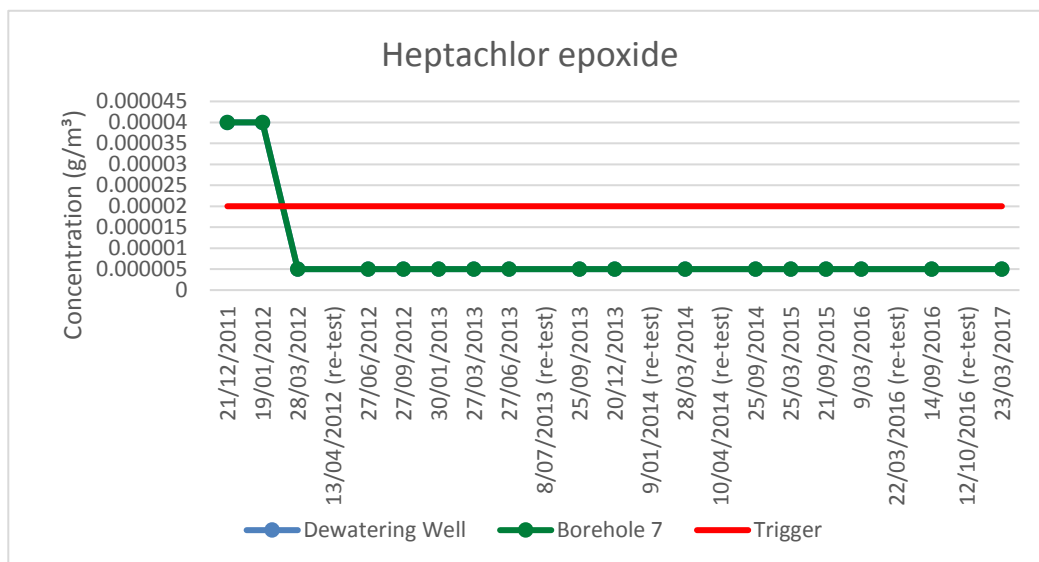
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



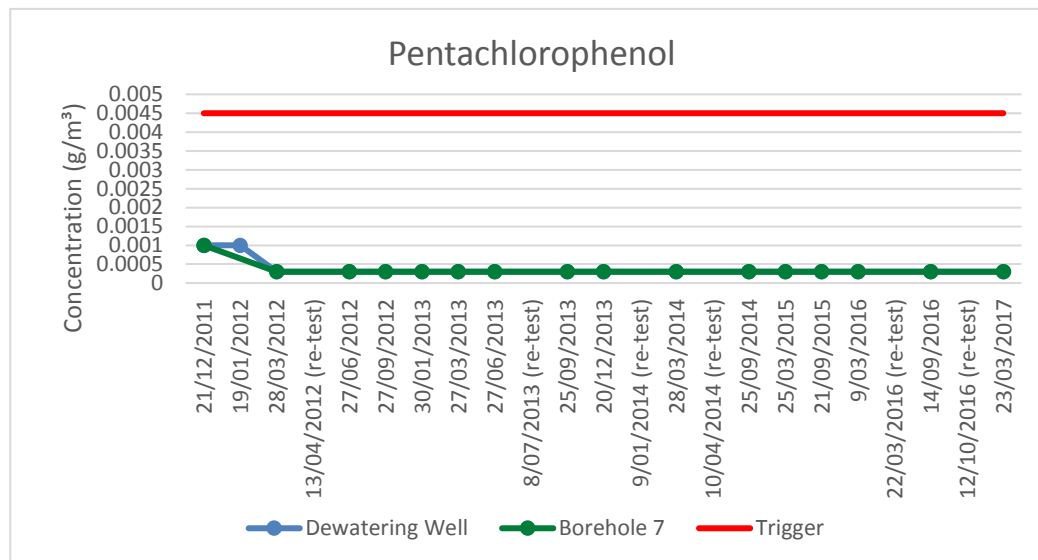
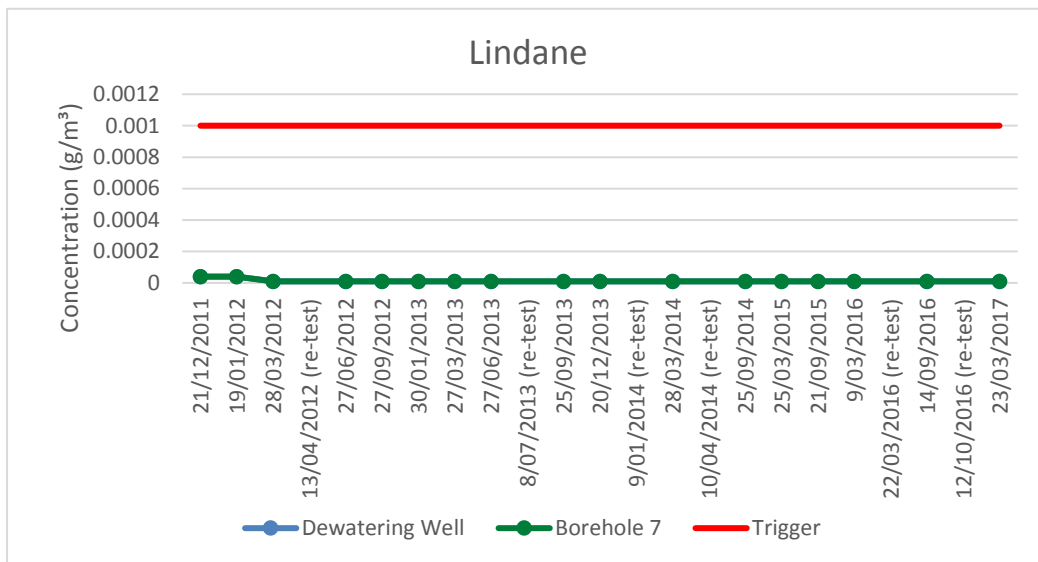
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



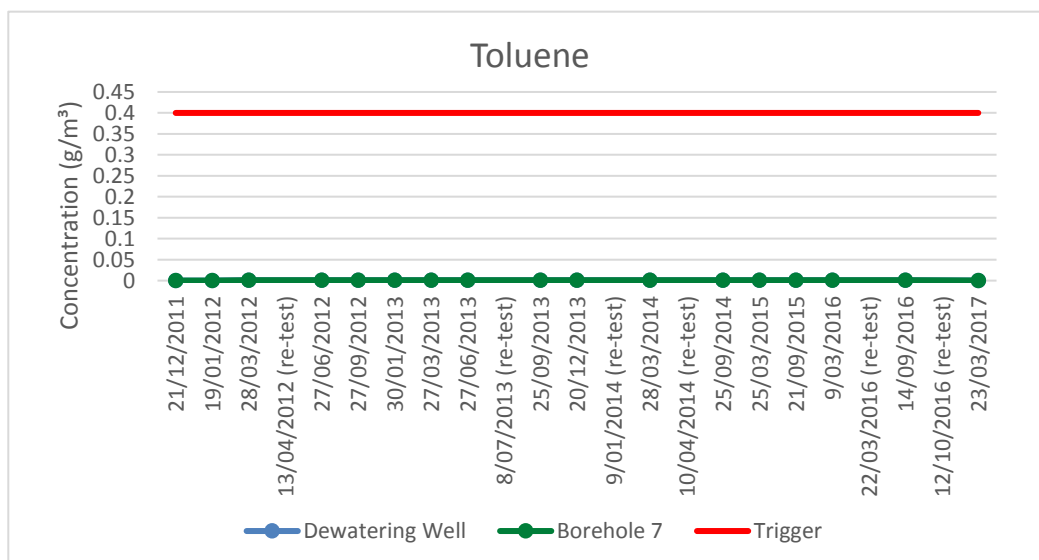
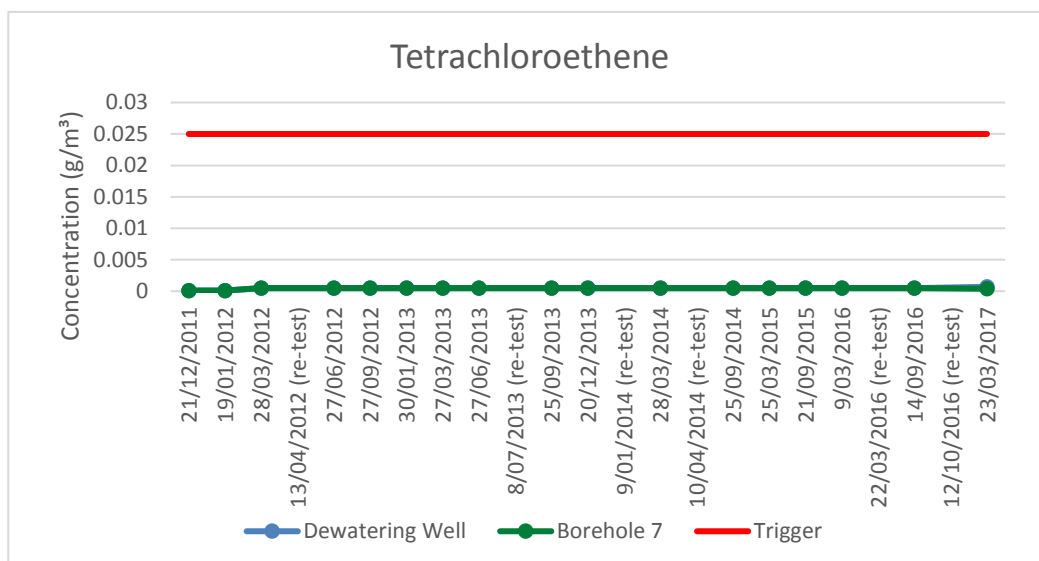
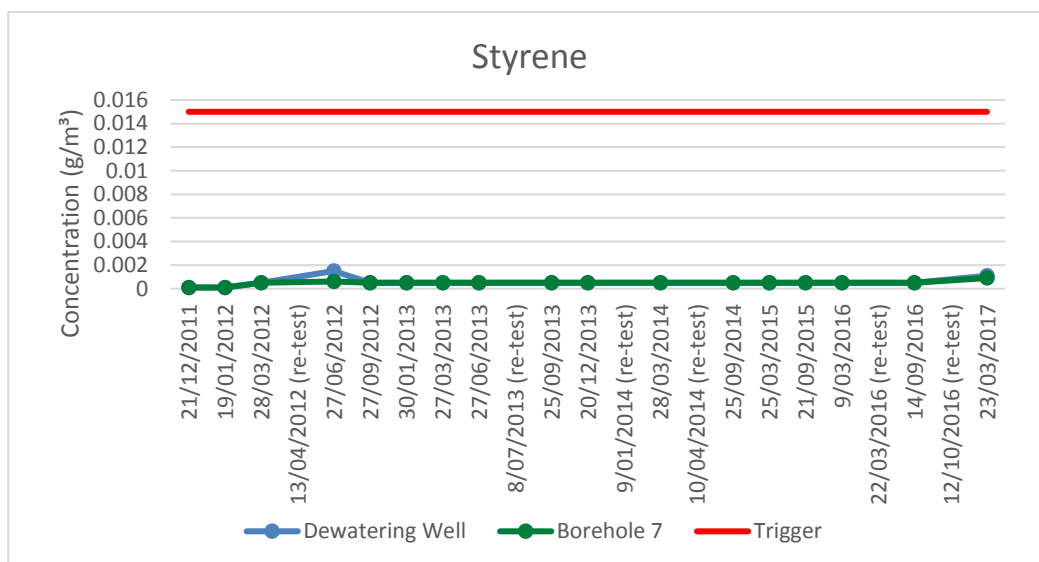
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



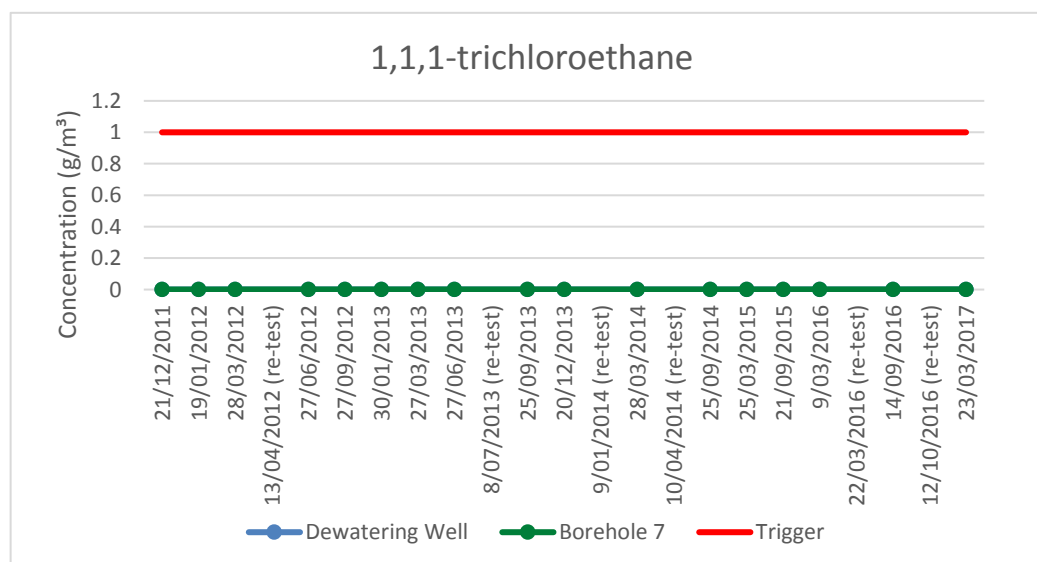
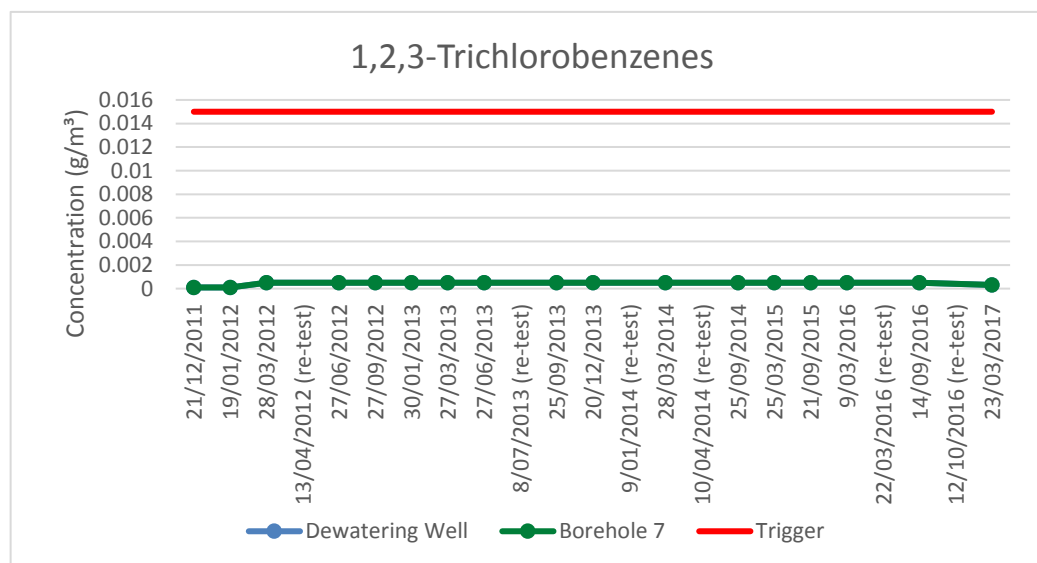
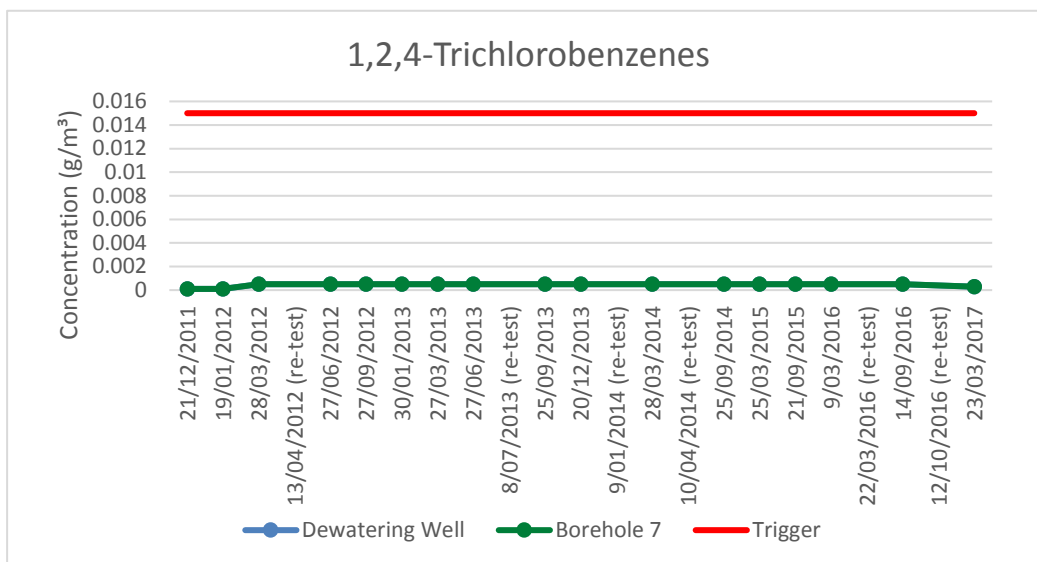
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



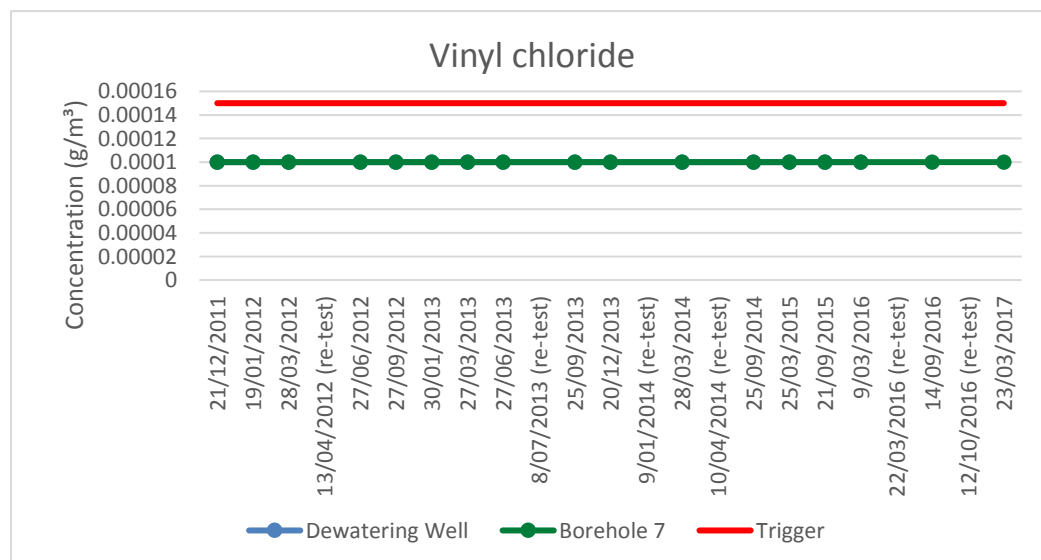
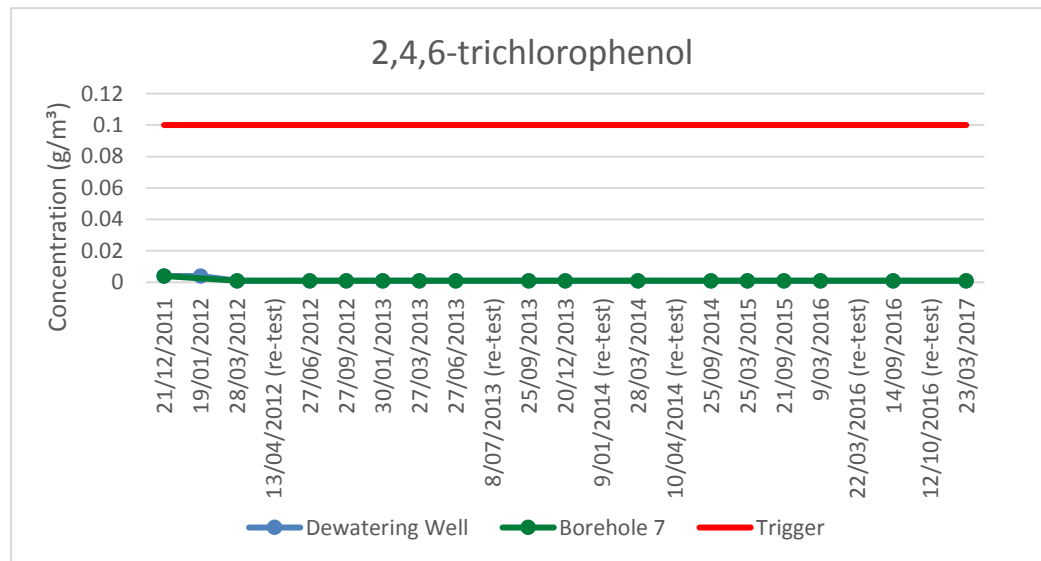
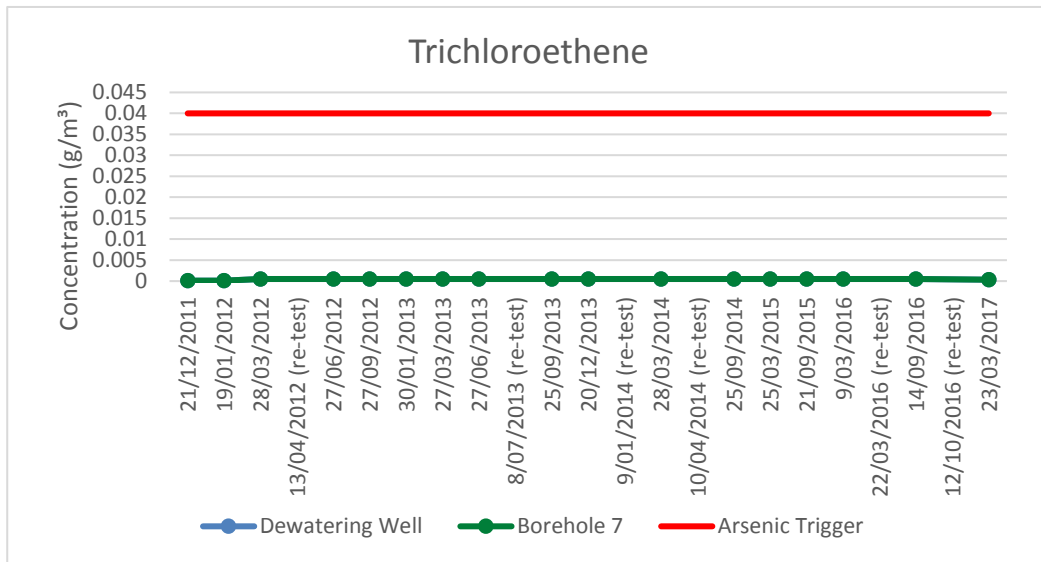
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



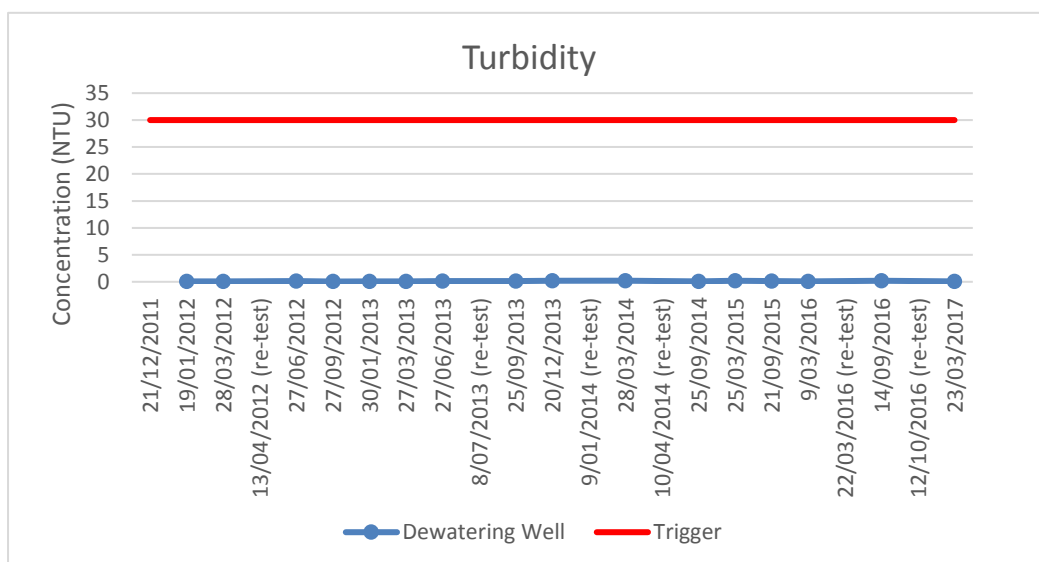
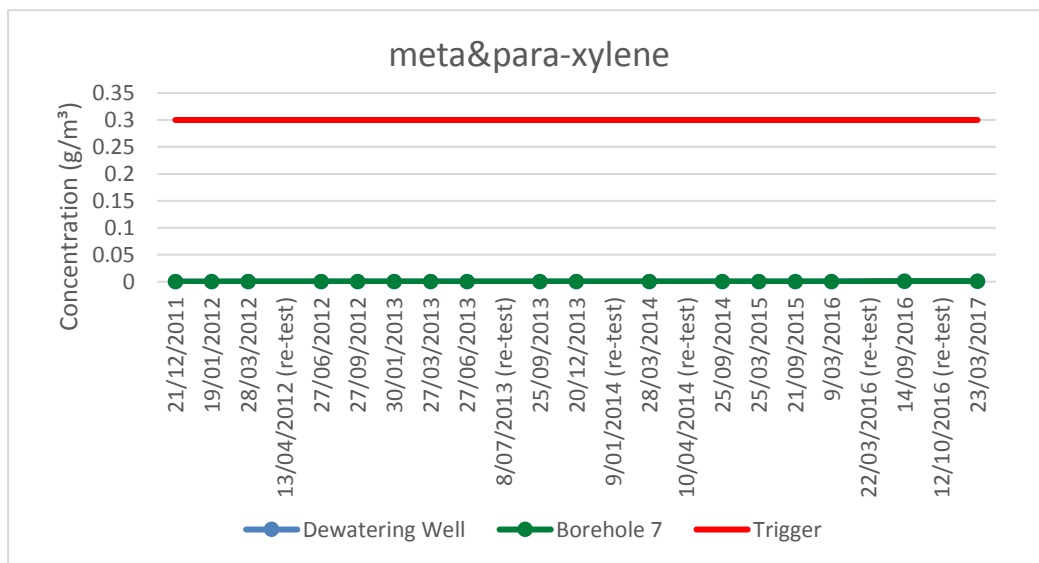
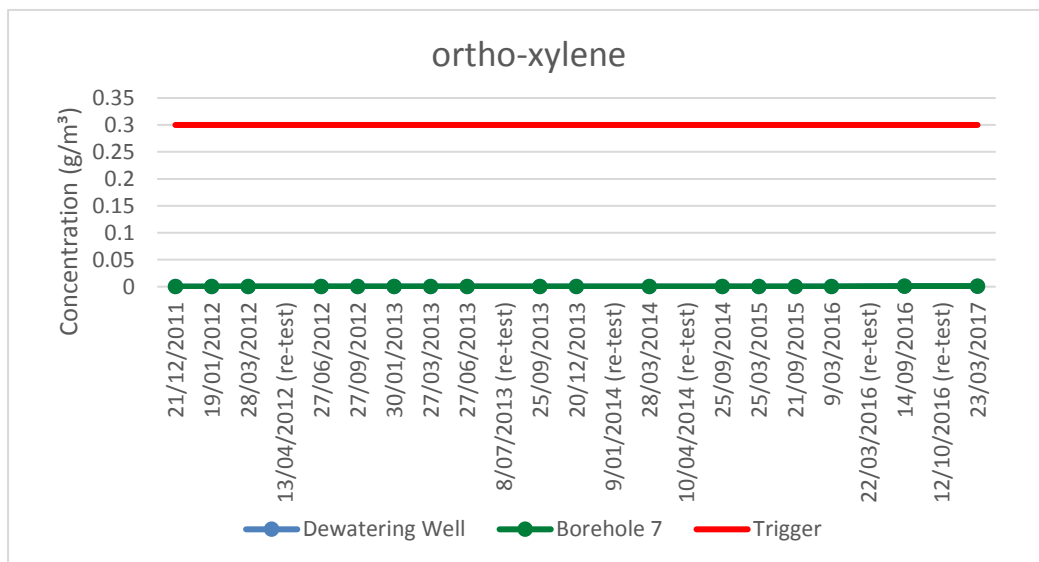
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



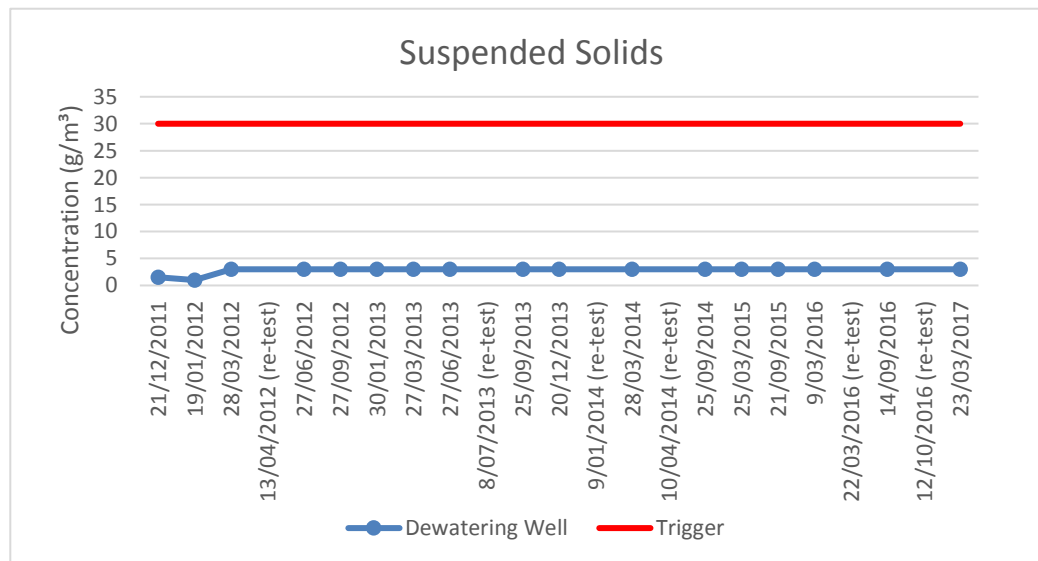
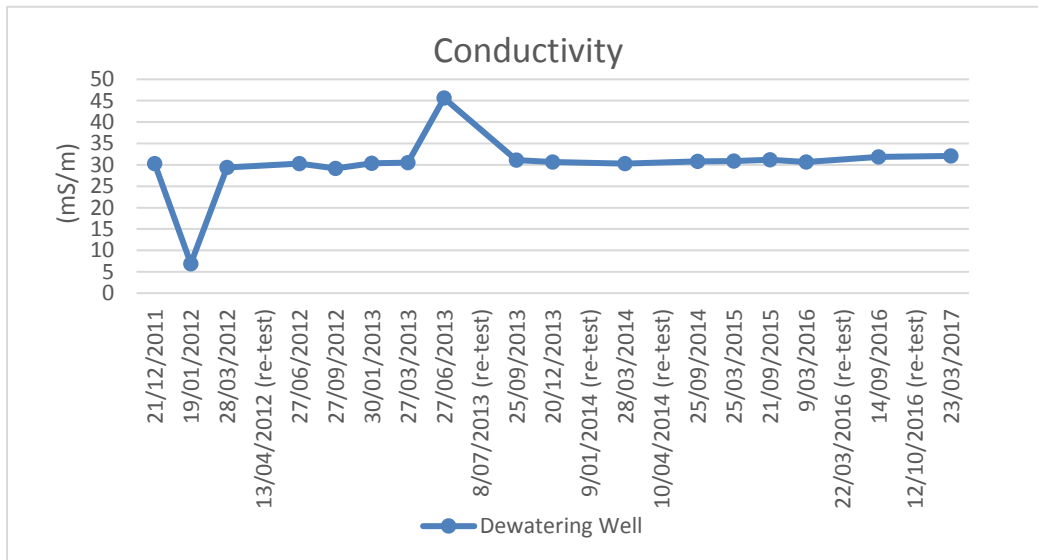
Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



Graphical representation of the results of the groundwater chemistry monitoring required by condition 31 for the period 01 April 2012 to 31 May 2017.



APPENDIX H

Air Monitoring Results

Daily Air Monitoring Results

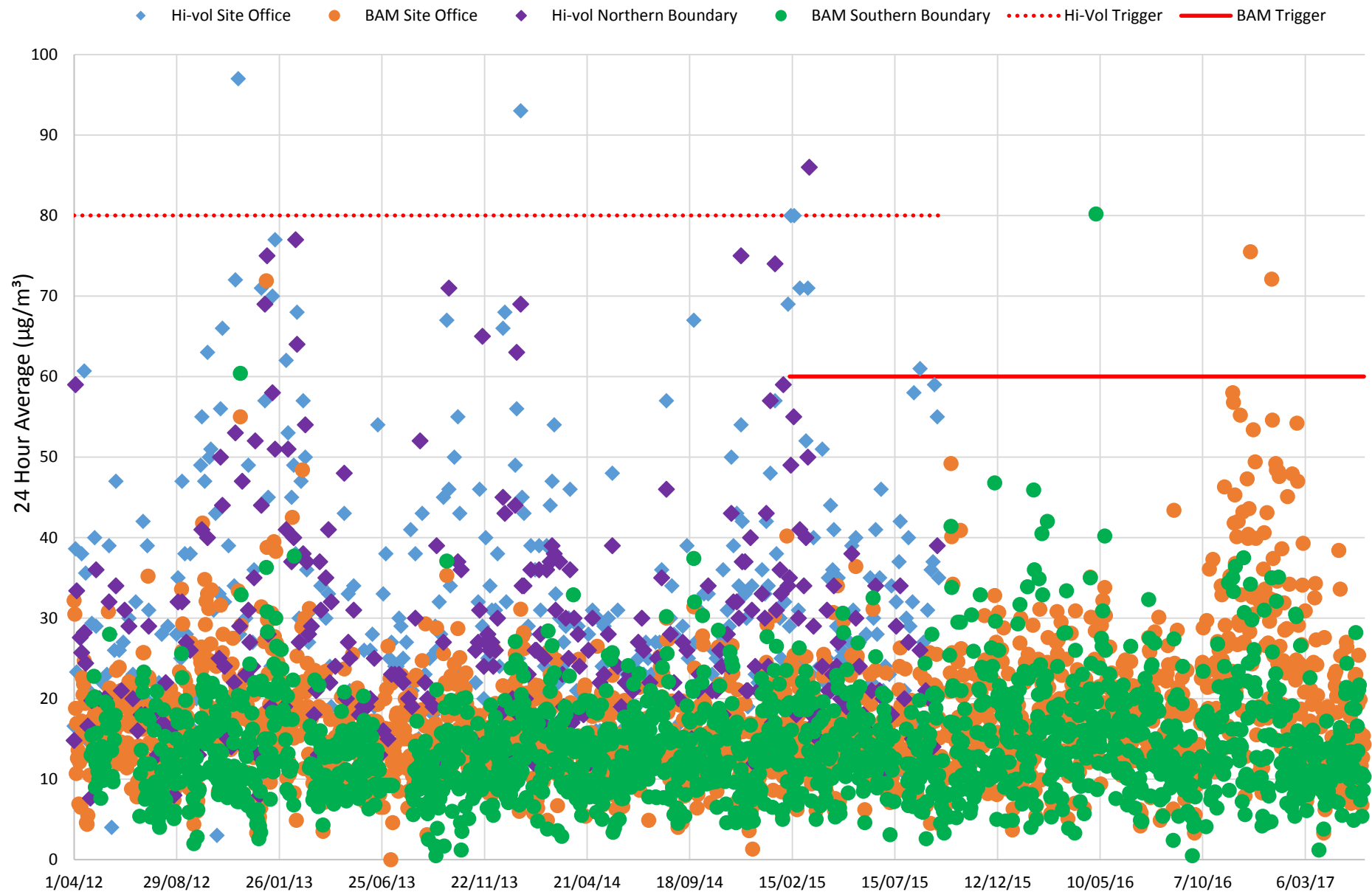


Figure 1. This figure illustrates the 24 hour average air monitoring results for each of the onsite monitoring devices for the period 01/02/2012 to 31/05/2017. On 11 February 2015 a new discharge to air consent (40041) was granted. The primary changes were the removal of HiVol monitoring and a decrease in the trigger level for the BAMs from $80\mu\text{g}/\text{m}^3$ per 24 hour average to $60\mu\text{g}/\text{m}^3$.

APPENDIX I

Confirmation of Fill Monitoring and Testing 2016/2017 Earthworks Season

Job No: 31197.5
31 May 2017

Winstone Aggregates
PO Box 17 195,
Greenlane,
Auckland

Attention: William Hay

Dear William

Confirmation of Earth Fill Monitoring and Testing within the Three Kings Quarry for the 2016/2017 Earthworks Season

This letter is to accompany Winstone Aggregates' (Winstones) annual fill management report to be submitted to Auckland Council.

Winstones have undertaken the filling works at the Three Kings quarry for the 2016/2017 earthworks season. The filling has been carried out using a range of equipment including excavators, bulldozers, diskers and heavy compaction equipment.

Testing of the earth fill has been undertaken by Winstones in accordance with an earth fill specification prepared by Tonkin & Taylor Ltd (T+T)¹. The in situ density and air void percentage of the fill was assessed using Nuclear Densometer testing and the in situ shear strength was assessed using a hand held shear vane. Testing results were forwarded to T+T for review at regular intervals.

T+T can confirm that the fill testing results supplied by Winstones meet the frequency and spatial distributions required in Section 8.4 of the Three Kings Earthworks Specification¹.

The test results are presented in Appendix A.

Yours Sincerely,



Chris Bauld
Project Director

31-May-17
p:\31197\31197.5000\workingmaterial\20170518 letter for winstones.docx

¹ Tonkin & Taylor Ltd (December 2016). *Three Kings Earthworks Specification – Version 5a*. T+T Ref: 31197.v5a.

Appendix A: Fill Test Results

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
20-Oct-16	621	797073.2	399334.2	49.0	1.907	1.903	1.530	1.526	24.5	5.61	5.81	5.71	214	Pass	
	622	797041.5	399326.4	48.5	1.948	1.947	1.538	1.537	26.5	2.02	2.07	2.05	100	Fail	622-1
	623	797036.1	399356.2	47.8	2.006	1.978	1.571	1.549	27.5	-1.70	-0.28	-0.99	67	Fail	623-1
	624	797065.1	399362.4	48.5	1.968	1.961	1.546	1.540	27.5	0.53	0.89	0.71	94	Fail	624-1
	625	797096.8	399355.5	50.0	1.896	1.886	1.511	1.503	25.5	5.53	6.03	5.78	146	Pass	
26-Oct-16	622-1	797041.5	399326.4	48.5	1.952	1.948	1.499	1.496	30.0	-0.83	-0.62	-0.73	140	Pass	
	623-1	797036.1	399356.2	47.8	1.829	1.856	1.400	1.421	30.5	5.27	3.87	4.57	180	Pass	
	624-1	797065.1	399362.4	48.5	1.893	1.901	1.451	1.457	30.5	2.06	1.65	1.86	129	Fail	Accepted as meeting bulk fill spec
	626	797078.2	399339.5	49.1	1.929	1.927	1.545	1.543	25.0	4.38	4.48	4.43	225	Pass	
	627	797046.5	399329.3	48.5	2.021	2.030	1.632	1.639	24.0	0.66	0.22	0.44	225	Pass	
31-Oct-16	628	797040.8	399364.8	48.2	2.097	2.111	1.816	1.828	15.5	4.62	3.99	4.31	225	Pass	
	629	797071.5	399369.9	48.7	1.902	1.907	1.494	1.498	27.5	3.87	3.62	3.75	191	Pass	
	630	797179.3	399292.7	50.9	1.982	1.988	1.579	1.584	25.5	1.24	0.94	1.09	203	Pass	
	631	797198.5	399280.9	51.4	2.002	2.003	1.634	1.635	22.5	2.69	2.64	2.67	210	Pass	
	632	797073.1	399341	49.3	1.980	1.976	1.620	1.616	22.5	3.98	4.17	4.08	225	Pass	
1-Nov-16	633	797018	399328.1	48.9	1.997	2.001	1.581	1.584	26.5	-0.18	-0.38	-0.28	225	Pass	
	634	797020.6	399355.3	48.6	1.978	1.978	1.589	1.589	24.5	2.22	2.22	2.22	225	Pass	
	635	797080.4	399380.5	48.7	1.986	1.986	1.602	1.602	24.0	2.25	2.25	2.25	225	Pass	
	636	797192.5	399282.6	51.4	1.940	1.944	1.559	1.562	24.5	4.17	3.98	4.08	UTP	Pass	
	637	797186.7	399293.2	51.0	1.984	1.972	1.635	1.625	21.5	4.56	5.14	4.85	UTP	Pass	
2-Nov-16	638	797067.4	399359.4	49.3	1.946	1.945	1.559	1.558	25.0	3.53	3.58	3.56	225	Pass	
	639	797027.5	399352.6	48.8	2.045	2.040	1.697	1.692	20.5	2.33	2.56	2.45	225	Pass	
	640	797058	399396.6	47.8	2.053	2.047	1.742	1.737	18.0	4.36	4.64	4.50	225	Pass	
	641	797054.7	399431.9	46.6	2.000	1.990	1.621	1.613	23.5	2.08	2.57	2.33	225	Pass	
	642	797206.2	399301.1	51.4	1.998	2.002	1.693	1.697	18.0	6.81	6.62	6.72	UTP	Pass	
3-Nov-16	643	797185.1	399284.7	51.4	1.982	1.968	1.639	1.627	21.0	4.97	5.65	5.31	UTP	Pass	
	644	797066.2	399327.7	49.8	2.000	1.994	1.679	1.674	19.0	5.69	5.97	5.83	215	Pass	
	645	797027.9	399374	48.3	2.041	2.038	1.702	1.700	20.0	3.08	3.23	3.16	UTP	Pass	
	646	797063.1	399420.2	47.1	2.035	2.032	1.707	1.704	19.0	3.96	4.10	4.03	UTP	Pass	
	647	797041.4	399448.4	45.8	2.009	2.009	1.654	1.654	21.5	3.24	3.24	3.24	225	Pass	
4-Nov-16	648	797181	399306.8	50.8	2.017	2.020	1.699	1.702	18.5	5.28	5.14	5.21	217	Pass	
	649	797211	399288.4	51.7	1.983	1.975	1.626	1.619	22.0	4.05	4.44	4.25	225	Pass	
	650	797029.7	399332.9	49.3	1.993	1.997	1.665	1.669	19.5	5.56	5.37	5.47	UTP	Pass	
	651	797067	399380.4	48.9	2.003	2.003	1.653	1.653	21.0	3.80	3.80	3.80	UTP	Pass	
	652	797033.5	399419.2	46.8	2.008	2.003	1.697	1.693	18.5	6.04	6.27	6.16	225	Pass	
	653	797064.1	399454.1	45.9	1.919	1.928	1.581	1.589	21.5	7.67	7.23	7.45	UTP	Pass	
	654	797123.3	399358.8	48.9	1.970	1.971	1.655	1.656	19.0	7.21	7.16	7.19	225	Pass	
	655	797178.3	399300.6	50.9	2.045	2.043	1.674	1.672	22.0	0.90	1.00	0.95	UTP	Pass	
	656	797203.4	399281	51.8	1.970	1.961	1.632	1.625	20.5	5.76	6.20	5.98	UTP	Pass	
	657	797171.9	399276.6	51.7	1.961	1.967	1.619	1.624	21.0	5.83	5.54	5.69	UTP	Pass	
	658	797192.6	399324.2	50.9	1.974	1.962	1.616	1.606	22.0	4.34	4.92	4.63	UTP	Pass	
	659	797171.7	399386.5	49.3	1.874	1.871	1.427	1.424	31.5	2.42	2.58	2.50	202	Pass	
	660	797063.0	399353.0	49.7	2.002	1.996	1.650	1.645	21.5	3.69	3.97	3.83	220	Pass	
	661	797054.3	399386.3	48.7	1.961	1.956	1.601	1.597	22.5	4.68	4.92	4.80	202	Pass	
	662	797051.8	399415.1	47.4	1.947	1.947	1.594	1.594	22.0	5.65	5.65	5.65	207	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
9-Nov-16	663	797073.5	399334.2	50.3	2.027	2.039	1.662	1.671	22.0	1.92	1.34	1.63	193	Pass	
	664	797029.6	399323.7	49.6	2.047	2.005	1.687	1.653	21.5	1.53	3.55	2.54	UTP	Pass	
	665	797049.2	399368.0	49.3	2.028	2.034	1.657	1.662	22.5	1.53	1.24	1.39	UTP	Pass	
	666	797065.4	399411.8	47.8	1.983	1.940	1.618	1.582	22.5	3.55	5.64	4.60	UTP	Pass	
	667	797035.1	399447.6	46.0	2.004	1.991	1.666	1.655	20.5	4.52	5.14	4.83	UTP	Pass	
	668	797077.7	399444.8	46.8	1.990	1.990	1.656	1.656	20.0	5.24	5.24	5.24	225	Pass	
	669	797106.6	399445.3	46.7	1.995	1.955	1.600	1.568	24.5	1.23	3.22	2.23	225	Pass	
	670	797105.0	399396.2	48.2	1.943	1.941	1.543	1.542	26.0	2.87	2.97	2.92	225	Pass	
	671	797118.8	399357.8	49.4	1.908	1.918	1.546	1.554	23.5	6.56	6.07	6.32	225	Pass	
	672	797177.7	399278.8	52.0	1.979	1.959	1.616	1.600	22.5	3.85	4.82	4.34	222	Pass	
10-Nov-16	673	797192.9	399323.2	50.9	1.971	1.969	1.636	1.634	20.5	5.89	5.99	5.94	225	Pass	
	674	797159.9	399355.6	50.4	1.938	1.935	1.572	1.570	23.5	5.20	5.34	5.27	187	Pass	
	675	797173.8	399399.9	48.8	1.892	1.905	1.501	1.511	26.0	5.31	4.66	4.99	200	Pass	
	676	797148.5	399439.4	47.0	1.986	1.996	1.631	1.639	22.0	4.10	3.62	3.86	169	Pass	
11-Nov-16	677	797057	399337	50.4	2.057	2.067	1.714	1.723	20	2.24	1.77	2.01	UTP	Pass	
	678	797017	399335	49.5	1.975	1.975	1.639	1.639	20.5	5.7	5.7	5.70	UTP	Pass	
	679	797028	399371	49.1	2.037	2.056	1.699	1.714	20	3.25	2.35	2.80	UTP	Pass	
	680	797029	399403	47.8	2.066	2.085	1.731	1.746	19.5	2.36	1.46	1.91	225	Pass	
	681	797025	399445	46.2	1.991	2.002	1.635	1.644	22	3.86	3.33	3.60	UTP	Pass	
	682	797057	399473	44.8	2	2.006	1.651	1.655	21	3.92	3.63	3.78	225	Pass	
	683	797082	399442	47	2.005	2.013	1.635	1.641	22.5	2.41	2.02	2.22	225	Pass	
	684	797072	399405	48.3	1.946	1.949	1.611	1.613	21	6.83	6.69	6.76	UTP	Pass	
	685	797067	399387	49.4	1.989	1.989	1.661	1.661	19.5	5.71	5.71	5.71	UTP	Pass	
	686	797099	399357	50.4	2.042	2.044	1.68	1.682	21.5	1.58	1.48	1.53	UTP	Pass	
14-Nov-16	687	797198	399273	52.6	1.943	1.951	1.592	1.598	22	5.91	5.52	5.72	180	Pass	
	688	797168	399308	51.5	1.967	1.965	1.61	1.608	22	4.64	4.74	4.69	203	Pass	
	689	797180	399356	50.5	1.971	1.966	1.623	1.619	21.5	5.08	5.32	5.20	225	Pass	
	690	797180	399390	49	1.985	1.99	1.634	1.638	21.5	4.39	4.15	4.27	225	Pass	
	691	797167	399441	46.7	1.956	1.955	1.594	1.593	22.5	4.74	4.79	4.77	206	Pass	
	692	797134	399447	47.2	1.97	1.989	1.611	1.627	22.5	4.44	3.52	3.98	196	Pass	
	693	797111	399438	47.3	2.021	2.041	1.692	1.709	19.5	4.44	3.49	3.97	225	Pass	
	694	797123	399405	48.7	2.008	2.021	1.698	1.709	18.5	6.09	5.48	5.79	220	Pass	
	695	797143	399378	49.7	2.022	2.015	1.729	1.723	17	6.65	6.97	6.81	225	Pass	
	696	797112	399358	50.3	2.065	2.007	1.699	1.651	21.5	0.47	3.27	1.87	UTP	Pass	
15-Nov-16	697	797077	399366	50.3	2.015	2.041	1.668	1.69	21	3.53	2.28	2.91	UTP	Pass	
	698	797062	399333	50.5	2.026	2.023	1.716	1.713	18	5.43	5.57	5.50	UTP	Pass	
	699	797030	399338	50.4	2.062	2.071	1.794	1.801	15	6.73	6.32	6.53	UTP	Pass	
	700	797047	399372	49.8	2.039	2.042	1.701	1.704	20	3.21	3.07	3.14	UTP	Pass	
	701	797038	399405	47.9	1.987	1.991	1.674	1.678	18.5	6.73	6.54	6.64	UTP	Pass	
	702	797036	399448	46.4	1.903	1.899	1.549	1.546	23	7.23	7.42	7.33	UTP	Pass	
	703	797059	399462	45.8	2.02	2.024	1.72	1.723	17.5	6.29	6.11	6.20	UTP	Pass	
	704	797063	399432	47.2	1.981	1.976	1.617	1.613	22.5	3.72	3.96	3.84	UTP	Pass	
	705	797072	399398	48.7	1.977	1.996	1.617	1.633	22.5	4.11	3.19	3.65	UTP	Pass	
	706	797100	399405	48.6	1.996	1.99	1.678	1.673	19	6.04	6.32	6.18	210	Pass	
21-Nov-16	707	797093	399443	47.2	2.046	2.038	1.738	1.732	17.5	4.86	5.23	5.05	204	Pass	
	709	797092	399353	51.1	2.045	2.058	1.672	1.682	22.5	0.77	0.13	0.45	225	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
22-Nov-16	710	797147	399368	50.5	2.041	2.05	1.704	1.712	20	3.2	2.77	2.99	225	Pass	728-1
	711	797133	399423	48.6	1.913	1.924	1.539	1.548	24.5	5.61	5.07	5.34	209	Pass	
	712	797117	399452	47.2	1.923	1.926	1.54	1.542	25	4.67	4.52	4.60	188	Pass	
	713	797102	399429	47.8	1.98	1.985	1.636	1.64	21	4.99	4.75	4.87	225	Pass	
	714	797100	399398	49.4	1.998	1.992	1.617	1.612	23.5	2.03	2.32	2.18	UTP	Pass	
	715	797084	399411	48.4	2.03	2.035	1.712	1.716	18.5	4.79	4.56	4.68	225	Pass	
	716	797056	399329	50.7	2.04	2.035	1.672	1.668	22	1.27	1.51	1.39	225	Pass	
	717	797023	399351	50	1.988	1.982	1.621	1.616	22.5	3.25	3.54	3.40	UTP	Pass	
	718	797066	399385	49.6	1.952	1.942	1.566	1.558	24.5	3.41	3.9	3.66	225	Pass	
	719	797035	399400	48.3	1.994	1.996	1.642	1.644	21.5	4.01	3.91	3.96	225	Pass	
	720	797043	399432	47.1	2.015	2.02	1.637	1.641	23	1.56	1.31	1.44	225	Pass	
	721	797064	399456	46.1	1.983	1.977	1.642	1.637	20.5	5.1	5.39	5.25	225	Pass	
	722	797123	399393	49.5	2.03	2.027	1.702	1.7	19	4.19	4.33	4.26	225	Pass	
	723	797168	399284	51.9	1.938	1.952	1.578	1.589	23	5.53	4.84	5.19	UTP	Pass	
	724	797185	399331	51.1	2.021	2.013	1.698	1.691	19	4.81	5.19	5.00	225	Pass	
	725	797158	399368	50.4	1.954	1.961	1.609	1.615	21.5	5.93	5.6	5.77	UTP	Pass	
	726	797183	399413	48.2	2.017	1.999	1.618	1.603	24.5	0.15	1.05	0.60	184	Pass	
	724	797134	399436	48.1	2.023	2.01	1.685	1.674	20	3.79	4.41	4.10	UTP	Pass	
	23-Nov-16	728	797177	399462	45.8	2	1.999	1.585	1.584	26	-0.22	-0.17	-0.20	60	
728-1		797177	399462	45.8	1.998	2.081	1.686	1.756	18.5	6.38	2.49	4.44	170	Pass	
729		797092	399370	50.9	1.94	1.955	1.587	1.6	22	5.94	5.22	5.58	225	Pass	
730		797087	399404	48.9	2.06	2.06	1.727	1.727	19.5	2.73	2.73	2.73	225	Pass	
731		797080	399441	47.4	1.95	1.949	1.562	1.561	25	3.32	3.37	3.35	225	Pass	
732		797051	399460	46.4	2.13	2.153	1.856	1.876	15	3.85	2.82	3.34	225	Pass	
733		797029	399431	47.3	2.149	2.144	1.817	1.813	18.5	-0.51	-0.28	-0.40	175	Pass	
734		797053	399424	47.9	2.152	2.164	1.85	1.861	16.5	1.3	0.75	1.03	158	Pass	
735		797041	399374	50	2.035	2.033	1.644	1.642	24	-0.01	0.09	0.04	UTP	Pass	
736		797019	399327	50.8	1.998	2.005	1.652	1.658	21	4.24	3.91	4.08	UTP	Pass	
24-Nov-16	737	797061	399335	51.4	2.036	2.03	1.679	1.674	21	2.14	2.43	2.29	UTP	Pass	
	738	797116	399366	50.8	1.99	1.975	1.65	1.638	20.5	4.9	5.61	5.26	225	Pass	
	739	797105	399402	49.6	1.979	1.996	1.653	1.667	19.5	6.17	5.36	5.77	225	Pass	
	740	797101	399447	47.4	2.073	2.078	1.754	1.758	18	3.12	2.88	3.00	225	Pass	
	741	797125	399463	46.8	2.037	2.054	1.689	1.703	20.5	2.64	1.83	2.24	225	Pass	
	742	797137	399418	49.1	2.087	2.069	1.743	1.728	19.5	1.07	1.92	1.50	225	Pass	
	743	797157	399360	51	2.01	2.01	1.65	1.65	22	2.91	2.91	2.91	UTP	Pass	
	744	797170	399387	49.9	2.099	2.095	1.745	1.741	20.5	-0.04	0.15	0.06	209	Pass	
	745	797162	399419	48.6	1.999	1.996	1.683	1.681	18.5	6.1	6.24	6.17	225	Pass	
	746	797184	399444	46.7	2.084	2.105	1.719	1.737	21	-0.15	-1.16	-0.66	215	Pass	
	747	797188	399413	48.3	2.008	2.019	1.708	1.718	17.5	6.76	6.25	6.51	225	Pass	
25-Nov-16	748	797162	399463	46	2.003	1.998	1.679	1.674	19.5	5.39	5.63	5.51	UTP	Pass	
	749	797102	399360	51.1	1.909	1.974	1.548	1.601	23.5	6.59	3.41	5.00	225	Pass	
	750	797095	399400	49.5	1.993	2.011	1.641	1.656	21.5	4.02	3.15	3.59	225	Pass	
	751	797068	399433	47.9	2.104	2.084	1.776	1.759	18.5	1.43	2.37	1.90	225	Pass	
	752	797075	399475	45.7	1.68	1.584	1.224	1.154	37	9.08	14.28	11.68	57	Fail	
	753	797042	399469	45.9	1.521	1.519	1.142	1.14	33	19.79	19.9	19.85	20	Fail	
	754	797042	399425	48	2.04	2.035	1.682	1.678	21.5	1.9	2.14	2.02	225	Pass	

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29-Nov-16	755	797059	399392	49.6	2.001	2.014	1.65	1.661	21.5	3.78	3.15	3.47	182	Pass	
	756	797034	399376	50.2	2.013	2.028	1.662	1.674	21	3.34	2.62	2.98	225	Pass	
	757	797060	399347	50.9	2.103	2.094	1.763	1.756	19.5	0.73	1.15	0.94	225	Pass	
	758	797060	399345	51.4	2.027	2.028	1.722	1.723	17.5	5.71	5.66	5.69	225	Pass	
	759	797097	399332	52.6	2.103	2.1	1.755	1.752	20	0.17	0.31	0.24	189	Pass	
	760	797060	399330	52.1	2.092	2.079	1.78	1.769	17.5	2.9	3.5	3.20	202	Pass	
	761	797022	399328	51.5	2.037	2.043	1.698	1.703	20	3.21	2.93	3.07	158	Pass	
	762	797034	399371	50.5	1.998	2.006	1.678	1.685	19	5.86	5.48	5.67	225	Pass	
	763	797069	399376	50.5	2.041	2.034	1.746	1.74	17	5.84	6.16	6.00	225	Pass	
	764	797100	399381	50.7	2.044	2.039	1.74	1.736	17.5	5.16	5.4	5.28	225	Pass	
	765	797116	399415	49.4	2.009	2.017	1.686	1.693	19	5.29	4.91	5.10	UTP	Pass	
	766	797078	399414	48.9	2.04	2.032	1.726	1.719	18	4.66	5.04	4.85	225	Pass	
	767	797054	399412	48.9	2.013	2.004	1.681	1.673	20	4.53	4.95	4.74	225	Pass	
	768	797028	399425	48.1	2.031	2.024	1.694	1.688	20	3.57	3.91	3.74	225	Pass	
30-Nov-16	769	797042	399452	46.8	2.028	2.033	1.706	1.71	19	4.59	4.36	4.48	216	Pass	
	770	797085	399452	47.4	2.016	2.029	1.695	1.706	19	5.15	4.54	4.85	213	Pass	
	771	797112	399463	47	1.986	1.996	1.664	1.673	19.5	6.18	5.71	5.95	191	Pass	
	772	797133	399355	52.2	1.771	1.738	1.265	1.242	40	2.56	4.38	3.47	58	Fail	772-1
	772-1	797133	399355	52.2	1.972	1.95	1.547	1.529	27.5	0.18	1.3	0.74	115	Fail	772-2
	752-1	797075	399475	45.7	1.911	1.924	1.519	1.529	26	4.53	3.89	4.21	225	Pass	
	753-1	797042	399469	45.9	2.016	2.011	1.702	1.698	18.5	5.56	5.79	5.68	225	Pass	
	773	797155	399364	51.1	1.997	1.995	1.66	1.659	20.5	4.84	4.94	4.89	225	Pass	
	774	797148	399402	49.8	1.903	1.895	1.541	1.535	23.5	6.73	7.12	6.93	225	Pass	
	775	797135	399445	48.2	2.005	2.009	1.64	1.643	22.5	2.75	2.56	2.66	206	Pass	
	776	797105	399448	48	2.022	2.03	1.655	1.661	22	1.99	1.6	1.80	220	Pass	
	777	797114	399416	49.5	1.976	1.992	1.64	1.654	20.5	5.69	4.92	5.31	225	Pass	
	778	797125	399378	51.2	1.972	1.979	1.597	1.602	23.5	3.32	2.98	3.15	225	Pass	
	779	797083	399335	52.3	2.001	1.993	1.642	1.635	22	3.26	3.65	3.46	221	Pass	
1-Dec-16	780	797096	399355	52.2	2.033	2.018	1.66	1.648	22.5	1.23	1.96	1.60	219	Pass	
	781	797076	399403	49.6	1.998	2.019	1.62	1.637	23.5	2.19	1.16	1.68	191	Pass	
	782	797070	399452	47.5	2.032	2.008	1.702	1.682	19.5	3.99	5.13	4.56	181	Pass	
	783	797079	399355	52	1.987	1.999	1.602	1.612	24	2.16	1.57	1.87	201	Pass	
	784	797072	399390	50.5	2.01	2.011	1.673	1.674	20	4.34	4.29	4.32	208	Pass	
	785	797064	399428	48.8	1.658	1.66	1.206	1.207	37.5	10.13	10.02	10.08	42	Fail	785-1
	786	797050	399455	47.1	2.101	2.101	1.729	1.729	21.5	-1.23	-1.23	-1.23	178	Pass	
	787	797041	399412	49.5	1.997	1.999	1.616	1.618	23.5	2.07	1.98	2.03	146	Pass	
	788	797047	399375	50.8	1.891	1.902	1.503	1.512	26	5.54	4.99	5.27	205	Pass	
	789	797053	399345	51.8	1.922	1.92	1.545	1.544	24.5	5.09	5.19	5.14	155	Pass	
	790	797027	399336	51.6	1.988	2.014	1.654	1.676	20	5.35	4.11	4.73	210	Pass	
	791	797174	399457	47.8	1.994	1.994	1.644	1.644	21.5	4.09	4.09	4.09	213	Pass	
	792	797178	399428	48.7	1.999	2.016	1.67	1.684	19.5	5.27	4.46	4.87	225	Pass	
	793	797185	399392	49.8	1.996	1.997	1.685	1.686	18.5	6.51	6.47	6.49	203	Pass	
2-Dec-16	794	797184	399359	50.6	2.001	2.006	1.672	1.676	19.5	5.15	4.91	5.03	225	Pass	
	795	797164	399356	51	2.024	2.002	1.699	1.681	19	4.58	5.62	5.10	225	Pass	
	796	797148	399390	50.7	2.008	2.001	1.656	1.65	21.5	3.46	3.8	3.63	217	Pass	
	797	797148	399427	48.9	2.03	2.034	1.73	1.733	17.5	5.93	5.74	5.84	225	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
5-Dec-16	798	797130	399458	47.8	2.014	2.017	1.686	1.688	19.5	4.74	4.6	4.67	205	Pass	
	799	797122	399419	49.8	2.039	2.027	1.662	1.652	22.5	0.72	1.3	1.01	155	Pass	
	800	797127	399356	51.9	1.997	1.995	1.669	1.667	19.5	5.36	5.46	5.41	220	Pass	
	0772-2	797133	399355	52.2	1.933	1.95	1.577	1.591	22.5	6.02	5.19	5.61	201	Pass	
	0785-1	797064	399428	48.8	1.901	1.909	1.51	1.516	26	4.98	4.58	4.78	197	Pass	
	801	797119	399353	52.2	2.011	2.015	1.68	1.684	19.5	4.69	4.51	4.60	225	Pass	
	802	797117	399391	51.1	1.998	1.994	1.65	1.647	21	4.09	4.28	4.19	225	Pass	
	803	797110	399423	49.9	1.955	1.959	1.603	1.606	22	5.43	5.24	5.34	225	Pass	
	804	797110	399458	48.2	2.013	2.012	1.666	1.665	21	3.61	3.66	3.64	205	Pass	
	805	797073	399449	48.2	1.989	1.981	1.647	1.64	21	4.78	5.16	4.97	225	Pass	
	806	797080	399416	49.7	1.998	1.981	1.654	1.64	21	4.33	5.14	4.74	225	Pass	
	807	797083	399377	51.3	1.893	1.895	1.432	1.434	32	0.89	0.78	0.84	174	Pass	
	808	797091	399333	52.4	1.977	1.99	1.659	1.67	19	6.73	6.12	6.43	225	Pass	
	809	797064	399317	52.7	1.994	1.997	1.639	1.642	21.5	3.8	3.66	3.73	225	Pass	
6-Dec-16	810	797050	399359	51.7	2.039	2.053	1.744	1.756	17	5.91	5.26	5.59	225	Pass	
	811	797048	399397	50.2	2.014	2.013	1.703	1.702	18.5	5.83	5.88	5.86	225	Pass	
	812	797049	399428	49.1	2.028	2.025	1.734	1.732	17	6.4	6.54	6.47	225	Pass	
	813	797030	399428	48.9	2.017	2.018	1.726	1.727	17	6.97	6.93	6.95	225	Pass	
	814	797031	399389	50.5	2.031	2.039	1.703	1.71	19.5	4.12	3.74	3.93	225	Pass	
	815	797027	399364	51.4	2.041	2.054	1.719	1.73	19	4.11	3.5	3.81	225	Pass	
	816	797027	399323	52.4	2.027	2.024	1.7	1.698	19	4.35	4.5	4.43	225	Pass	
	817	797140	399360	51.9	2.066	2.06	1.755	1.72	17.5	3.88	2.27	3.08	UTP	Pass	
	818	797133	399394	51.2	1.98	1.97	1.669	1.65	18.5	7.11	6.88	7.00	UTP	Pass	
	819	797131	399423	50	2.028	2.014	1.684	1.678	20.5	3.26	4.27	3.77	214	Pass	
	820	797135	399466	47.7	1.961	1.97	1.619	1.617	21	5.82	4.84	5.33	195	Pass	
	821	797165	399466	47.8	1.963	1.971	1.592	1.617	23.5	3.92	4.7	4.31	206	Pass	
	822	797179	399439	48.9	1.973	1.973	1.605	1.609	23	3.75	4.03	3.89	225	Pass	
	823	797160	399427	49.4	1.944	1.961	1.567	1.662	24	4.28	8.54	6.41	225	Pass	
	824	797169	399399	50.3	1.981	1.974	1.626	1.629	22	4.27	5.15	4.71	225	Pass	
7-Dec-16	825	797184	399360	51	2.032	2.042	1.652	1.69	23	0.8	2.23	1.52	225	Pass	
	826	797182	399328	51.5	2.024	2.024	1.67	1.671	21	2.75	2.83	2.79	209	Pass	
	827	797173	399291	52.1	2.022	2.027	1.724	1.711	17.5	6.33	5	5.67	UTP	Pass	
	829	797076	399462	47.4	1.987	1.981	1.593	1.636	24.5	1.62	4.9	3.26	179	Pass	
	830	797081	399428	49.7	2.012	2.015	1.64	1.642	22.5	2.05	1.9	1.98	225	Pass	
	831	797088	399396	51	1.981	1.977	1.674	1.671	18.5	7.32	7.51	7.42	197	Pass	
	832	797094	399356	52.4	2.011	2.011	1.618	1.618	24.5	0.78	0.78	0.78	218	Pass	
	833	797074	399343	52.6	2.05	2.051	1.702	1.703	20.5	2.17	2.12	2.15	225	Pass	
	834	797060	399393	50.9	2.078	2.07	1.748	1.741	19	2.27	2.65	2.46	225	Pass	
	835	797056	399425	49.7	1.947	1.929	1.611	1.596	21	6.72	7.58	7.15	UTP	Pass	
	836	797048	399466	46.8	1.999	2.001	1.652	1.654	21	4.14	4.05	4.10	UTP	Pass	
	837	797025	399444	48.6	2.005	1.996	1.695	1.687	18.5	6.21	6.63	6.42	UTP	Pass	
	838	797033	399402	50.8	1.996	2.014	1.643	1.658	21.5	3.83	2.96	3.40	UTP	Pass	
	839	797046	399354	52.3	1.93	1.931	1.572	1.572	23	5.95	5.9	5.93	UTP	Pass	
13-Dec-16	841	797019	399335	52.6	1.968	1.967	1.61	1.609	22.5	4.56	4.61	4.59	225	Pass	
	842	797073	399341	49.3	1.932	1.919	1.582	1.572	22	6.44	7.07	6.76	UTP	Pass	
	843	797031	399409	50.5	1.964	1.959	1.577	1.573	24.5	2.91	3.16	3.04	225	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
16-Dec-16	844	797026	399446	49	1.94	1.929	1.565	1.556	24	4.51	5.05	4.78	UTP	Pass	
	845	797049	399452	48.5	1.964	1.981	1.579	1.592	24.5	2.99	2.15	2.57	225	Pass	
	846	797050	399420	50	1.993	1.982	1.643	1.634	21.5	4.13	4.66	4.40	225	Pass	
	847	797054	399380	51.9	1.922	1.916	1.539	1.535	25	4.72	5.02	4.87	UTP	Pass	
	848	797053	399348	52.9	1.982	1.98	1.601	1.599	24	2.58	2.68	2.63	225	Pass	
	849	797082	399340	53.3	2.015	2.038	1.674	1.693	20.5	3.91	2.82	3.37	UTP	Pass	
	850	797079	399374	52.1	1.961	1.967	1.54	1.545	27.5	0.89	0.58	0.74	225	Pass	
	851	797073	399411	50.2	1.953	1.975	1.556	1.574	25.5	2.69	1.59	2.14	214	Pass	
	852	797079	399459	48.2	1.977	1.977	1.614	1.614	22.5	3.91	3.91	3.91	201	Pass	
	853	797098	399431	50.1	1.976	1.977	1.594	1.595	24	2.78	2.73	2.76	184	Pass	
	854	797106	399396	51.6	1.96	1.954	1.59	1.585	23.5	4.11	4.4	4.26	177	Pass	
	884	797135	399360	52.7	2.038	2.019	1.706	1.69	19.5	3.6	4.5	4.05	161	Pass	
	885	797140	399398	51.7	2.018	2.017	1.641	1.64	23	1.53	1.58	1.56	161	Pass	
	886	797131	399441	49.8	2.061	2.064	1.745	1.747	18	3.74	3.6	3.67	208	Pass	
	887	797168	399460	48.4	2.068	2.051	1.708	1.694	21	0.74	1.55	1.15	195	Pass	
	888	797167	399425	50	2.075	2.036	1.72	1.687	20.5	0.77	2.64	1.71	218	Pass	
	889	797185	399398	50.4	1.982	1.977	1.645	1.641	20.5	5.38	5.62	5.50	197	Pass	
	890	797167	399360	52	2.058	2.048	1.693	1.684	21.5	0.78	1.26	1.02	214	Pass	
19-Dec-16	891	797177	399319	52.2	2.038	2.024	1.682	1.67	21	2.08	2.76	2.42	217	Pass	
	892	797166	399290	52.6	1.968	1.988	1.636	1.653	20.5	6.23	5.28	5.76	225	Pass	
	893	797163	399456	48.7	1.891	1.899	1.512	1.519	25	6.13	5.73	5.93	155	Pass	
	894	797165	399421	50.2	1.994	1.997	1.599	1.602	24.5	1.3	1.15	1.23	195	Pass	
	895	797172	399369	51.4	2.007	1.998	1.674	1.666	20	4.7	5.13	4.92	214	Pass	
	896	797172	399316	52.4	2.033	2.026	1.673	1.668	21.5	2.06	2.4	2.23	225	Pass	
	897	797122	399353	52.8	2.043	2.052	1.759	1.767	16	6.46	6.04	6.25	225	Pass	
	898	797110	399408	51.7	2.055	2.075	1.726	1.743	19	3.17	2.23	2.70	225	Pass	
	899	797102	399462	49.1	1.935	1.922	1.574	1.563	23	5.58	6.22	5.90	211	Pass	
	900	797057	399464	48.9	1.923	1.938	1.592	1.604	21	7.92	7.2	7.56	199	Pass	
20-Dec-16	901	797060	399406	51.3	2.014	1.961	1.612	1.57	25	0.09	2.72	1.41	164	Pass	
	902	797071	399354	52.9	2.101	2.101	1.761	1.761	19.5	0.75	0.75	0.75	204	Pass	
	903	797021	399318	54.1	2.012	2.01	1.665	1.663	21	3.61	3.71	3.66	UTP	Pass	
	904	797031	399366	52.6	1.967	1.962	1.625	1.621	21	5.61	5.85	5.73	UTP	Pass	
	905	797028	399420	50.8	2.068	2.051	1.685	1.671	23	-0.73	0.1	-0.32	193	Pass	
	906	797040	399471	48.6	1.999	2.01	1.658	1.667	20.5	4.48	3.95	4.22	199	Pass	
	907	797057	399434	50.5	2.009	2.021	1.66	1.67	21	3.64	3.07	3.36	187	Pass	
	908	797065	399391	51.9	1.997	1.991	1.635	1.63	22	3.22	3.51	3.37	UTP	Pass	
	909	797074	399332	54.2	2.045	2.054	1.702	1.709	20	2.63	2.2	2.42	208	Pass	
	910	797103	399367	52.7	1.97	1.957	1.644	1.633	20	6.52	7.13	6.83	UTP	Pass	
21-Dec-16	911	797097	399417	51.4	1.983	1.988	1.67	1.675	18.5	6.88	6.64	6.76	225	Pass	
	912	797090	399462	49	2.009	2.005	1.693	1.69	18.5	5.71	5.9	5.81	225	Pass	
	913	797177	399284	52.7	2.051	2.052	1.751	1.752	17	5.16	5.12	5.14	UTP	Pass	
	914	797171	399329	52.4	1.998	1.994	1.633	1.63	22.5	3.04	3.23	3.14	UTP	Pass	
	915	797175	399373	51.4	2.002	1.999	1.657	1.654	21	4.1	4.24	4.17	UTP	Pass	
	916	797167	399420	50.2	1.991	1.995	1.659	1.662	20	5.36	5.17	5.27	UTP	Pass	
	917	797157	399468	48.3	2.018	2.025	1.699	1.705	19	5.18	4.86	5.02	UTP	Pass	
	918	797122	399458	49.2	2.033	2.019	1.714	1.702	18.5	4.63	5.28	4.96	UTP	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
22-Dec-16	919	797131	399404	51.8	2	2.009	1.691	1.699	18.5	6.47	6.05	6.26	225	Pass	
	920	797134	399364	52.6	2.004	2	1.658	1.655	21	4.01	4.2	4.11	225	Pass	
	921	797112	399339	54.2	2.061	2.054	1.761	1.755	17	4.75	5.08	4.92	UTP	Pass	
	922	797094	399403	52	2.04	2.027	1.662	1.651	23	0.62	1.25	0.94	UTP	Pass	
	923	797077	399467	48.7	2.044	2.035	1.68	1.673	21.5	1.38	1.81	1.60	UTP	Pass	
	924	797053	399470	49	2.101	2.088	1.767	1.756	19	1.17	1.78	1.48	203	Pass	
	925	797056	399406	51.5	2.089	2.069	1.749	1.732	19.5	1.2	2.14	1.67	205	Pass	
	926	797068	399328	54	2.101	2.104	1.794	1.796	17	2.84	2.7	2.77	UTP	Pass	
28-Dec-16	927	797026	399332	53.7	2.048	2.039	1.699	1.692	20.5	2.18	2.61	2.40	221	Pass	
	928	797030	399397	51.9	2.041	2.046	1.735	1.74	17.5	5.17	4.94	5.06	225	Pass	
	929	797027	399452	49.7	2.038	2.036	1.703	1.702	19.5	3.46	3.55	3.51	UTP	Pass	
	930	797179	399303	52.8	2.07	2.094	1.73	1.75	19.5	1.95	0.82	1.39	209	Pass	
	931	797180	399373	51.5	2.033	2.023	1.683	1.675	21	2.67	3.15	2.91	225	Pass	
	932	797176	399442	49.3	1.99	2.022	1.675	1.702	19	6.46	4.96	5.71	225	Pass	
	933	797133	399457	49.3	1.922	1.932	1.591	1.599	21	7.97	7.49	7.73	206	Pass	
	934	797132	399417	51.5	2.016	2.003	1.669	1.658	21	3.48	4.11	3.80	UTP	Pass	
29-Dec-16	935	797135	399367	52.7	2.091	2.077	1.746	1.735	19.5	0.85	1.52	1.19	225	Pass	
	936	797119	399392	52.3	2.031	2.04	1.722	1.73	18	5.32	4.9	5.11	225	Pass	
	937	797107	399431	51.1	1.953	1.936	1.623	1.608	20.5	6.86	7.67	7.27	225	Pass	
	938	797114	399350	54	1.881	1.877	1.651	1.648	14	15.86	16.03	15.95	UTP	Fail	938-1
	939	797113	399398	52.5	2.042	2.019	1.7	1.681	20	2.84	3.94	3.39	225	Pass	
	940	797109	399446	50.6	2.019	2.022	1.669	1.672	21	3.22	3.07	3.15	225	Pass	
	941	797093	399483	48.4	2.032	2.021	1.669	1.66	22	1.88	2.41	2.15	225	Pass	
	942	797059	399472	48.9	2.025	2.03	1.637	1.641	23.5	0.55	0.31	0.43	225	Pass	
30-Dec-16	943	797078	399424	51.2	2.02	2.034	1.637	1.649	23.5	1.08	0.39	0.74	170	Pass	
	944	797065	399393	52.2	2.03	2.036	1.659	1.664	22.5	1.45	1.16	1.31	176	Pass	
	945	797019	399356	53	1.972	1.95	1.658	1.64	19	7.22	8.26	7.74	UTP	Pass	945-1
	946	797037	399409	51.8	2.133	2.151	1.82	1.835	17	1.28	0.45	0.87	UTP	Pass	
	947	797035	399444	50.6	2.14	2.167	1.819	1.842	17.5	0.53	-0.73	-0.10	UTP	Pass	
	938-1	797114	399350	54	2.061	1.993	1.75	1.692	18	4.08	7.25	5.67	UTP	Pass	
	945-1	797019	399356	53	1.963	1.968	1.604	1.608	22.5	4.67	4.43	4.55	UTP	Pass	
	948	797129	399384	52.8	1.977	1.969	1.652	1.645	19.5	6.3	6.68	6.49	225	Pass	
4-Jan-17	949	797121	399425	51.5	1.979	1.976	1.661	1.659	19	6.68	6.82	6.75	205	Pass	
	950	797115	399475	48.9	1.947	1.944	1.566	1.564	24.5	3.92	4.07	4.00	169	Pass	
	951	797156	399460	49.2	1.946	1.956	1.616	1.624	20.5	7.13	6.65	6.89	179	Pass	
	952	797185	399438	49.3	2.028	2.013	1.734	1.721	17	6.39	7.08	6.74	225	Pass	
	953	797160	399410	51.2	2.005	1.998	1.699	1.693	18	6.49	6.82	6.66	225	Pass	
	954	797186	399386	51	1.989	1.992	1.662	1.665	19.5	5.76	5.62	5.69	225	Pass	
	955	797170	399348	52.5	1.989	1.996	1.622	1.628	22.5	3.21	2.87	3.04	225	Pass	
	956	797168	399317	52.9	1.956	1.954	1.613	1.611	21.5	5.95	6.05	6.00	225	Pass	
4-Jan-17	957	797180	399286	53.5	1.956	1.966	1.586	1.594	23.5	4.24	3.75	4.00	225	Pass	
	958	797035.3	399330.9	54.009	1.971	1.979	1.608	1.615	22.5	4.15	3.76	3.96	199	Pass	
	959	797030.7	399355.6	53.583	2.049	2.049	1.693	1.693	21	1.69	1.69	1.69	211	Pass	
	960	797031.5	399408.7	52.074	1.973	1.967	1.648	1.643	19.5	6.49	6.78	6.64	202	Pass	
	961	797059.4	399365.5	53.59	2.035	2.047	1.644	1.653	24	-0.01	-0.6	-0.31	225	Pass	
	962	797079.0	399330.0	54.755	1.896	1.886	1.531	1.522	24	6.77	7.26	7.02	194	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
5-Jan-17	963	797180.3	399341.1	52.466	1.948	1.947	1.57	1.569	24	4.03	4.08	4.06	206	Pass	
	964	797178.7	399299.2	53.427	1.978	1.968	1.632	1.623	21	4.94	5.42	5.18	215	Pass	
	965	797157.9	399262.3	53.723	1.977	1.989	1.623	1.633	22	4.47	3.89	4.18	225	Pass	
	966	797162.4	399346.5	52.96	1.905	1.911	1.513	1.518	26	4.76	4.46	4.61	167	Pass	
	967	797164.1	399399.6	51.71	1.989	1.976	1.631	1.621	22	3.8	4.43	4.12	159	Pass	
	968	797164.0	399450.3	49.524	1.91	1.907	1.514	1.512	26	4.32	4.47	4.40	188	Pass	
	969	797131.9	399473.5	49.395	1.969	1.971	1.584	1.586	24.5	2.84	2.74	2.79	175	Pass	
	970	797096.1	399469.6	49.728	1.967	1.987	1.649	1.666	19.5	7.13	6.19	6.66	165	Pass	
6-Jan-17	971	797123.1	399440.9	51.075	1.993	1.995	1.674	1.676	19	6.1	6.01	6.06	171	Pass	
	972	797103.2	399397.6	52.874	2.025	2.007	1.668	1.653	21.5	2.5	3.37	2.94	182	Pass	
	973	797124.2	399361.2	53.601	2.023	2.023	1.642	1.642	23	1.06	1.06	1.06	185	Pass	
	974	797078.1	399319.4	55.407	1.982	1.982	1.647	1.647	20.5	5.52	5.52	5.52	UTP	Pass	
	975	797058.1	399348.0	53.912	1.979	1.977	1.654	1.653	19.5	6.27	6.36	6.32	225	Pass	
	976	797034.1	399387.9	53.364	1.981	1.972	1.61	1.603	23	3.3	3.74	3.52	225	Pass	
	977	797057.5	399420.1	52.13	1.928	1.951	1.545	1.564	25	4.5	3.36	3.93	225	Pass	
	978	797033.8	399451.6	50.847	1.943	1.929	1.568	1.557	24	4.43	5.12	4.78	225	Pass	
9-Jan-17	979	797090.2	399482.7	49.135	1.94	1.964	1.57	1.589	23.5	4.85	3.67	4.26	166	Pass	
	980	797085.6	399441.6	51.432	1.972	1.947	1.593	1.572	24	3.07	4.3	3.69	160	Pass	
	981	797108.9	399416.4	52.562	2.011	1.997	1.684	1.672	19.5	4.93	5.59	5.26	174	Pass	
	982	797104.9	399375.7	53.596	2.01	2.004	1.666	1.661	20.5	3.87	4.15	4.01	180	Pass	
	983	797125.2	399348.1	54.191	2.013	2.001	1.687	1.677	19.5	4.93	5.49	5.21	184	Pass	
	984	797160.3	399271.9	53.816	2.047	2.04	1.73	1.724	18.5	4.24	4.57	4.41	UTP	Pass	
	985	797169.5	399335.3	53.328	1.976	1.988	1.616	1.626	22.5	4.13	3.55	3.84	225	Pass	
	986	797144.9	399389.8	52.928	1.988	2.013	1.593	1.613	25	1.49	0.25	0.87	217	Pass	
10-Jan-17	987	797166.7	399439.7	50.423	2.003	1.984	1.625	1.609	23.5	1.99	2.92	2.46	196	Pass	
	988	797112.0	399458.8	50.721	1.954	1.953	1.584	1.583	23.5	4.33	4.38	4.36	164	Pass	
	989	797114.1	399409.0	52.857	1.949	1.935	1.554	1.543	25.5	2.95	3.65	3.30	159	Pass	
	990	797128.5	399352.4	54.043	1.976	1.972	1.626	1.623	21.5	4.8	4.99	4.90	225	Pass	
	991	797104.4	399330.3	55.054	2.022	2.022	1.674	1.674	21	3.21	3.21	3.21	UTP	Pass	
	992	797101.3	399378.0	53.956	2.027	2.03	1.657	1.659	22.5	1.63	1.48	1.56	225	Pass	
	993	797086.6	399421.1	52.511	1.945	1.944	1.59	1.59	22.5	5.64	5.69	5.67	225	Pass	
	994	797075.5	399477.3	49.98	2.119	2.13	1.816	1.826	16.5	2.45	1.94	2.20	187	Pass	
11-Jan-17	995	797048.0	399473.0	50.629	2.107	2.123	1.765	1.779	19.5	0.44	-0.32	0.06	187	Pass	
	996	797046.8	399427.5	52.413	2.104	2.127	1.784	1.804	18	1.95	0.88	1.42	169	Pass	
	997	797031.1	399385.4	53.577	1.985	2.006	1.643	1.661	21	4.97	3.96	4.47	UTP	Pass	
	998	797063.8	399344.8	54.934	1.977	1.976	1.671	1.67	18.5	7.5	7.54	7.52	UTP	Pass	
	999	797021.2	399321.5	55.092	1.979	2.002	1.669	1.688	18.5	7.19	6.11	6.65	UTP	Pass	
	1000	797166.2	399299.2	54.104	2.031	2.017	1.655	1.644	22.5	1.13	1.82	1.48	225	Pass	
	1001	797175.7	399367.7	52.533	2.004	1.969	1.63	1.602	23	2.25	3.96	3.11	225	Pass	
	1002	797145.3	399407.2	52.522	2.014	2.013	1.662	1.661	21	3.26	3.31	3.29	171	Pass	
12-Dec-17	1003	797169.0	399450.4	49.751	2.012	2.007	1.697	1.693	18.5	5.68	5.91	5.80	157	Pass	
	1004	797118.1	399462.5	50.461	1.968	1.964	1.63	1.627	20.5	5.84	6.03	5.94	225	Pass	
	1005	797115.0	399425.2	52.445	1.986	1.972	1.673	1.662	18.5	6.77	7.43	7.10	225	Pass	
	1006	797117.6	399392.7	53.393	1.947	1.959	1.58	1.59	23	4.79	4.2	4.50	225	Pass	
	1007	797127.3	399347.2	54.153	2.027	2.044	1.705	1.719	19	4.64	3.84	4.24	225	Pass	
	1008	797104.4	399350.5	54.568	1.987	2.009	1.595	1.613	24.5	1.74	0.65	1.20	162	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
13-Jan-17	1009	797098.9	399384.6	54.065	1.985	1.995	1.578	1.586	26	0.87	0.37	0.62	167	Pass	
	1010	797087.2	399423.9	52.715	1.953	1.94	1.552	1.541	26	2.41	3.06	2.74	181	Pass	
	1011	797075.7	399477.2	50.283	1.949	1.938	1.575	1.567	23.5	4.3	4.84	4.57	176	Pass	
	1012	797041.6	399472.4	51.084	1.919	1.936	1.543	1.556	24.5	5.22	4.38	4.80	176	Pass	
	1013	797026.4	399434.5	52.936	1.944	1.94	1.562	1.559	24.5	3.94	4.14	4.04	160	Pass	
	1014	797051.9	399418.0	53.067	1.918	1.936	1.529	1.544	25.5	4.49	3.6	4.05	149	Pass	
	1015	797030.9	399377.2	54.488	2.043	2.05	1.697	1.702	20.5	2.52	2.19	2.36	225	Pass	
	1016	797058.3	399365.5	55.083	2.044	2.034	1.707	1.699	19.5	3.08	3.56	3.32	225	Pass	
	1017	797079.7	399324.5	55.358	1.92	1.93	1.565	1.573	22.5	6.54	6.05	6.30	225	Pass	
	1018	797032.5	399314.2	55.423	1.95	1.98	1.625	1.65	20	7.31	5.89	6.60	225	Pass	
	1019	797136.0	399364.0	53.891	2.05	2.035	1.669	1.657	23	0.11	0.84	0.48	188	Pass	
	1020	797115.0	399401.9	53.47	2.009	2.023	1.62	1.632	24	1.11	0.42	0.77	225	Pass	
	1021	797118.7	399449.5	51.209	1.991	2.002	1.599	1.607	24.5	1.56	1.01	1.29	225	Pass	
	1022	797161.7	399461.6	49.691	1.992	1.981	1.603	1.594	24.5	1.7	2.25	1.98	225	Pass	
16-Jan-17	1023	797156.3	399414.1	52.078	1.995	1.988	1.619	1.613	23	2.42	2.76	2.59	225	Pass	
	1024	797175.9	399380.2	52.451	1.971	1.963	1.634	1.627	20.5	5.77	6.15	5.96	225	Pass	
	1025	797175.4	399327.7	53.611	1.967	1.98	1.586	1.597	24	3.16	2.52	2.84	225	Pass	
	1026	797180.0	399274.7	54.161	2.005	1.994	1.655	1.645	21	3.67	4.2	3.94	225	Pass	
	1027	797024.7	399320.3	56.108	1.904	1.873	1.533	1.508	24	6.14	7.67	6.91	UTP	Pass	
	1028	797023.5	399355.1	55.735	1.884	1.879	1.504	1.5	25.5	6.29	6.54	6.42	225	Pass	
	1029	797033.7	399394.3	54.32	1.981	1.995	1.592	1.603	24.5	2.11	1.42	1.77	221	Pass	
	1030	797027.6	399441.7	53.048	1.998	1.991	1.633	1.627	22.5	2.99	3.33	3.16	225	Pass	
	1031	797053.7	399461.8	51.799	1.977	1.984	1.597	1.602	24	2.83	2.48	2.66	225	Pass	
	1032	797062.5	399423.2	53.157	1.97	1.965	1.634	1.63	20.5	5.88	6.12	6.00	165	Pass	
	1033	797065.2	399371.3	54.994	1.893	1.884	1.513	1.506	25	5.95	6.4	6.18	UTP	Pass	
	1034	797059.8	399321.6	55.814	1.909	1.908	1.54	1.539	24	6.08	6.13	6.11	225	Pass	
	1035	797112.8	399330.3	55.13	1.987	1.982	1.68	1.676	18.5	7.07	7.3	7.19	UTP	Pass	
	1036	797112.9	399377.3	54.192	1.997	2	1.646	1.649	21.5	3.95	3.8	3.88	151	Pass	
17-Jan-17	1037	797097.3	399423.3	52.902	2.063	2.06	1.711	1.708	20.5	1.41	1.55	1.48	171	Pass	
	1038	797095.8	399471.2	50.715	1.917	1.908	1.552	1.544	23.5	6	6.44	6.22	151	Pass	
	1039	797189.2	399287.9	53.76	1.984	2.01	1.606	1.627	23.5	2.71	1.43	2.07	210	Pass	
	1040	797157.9	399322.9	54.736	1.979	1.966	1.574	1.564	25.5	1.22	1.87	1.55	186	Pass	
	1041	797181.1	399367.7	52.618	1.921	1.935	1.561	1.573	23	6.22	5.53	5.88	191	Pass	
	1042	797160.1	399402.5	52.699	1.903	1.889	1.5	1.489	27	4.13	4.83	4.48	175	Pass	
	1043	797182.9	399438.2	50.557	1.956	1.985	1.573	1.596	24.5	3.44	2.01	2.73	199	Pass	
	1044	797147.3	399462.1	50.225	1.915	1.901	1.528	1.517	25.5	4.69	5.39	5.04	202	Pass	
	1045	797108.4	399472.4	50.645	1.959	1.981	1.557	1.574	26	2.1	1	1.55	202	Pass	
	1046	797119.7	399415.0	53.171	2.017	2.031	1.675	1.686	20.5	3.75	3.08	3.42	225	Pass	
	1047	797129.6	399365.3	54.362	2.018	2.024	1.695	1.7	19	4.92	4.64	4.78	225	Pass	
	1048	797068.5	399337.7	55.512	2.028	2.019	1.695	1.687	19.5	3.91	4.33	4.12	UTP	Pass	
	1049	797104.7	399344.0	55.105	1.945	1.942	1.582	1.58	23	5.13	5.28	5.21	203	Pass	
18-Jan-17	1050	797097.9	399401.6	54.218	1.94	1.958	1.576	1.591	23	5.25	4.37	4.81	209	Pass	
	1051	797088.6	399467.2	51.482	2	1.992	1.658	1.652	20.5	4.41	4.79	4.60	225	Pass	
	1052	797060.2	399468.1	51.737	2.004	1.992	1.64	1.63	22	2.87	3.45	3.16	225	Pass	
	1053	797030.0	399463.5	52.726	1.959	1.949	1.598	1.59	22.5	4.72	5.21	4.97	225	Pass	
	1054	797050.9	399427.5	53.796	1.958	1.962	1.613	1.616	21.5	5.76	5.57	5.67	225	Pass	

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19-Jan-17	1055	797025.0	399417.2	54.197	1.893	1.902	1.521	1.529	24.5	6.49	6.04	6.27	225	Pass	
	1056	797058.9	399386.5	55.05	1.922	1.917	1.561	1.557	23	6.11	6.36	6.24	UTP	Pass	
	1057	797027.9	399384.9	55.202	1.993	1.996	1.648	1.651	21	4.48	4.34	4.41	UTP	Pass	
	1058	797016.1	399335.0	55.881	1.988	1.996	1.678	1.684	18.5	6.83	6.46	6.65	UTP	Pass	
	1059	797043.2	399326.1	55.886	1.996	1.988	1.683	1.676	18.5	6.36	6.74	6.55	UTP	Pass	
	1060	797072.7	399321.4	55.492	1.998	1.998	1.655	1.655	21	4.37	4.37	4.37	UTP	Pass	
	1061	797168.5	399278.2	54.762	1.919	1.916	1.49	1.524	29	1.92	4.37	3.15	225	Pass	
	1062	797179.6	399318.6	53.777	2.048	2.068	1.715	1.719	19.5	3.2	1.44	2.32	225	Pass	
	1063	797156.7	399360.3	54.111	1.92	1.921	1.543	1.52	24.5	5.16	3.59	4.38	225	Pass	
	1064	797175.7	399399.0	52.245	2.051	2.057	1.686	1.71	21.5	1.05	1.96	1.51	225	Pass	
	1065	797155.8	399426.2	52.073	1.983	1.984	1.613	1.626	23	3.24	3.99	3.62	225	Pass	
	1066	797169.2	399456.7	49.967	1.986	2.003	1.582	1.642	25.5	0.98	3.07	2.03	202	Pass	
	1067	797136.6	399461.6	50.849	2.084	2.082	1.745	1.724	19.5	1.47	0.32	0.90	185	Pass	
	1068	797105.3	399451.1	52.17	2.095	2.096	1.756	1.738	19.5	1.08	-0.17	0.46	174	Pass	
20-Jan-17	1069	797133.2	399393.1	54.059	1.972	1.973	1.609	1.612	22.5	4.08	4.19	4.14	214	Pass	
	1070	797129.8	399352.1	54.689	2.079	2.071	1.763	1.713	18	3.12	0.75	1.94	203	Pass	
	1071	797071.2	399351.6	55.69	2.059	2.046	1.756	1.745	17	4.68	5.28	4.98	225	Pass	
	1072	797069.4	399392.6	55.06	2.019	2.035	1.666	1.679	21	3	2.24	2.62	225	Pass	
	1073	797021.0	399392.6	55.13	2.044	2.027	1.668	1.654	22.5	0.6	1.43	1.02	UTP	Pass	
23-Jan-17	1074	797035.9	399388.2	55.62	2.018	2.022	1.694	1.698	19	4.88	4.69	4.79	UTP	Pass	
	1075	797018.2	399350.0	55.8	2.045	2.029	1.673	1.66	22	0.84	1.62	1.23	225	Pass	
	1076	797041.8	399342.0	55.71	1.882	1.898	1.499	1.512	25.5	6.2	5.41	5.81	225	Pass	
	1077	797059.4	399357.3	55.884	1.987	1.988	1.666	1.667	19.5	6.18	6.14	6.16	UTP	Pass	
	1078	797030.8	399392.9	56.099	1.892	1.899	1.54	1.546	23	7.75	7.42	7.59	UTP	Pass	
24-Jan-17	1079	797047.8	399423.6	54.744	2.018	2.009	1.695	1.688	19	4.93	5.35	5.14	UTP	Pass	
	1080	797037.2	399460.3	53.329	1.898	1.882	1.456	1.444	30.5	1.87	2.7	2.29	52	Fail	1080-1
	1081	797079.1	399462.1	52.106	1.923	1.927	1.495	1.498	28.5	1.81	1.61	1.71	225	Pass	
	1082	797107.7	399425.7	53.361	1.905	1.89	1.505	1.493	26.5	4.24	4.99	4.62	156	Pass	
	1083	797091.0	399382.2	55.138	1.92	1.911	1.468	1.461	31	0.45	0.92	0.69	91	Fail	1083-1
	1084	797123.3	399356.7	55.265	1.966	1.945	1.609	1.591	22	4.68	5.7	5.19	204	Pass	
	1085	797137.6	399359.2	54.661	2.042	2.038	1.662	1.659	23	0.44	0.64	0.54	93	Fail	1085-1
	1086	797124.8	399403.8	53.817	1.987	1.989	1.58	1.582	25.5	0.81	0.71	0.76	85	Fail	1086-1
	1087	797137.7	399435.7	52.34	2.067	2.078	1.724	1.734	20	1.87	1.35	1.61	157	Pass	
	1088	797113.9	399464.4	51.253	2.011	1.993	1.607	1.593	25	0.11	1	0.56	126	Fail	1088-1
25-Jan-17	1089	797153.4	399462.8	50.116	2.042	2.043	1.693	1.693	20.5	2.37	2.32	2.35	167	Pass	
	1090	797173.7	399435.2	50.813	1.953	1.927	1.555	1.534	25.5	2.58	3.88	3.23	184	Pass	
	1091	797165.6	399398.5	52.638	1.985	1.974	1.621	1.612	22.5	3.54	4.08	3.81	219	Pass	
	1092	797171.5	399359.5	53.254	1.976	1.972	1.606	1.603	23	3.53	3.73	3.63	208	Pass	
	1093	797170.2	399323.8	54.298	2.117	2.134	1.799	1.813	17.5	1.55	0.76	1.16	223	Pass	
	1094	797088.7	399368.8	55.508	1.818	1.817	1.474	1.474	23.5	11.03	11.08	11.06	84	Fail	1094-1
	1095	797073.2	399395.4	55.373	2.019	2.024	1.721	1.726	17.5	6.47	6.24	6.36	225	Pass	
	1096	797071.0	399437.3	53.858	1.906	1.933	1.525	1.546	25	5.39	4.05	4.72	62	Fail	1096-1
	1097	797042.6	399400.5	55.599	1.99	2.004	1.667	1.678	19.5	5.93	5.27	5.60	225	Pass	
	1098	797028.8	399384.2	56.149	2.022	2.018	1.723	1.72	17.5	6.29	6.47	6.38	225	Pass	
	1099	797158.6	399307.5	55.621	2.055	2.079	1.7	1.72	21	1.57	0.42	1.00	225	Pass	
	1100	797152.0	399337.6	55.182	2.011	2.021	1.658	1.666	21.5	3.29	2.81	3.05	221	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
27-Jan-17	1101	797179.0	399322.6	54.5	2.07	2.081	1.729	1.738	19.5	1.88	1.36	1.62	225	Pass	
	1102	797197.1	399316.1	52.119	2.103	2.113	1.779	1.787	18	1.7	1.24	1.47	194	Pass	
	1103	797037.2	399413.8	55.534	1.937	1.935	1.572	1.571	23	5.29	5.39	5.34	207	Pass	
	1104	797067.0	399392.3	55.625	1.936	1.948	1.571	1.58	23.5	5.3	4.71	5.01	190	Pass	
	1105	797058.5	399444.6	53.921	1.97	1.985	1.554	1.566	26.5	0.86	0.11	0.49	179	Pass	
	1106	797034.6	399462.5	53.794	2.007	2.01	1.707	1.709	17.5	6.77	6.63	6.70	225	Pass	
	1107	797083.1	399465.0	52.051	2.075	2.058	1.771	1.757	17	4.04	4.82	4.43	UTP	Pass	
	1108	797098.2	399426.3	53.54	1.999	1.987	1.615	1.606	24	1.8	2.39	2.10	225	Pass	
	1109	797096.5	399385.5	55.179	1.982	1.967	1.645	1.632	20.5	5.36	6.08	5.72	225	Pass	
	1110	797109.6	399348.8	55.523	2.001	2	1.615	1.614	24	1.58	1.62	1.60	225	Pass	
	1111	797072.3	399336.3	55.902	1.994	1.982	1.644	1.634	21.5	4.12	4.7	4.41	217	Pass	
27-Jan-17	1112	797072.3	399336.3	55.897	2.021	2.014	1.668	1.663	21	2.95	3.28	3.12	167	Pass	
	1083-1	797091.0	399382.2	55.138	2.002	2.001	1.673	1.673	19.5	5.16	5.21	5.19	225	Pass	
	1085-1	797137.6	399359.2	54.661	1.945	1.937	1.588	1.581	22.5	5.46	5.85	5.66	215	Pass	
	1086-1	797124.8	399403.8	53.817	1.975	1.992	1.607	1.62	23	3.65	2.82	3.24	225	Pass	
	1088-1	797113.9	399464.4	51.253	2.006	2.004	1.624	1.622	23.5	1.63	1.72	1.68	180	Pass	
31-Jan-17	1080-1	797037.2	399460.3	53.329	2.189	2.148	1.866	1.831	17.5	-1.41	0.49	-0.46	225	Pass	
	1113	797121.7	399350.4	55.441	2.039	2.078	1.665	1.697	22.5	0.94	-0.96	-0.01	225	Pass	
	1114	797123.8	399397.1	54.865	1.948	1.927	1.589	1.572	22.5	5.27	6.29	5.78	193	Pass	
	1115	797111.3	399454.8	52.577	1.947	1.951	1.574	1.577	23.5	4.42	4.22	4.32	202	Pass	
	1116	797157.1	399453.7	51.299	1.938	1.936	1.555	1.554	24.5	4.13	4.23	4.18	204	Pass	
	1117	797186.5	399440.4	50.283	1.952	1.959	1.599	1.605	22	5.49	5.15	5.32	188	Pass	
	1118	797167.1	399409.2	52.931	2.052	2.022	1.675	1.65	22.5	0.23	1.69	0.96	225	Pass	
	1119	797156.7	399375.3	54.254	1.915	1.917	1.51	1.512	27	3.6	3.5	3.55	225	Pass	
	1120	797193.0	399389.5	50.917	1.918	1.914	1.557	1.554	23	6.26	6.45	6.36	225	Pass	
	1121	797187.0	399337.8	52.364	2.016	2.021	1.628	1.632	24	0.92	0.67	0.80	UTP	Pass	
	1122	797168.1	399320.4	55.244	1.962	1.961	1.616	1.616	21.5	5.57	5.62	5.60	UTP	Pass	
1-Feb-17	1123	797186.6	399285.7	54.186	2.047	2.058	1.694	1.704	21	1.98	1.46	1.72	225	Pass	
	1124	797204.5	399313.2	51.111	2.059	2.076	1.707	1.721	20.5	1.6	0.79	1.20	225	Pass	
	1125	797227.8	399323.6	48.943	2.05	2.056	1.728	1.733	18.5	3.8	3.52	3.66	225	Pass	
	1126	797071.3	399315.7	55.854	2.044	2.03	1.727	1.716	18.5	4.36	5.02	4.69	225	Pass	
	1127	797078.2	399367.3	56.031	1.938	1.934	1.585	1.582	22.5	5.99	6.19	6.09	225	Pass	
	1128	797073.9	399430.0	54.542	1.893	1.895	1.483	1.485	27.5	4.08	3.98	4.03	225	Pass	
	1129	797062.1	399473.0	53.013	1.911	1.903	1.526	1.52	25	5.01	5.41	5.21	215	Pass	
	1130	797030.8	399475.9	53.565	1.799	1.794	1.37	1.367	31.5	6.39	6.65	6.52	161	Pass	
	1131	797038.7	399447.3	54.642	1.945	1.936	1.619	1.611	20	7.43	7.85	7.64	225	Pass	
	1132	797018.4	399422.7	55.502	1.983	2.012	1.649	1.673	20.5	5.52	4.14	4.83	225	Pass	
	1133	797040.7	399395.0	56.398	1.927	1.92	1.569	1.563	23	6.07	6.41	6.24	225	Pass	
2-Feb-17	1134	797017.3	399368.8	56.309	1.943	1.964	1.609	1.627	20.5	7.03	6.02	6.53	225	Pass	
	1135	797040.2	399340.8	56.291	1.924	1.921	1.536	1.533	25.5	4.3	4.45	4.38	208	Pass	
	1136	797019.2	399318.5	56.268	1.937	1.929	1.523	1.517	27	2.19	2.6	2.40	199	Pass	
	1137	797154.2	399304.3	55.765	1.958	1.969	1.547	1.556	26.5	1.62	1.07	1.35	225	Pass	
	1138	797185.7	399311.7	54.376	1.962	1.971	1.603	1.61	22.5	4.72	4.28	4.50	UTP	Pass	
	1139	797215.0	399303.4	49.799	1.965	1.982	1.609	1.623	22	4.84	4.01	4.43	UTP	Pass	
	1140	797230.0	399328.4	48.974	2.011	2.034	1.701	1.72	18.5	5.97	4.9	5.44	UTP	Pass	
	1141	797156.4	399346.0	55.092	2.032	2.044	1.639	1.648	24	-0.02	-0.61	-0.32	225	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
3-Feb-17	1142	797178.7	399361.6	53.099	2.028	2.055	1.656	1.678	22.5	1.47	0.15	0.81	225	Pass	
	1143	797156.5	399382.8	54.425	1.964	1.971	1.599	1.605	23	4.3	3.96	4.13	225	Pass	
	1144	797169.6	399408.9	53.086	1.966	1.974	1.595	1.602	23.5	3.83	3.44	3.64	225	Pass	
	1145	797165.1	399447.6	51.697	1.992	1.999	1.6	1.606	24.5	1.54	1.19	1.37	225	Pass	
	1146	797131.1	399451.0	52.966	1.99	2.002	1.6	1.61	24.5	1.76	1.17	1.47	225	Pass	
	1147	797132.7	399413.5	54.528	2.001	1.995	1.639	1.634	22	3.07	3.36	3.22	225	Pass	
	1148	797130.2	399379.9	55.288	1.998	1.998	1.599	1.599	25	0.88	0.88	0.88	UTP	Pass	
	1149	797094.2	399349.5	56.066	1.973	1.973	1.618	1.661	22	4.55	7.27	5.91	225	Pass	
	1150	797081.0	399401.7	55.33	2.003	1.992	1.598	1.575	25.5	0.31	-0.05	0.13	200	Pass	
	1151	797053.5	399422.6	55.447	1.886	1.898	1.481	1.553	27.5	4.63	7.99	6.31	182	Pass	
3-Feb-17	1152	797031.5	399438.8	55.556	1.978	1.971	1.617	1.645	22.5	4.04	6.49	5.27	213	Pass	
	1153	797035.2	399398.1	56.299	1.927	1.921	1.525	1.5	26.5	3.33	2.32	2.83	155	Pass	
	1154	797051.9	399355.8	56.4	1.932	1.941	1.517	1.555	27.5	2.29	3.83	3.06	161	Pass	
7-Feb-17	1094-1	797088.7	399368.8	55.508	2.074	2.085	1.771	1.78	17	4.08	3.58	3.83	UTP	Pass	
	1096-1	797071.0	399437.3	53.858	2.023	2.015	1.652	1.646	22.5	1.74	2.13	1.94	225	Pass	
	1155	797133.1	399438.8	53.782	2.05	2.071	1.69	1.707	21.5	1.39	0.38	0.89	167	Pass	
8-Feb-17	1156	797143.8	399387.9	55.066	2.076	2.063	1.704	1.694	22	-0.28	0.34	0.03	164	Pass	
	1157	797145.1	399345.0	55.603	2.079	2.115	1.73	1.76	20	1.04	-0.68	0.18	225	Pass	
	1158	797117.0	399353.2	56.084	1.998	1.99	1.65	1.644	21	4.1	4.48	4.29	225	Pass	
	1159	797116.0	399392.3	55.683	2.084	2.087	1.695	1.698	23	-1.67	-1.81	-1.74	225	Pass	
	1160	797092.6	399454.4	53.671	2.109	2.111	1.75	1.752	20.5	-0.7	-0.8	-0.75	225	Pass	
	1161	797065.5	399346.0	56.079	1.97	1.994	1.641	1.661	20	6.32	5.18	5.75	225	Pass	
	1162	797049.4	399379.6	56.455	2.033	2.039	1.753	1.758	16	7.06	6.78	6.92	225	Pass	
	1163	797052.3	399422.0	55.662	2.044	2.039	1.706	1.701	20	2.99	3.23	3.11	225	Pass	
	1164	797033.6	399468.3	54.711	2.031	2.039	1.644	1.651	23.5	0.43	0.04	0.24	200	Pass	
	1165	797060.4	399481.0	53.519	2.083	2.098	1.809	1.822	15	5.62	4.94	5.28	225	Pass	
10-Feb-17	1166	797076.1	399442.3	54.502	1.962	1.972	1.647	1.656	19	7.51	7.04	7.28	225	Pass	
	1167	797087.1	399394.6	55.573	1.959	1.954	1.642	1.638	19.5	7.48	7.72	7.60	UTP	Pass	
	1168	797100.9	399352.9	56.258	2.057	2.061	1.775	1.778	16	6.05	5.87	5.96	UTP	Pass	
	1179	797103.4	399392.7	56.191	2.038	2.043	1.721	1.725	18.5	4.55	4.32	4.44	225	Pass	
	1180	797090.6	399424.1	55.142	2.019	2.037	1.641	1.656	23	1.45	0.57	1.01	208	Pass	
	1181	797093.8	399451.1	54.263	1.901	1.912	1.555	1.564	22.5	7.81	7.27	7.54	146	Pass	
	1182	797116.8	399445.9	54.289	1.98	1.983	1.601	1.604	23.5	2.83	2.69	2.76	153	Pass	
	1183	797125.1	399420.1	55.244	2.016	2.016	1.614	1.614	25	0.04	0.04	0.04	157	Pass	
	1184	797118.0	399399.9	56.183	1.954	1.941	1.6	1.589	22	5.33	5.96	5.65	156	Pass	
	1185	797126.6	399378.9	56.395	1.967	1.98	1.581	1.592	24.5	2.86	2.21	2.54	213	Pass	
	1186	797222.9	399433.2	45.571	2.027	2.018	1.606	1.599	26	-1.58	-1.13	-1.36	151	Pass	
	1187	797230.6	399437.3	45.307	1.957	1.966	1.505	1.512	30	-0.92	-1.38	-1.15	97	Fail	1205
	1188	797233.1	399437.3	45.393	1.932	1.941	1.51	1.517	28	1.87	1.41	1.64	89	Fail	1207
	1189	797243.1	399435.4	45.094	1.811	1.834	1.378	1.396	31.5	5.69	4.49	5.09	75	Fail	1208
	1190	797248.5	399432.9	44.954	1.923	1.931	1.54	1.546	25	4.64	4.25	4.45	204	Pass	
	1191	797245.0	399424.5	45.162	1.898	1.895	1.479	1.476	28.5	3.29	3.44	3.37	113	Fail	1209
	1192	797235.4	399411.4	46.033	1.801	1.802	1.386	1.387	30	7.15	7.1	7.13	68	Fail	1210
	1193	797249.0	399405.7	46.249	1.93	1.921	1.528	1.521	26.5	3.22	3.68	3.45	155	Pass	
	1194	797249.2	399390.5	46.478	1.966	1.969	1.532	1.534	28.5	-0.15	-0.31	-0.23	225	Pass	
	1195	797227.2	399395.3	46.49	1.848	1.836	1.344	1.335	37.5	-0.2	0.45	0.13	48	Fail	1211

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13-Feb-17	1197	797226.4	399374.2	46.844	2.023	2.028	1.669	1.673	21	2.76	2.52	2.64	UTP	Pass	
	1198	797112.8	399364.2	56.781	2.015	2.015	1.695	1.695	19	5.2	5.2	5.20	186	Pass	
	1199	797103.9	399401.3	56.296	1.987	1.976	1.647	1.638	20.5	4.99	5.52	5.26	216	Pass	
	1200	797105.7	399440.3	54.806	1.91	1.913	1.512	1.515	26.5	4.21	4.06	4.14	147	Pass	
	1201	797137.3	399450.5	53.67	1.991	1.994	1.664	1.667	19.5	5.7	5.56	5.63	159	Pass	
	1202	797137.5	399410.9	55.623	2.085	2.088	1.809	1.812	15.5	5.4	5.26	5.33	157	Pass	
	1203	797127.7	399386.0	56.517	2.034	2.027	1.673	1.667	21.5	1.92	2.25	2.09	190	Pass	
	1204	797157.7	399374.8	55.523	2.075	2.086	1.714	1.723	21	0.4	-0.12	0.14	162	Pass	
	1205	797214.5	399322.8	50.898	1.976	1.965	1.599	1.59	23.5	3.06	3.6	3.33	147	Pass	
	1206	797240.7	399325.3	49.635	2.045	2.044	1.657	1.656	23.5	-0.19	-0.14	-0.17	225	Pass	
14-Feb-17	1207	797240.5	399396.3	46.313	2.073	2.071	1.823	1.821	13.5	7.49	7.58	7.54	UTP	Pass	
	1208	797245.1	399409.9	45.19	1.876	1.875	1.371	1.37	37	-1.27	-1.22	-1.25	160	Pass	
	1209	797247.2	399425.2	44.828	1.678	1.677	1.14	1.14	47	3.99	4.05	4.02	148	Pass	
	1210	797242.8	399431.4	44.675	1.963	1.963	1.521	1.521	29	-0.52	-0.52	-0.52	153	Pass	
	1211	797235.5	399413.3	44.663	1.962	1.962	1.552	1.552	26.5	1.5	1.5	1.50	158	Pass	
	1212	797103.3	399358.4	56.776	2.025	2.047	1.699	1.717	19	4.45	3.42	3.94	UTP	Pass	
	1213	797091.4	399397.0	56.357	1.893	1.885	1.513	1.506	25	5.96	6.35	6.16	225	Pass	
	1214	797098.9	399438.8	54.763	2.01	1.999	1.608	1.599	25	0.24	0.79	0.52	166	Pass	
	1215	797130.6	399451.6	53.956	1.973	1.973	1.579	1.579	25	2.15	2.15	2.15	172	Pass	
	1216	797156.8	399408.4	54.969	1.881	1.893	1.481	1.49	27	5.12	4.52	4.82	203	Pass	
22-Feb-17	1217	797148.7	399359.2	55.945	1.97	1.987	1.54	1.553	28	-0.04	-0.9	-0.47	155	Pass	
	1218	797228.2	399389.1	46.775	1.945	1.94	1.584	1.58	23	5.23	5.47	5.35	148	Pass	
	1219	797240.8	399410.3	45.143	1.907	1.903	1.524	1.521	25	5.26	5.46	5.36	225	Pass	
	1220	797238.1	399430.9	44.542	1.917	1.918	1.503	1.504	27.5	2.94	2.89	2.92	163	Pass	
	1221	797229.7	399418.2	44.511	1.901	1.894	1.551	1.546	22.5	7.57	7.91	7.74	182	Pass	
	1222	797048.3	399401.4	56.658	2.026	2.017	1.664	1.656	22	2.14	2.58	2.36	225	Pass	
	1223	797067.5	399388.2	56.533	1.986	1.984	1.587	1.585	25	1.3	1.4	1.35	170	Pass	
	1224	797089.4	399407.6	55.923	2.025	2.017	1.626	1.619	24.5	-0.14	0.26	0.06	135	Fail	1224-1
	1225	797117.3	399395.6	56.643	2.009	2.009	1.706	1.706	17.5	6.53	6.53	6.53	131	Fail	1225-1
	1226	797135.8	399422.9	55.321	2.065	2.061	1.78	1.776	16	5.56	5.74	5.65	146	Pass	
23-Feb-17	1224-1	797089.4	399407.6	55.923	1.95	1.94	1.619	1.611	20.5	6.93	7.41	7.17	177	Pass	
	1225-1	797117.3	399395.6	56.643	2.05	2.046	1.786	1.783	15	7.46	7.64	7.55	158	Pass	
24-Feb-17	1227	797041.2	399345.6	56.883	2	1.998	1.635	1.634	22.5	2.97	3.07	3.02	159	Pass	
	1228	797063.0	399373.4	57.194	1.953	1.968	1.61	1.622	21.5	6.05	5.33	5.69	180	Pass	
	1229	797038.3	399401.9	56.909	1.981	1.991	1.589	1.597	24.5	1.96	1.46	1.71	163	Pass	
	1230	797054.3	399435.3	55.651	1.972	1.975	1.598	1.6	23.5	3.4	3.25	3.33	153	Pass	
	1231	797036.8	399462.6	55.296	1.925	1.934	1.587	1.595	21.5	7.45	7.02	7.24	181	Pass	
	1232	797043.0	399387.0	57.143	2.04	2.063	1.66	1.679	23	0.51	-0.62	-0.06	166	Pass	
	1233	797065.6	399389.0	57.009	1.965	1.964	1.646	1.645	19.5	7.16	7.2	7.18	147	Pass	
	1234	797091.6	399391.4	57.025	1.985	1.99	1.604	1.608	23.5	2.51	2.26	2.39	210	Pass	
	1235	797127.8	399394.3	56.761	1.975	1.977	1.663	1.664	19	7.18	7.09	7.14	211	Pass	
	1236	797201.9	399379.8	49.529	2.023	2.022	1.688	1.687	20	3.99	4.04	4.02	UTP	Pass	
27-Feb-17	1237	797206.7	399401.1	48.818	1.815	1.814	1.471	1.47	23.5	11.1	11.15	11.13	225	Fail	no retest
	1238	797201.7	399427.0	48.451	2.034	2.034	1.649	1.649	23.5	0.44	0.44	0.44	196	Pass	
	1239	797245.3	399296.6	47.002	1.871	1.89	1.502	1.517	24.5	7.47	6.53	7.00	178	Pass	
	1240	797071.6	399371.0	57.128	2.009	2.002	1.713	1.707	17.5	6.94	7.27	7.11	218	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
28-Feb-17	1241	797069.4	399408.9	56.726	1.902	1.91	1.5	1.506	27	4.24	3.84	4.04	209	Pass	
	1242	797111.9	399370.1	56.88	2.036	2.028	1.764	1.757	15.5	7.49	7.86	7.68	UTP	Pass	
	1243	797105.6	399408.4	56.294	1.955	1.945	1.625	1.617	20.5	6.8	7.28	7.04	211	Pass	
	1244	797092.1	399435.6	55.765	1.994	2.008	1.664	1.675	20	5.35	4.69	5.02	177	Pass	
	1245	797132.5	399427.5	55.817	1.952	1.954	1.54	1.542	26.5	1.79	1.69	1.74	151	Pass	
	1246	797130.2	399391.7	56.868	2.06	2.054	1.713	1.708	20.5	1.85	2.14	2.00	225	Pass	
	1247	797232.0	399436.7	45.522	2.004	1.997	1.631	1.626	23	2.32	2.66	2.49	152	Pass	
	1248	797248.6	399420.3	46.036	2.017	2.004	1.625	1.615	24	0.62	1.26	0.94	172	Pass	
	1249	797230.1	399402.0	46.863	2.072	2.085	1.767	1.778	17.5	4.05	3.45	3.75	225	Pass	
	1250	797205.4	399386.5	49.499	1.919	1.913	1.572	1.567	22	7.05	7.35	7.20	225	Pass	
	1251	797201.3	399414.6	49.094	2	2.006	1.627	1.632	23	2.43	2.14	2.29	225	Pass	
	1252	797230.2	399312.6	50.443	1.998	2.003	1.702	1.706	17.5	7.37	7.14	7.26	225	Pass	
	1253	797230.6	399293.0	48.007	1.966	1.967	1.544	1.545	27.5	0.62	0.57	0.60	162	Pass	
	1254	797230.6	399272.2	47.799	2.011	2.009	1.707	1.706	18	6.39	6.49	6.44	UTP	Pass	
	1255	797245.2	399283.6	47.852	1.976	1.961	1.613	1.601	22.5	3.95	4.68	4.32	202	Pass	
	1256	797252.3	399303.7	48.083	2.006	2.006	1.72	1.72	16.5	7.72	7.72	7.72	181	Pass	
	1257	797032.7	399337.6	57.196	2.048	2.06	1.747	1.758	17	5.22	4.66	4.94	225	Pass	
	1258	797053.5	399398.0	57.003	2.066	2.068	1.703	1.704	21.5	0.61	0.51	0.56	225	Pass	
	1259	797030.7	399455.7	56.187	1.977	1.979	1.662	1.664	19	6.93	6.84	6.89	184	Pass	
	1260	797104.7	399446.2	55.337	2.044	2.058	1.67	1.681	22.5	0.73	0.05	0.39	223	Pass	
	1261	797140.5	399406.0	56.472	2.049	2.037	1.74	1.73	18	4.65	5.21	4.93	225	Pass	
	1262	797131.0	399354.6	56.797	2.136	2.154	1.828	1.843	17	1.48	0.65	1.07	225	Pass	
	1263	797178.2	399365.2	54.451	2.116	2.114	1.808	1.806	17	2.24	2.34	2.29	225	Pass	
	1264	797174.8	399422.6	54.051	1.974	1.97	1.642	1.639	20	5.99	6.18	6.09	217	Pass	
	1265	797205.1	399438.3	48.132	1.978	1.982	1.659	1.662	19.5	6.63	6.45	6.54	200	Pass	
	1266	797235.6	399439.0	45.679	1.974	1.968	1.647	1.642	20	6.29	6.57	6.43	225	Pass	
	1267	797243.7	399404.0	46.887	2.006	2.007	1.661	1.661	21	3.96	3.91	3.94	225	Pass	
	1268	797212.0	399402.2	48.743	1.934	1.94	1.567	1.572	23.5	5.26	4.96	5.11	UTP	Pass	
	1269	797201.3	399358.6	49.991	1.97	1.963	1.647	1.641	19.5	6.71	7.04	6.88	UTP	Pass	
	1270	797239.4	399370.8	47.49	2.011	2.009	1.67	1.668	20.5	4.06	4.15	4.11	225	Pass	
	1271	797246.8	399342.8	48.932	1.896	1.911	1.548	1.56	22.5	7.84	7.11	7.48	UTP	Pass	
	1272	797234.0	399309.9	49.778	1.958	1.97	1.602	1.611	22.5	5.04	4.46	4.75	UTP	Pass	
1-Mar-17	1273	797231.9	399261.7	47.707	1.938	1.949	1.608	1.617	20.5	7.43	6.91	7.17	225	Pass	
	1274	797143.1	399355.5	56.602	2.016	2.015	1.664	1.664	21	3.19	3.24	3.22	204	Pass	
	1275	797133.4	399406.5	56.705	1.972	1.983	1.626	1.635	21.5	5.15	4.62	4.89	215	Pass	
	1276	797135.1	399451.4	54.649	1.982	1.973	1.665	1.657	19	6.61	7.04	6.83	210	Pass	
	1277	797112.6	399376.8	57.148	1.971	1.983	1.639	1.649	20.5	6.09	5.52	5.81	187	Pass	
	1278	797073.7	399323.8	56.309	2.104	2.108	1.758	1.761	19.5	0.29	0.1	0.20	225	Pass	
	1279	797055.3	399400.9	56.932	2.002	2.001	1.637	1.636	22.5	2.85	2.89	2.87	209	Pass	
	1280	797043.7	399478.6	55.25	2.007	1.988	1.63	1.614	23	1.91	2.83	2.37	214	Pass	
2-Mar-17	1281	797022.7	399430.4	56.865	2.023	2.032	1.718	1.726	17.5	5.88	5.46	5.67	225	Pass	
	1282	797019.1	399356.0	57.27	2.056	2.054	1.684	1.682	22	0.43	0.52	0.48	189	Pass	
	1283	797167.3	399357.4	55.686	2.093	2.074	1.757	1.741	19	1.3	2.2	1.75	225	Pass	
	1284	797157.9	399394.1	56.215	1.994	2	1.61	1.615	24	1.99	1.7	1.85	225	Pass	
	1285	797164.0	399429.2	54.798	1.989	2	1.649	1.658	20.5	4.91	4.38	4.65	225	Pass	
	1286	797084.7	399472.9	52.942	2.075	2.091	1.787	1.8	16	4.99	4.26	4.63	225	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
3-Mar-17	1287	797136.2	399474.7	51.01	2.088	2.079	1.822	1.814	14.5	5.94	6.34	6.14	225	Pass	
	1288	797166.4	399471.4	48.967	2.087	2.091	1.777	1.78	17.5	3.16	2.98	3.07	UTP	Pass	
	1289	797214.9	399330.3	50.33	2.053	2.058	1.766	1.771	16	5.92	5.69	5.81	UTP	Pass	
	1290	797222.4	399274.4	47.96	2.099	2.104	1.774	1.778	18.5	1.81	1.57	1.69	225	Pass	
	1291	797247.8	399308.7	49.102	2.054	2.059	1.732	1.736	18.5	3.64	3.41	3.53	208	Pass	
	1292	797238.4	399384.5	47.352	2.076	2.078	1.787	1.789	16	4.95	4.85	4.90	205	Pass	
	1293	797210.3	399410.8	48.923	2.053	2.063	1.74	1.748	18	4.24	3.78	4.01	217	Pass	
	1294	797234.2	399422.1	46.359	2.079	2.088	1.726	1.734	20.5	0.8	0.37	0.59	225	Pass	
	1295	797206.1	399369.9	49.869	2.065	2.05	1.749	1.737	18	3.65	4.35	4.00	209	Pass	
	1296	797021.6	399316.2	56.833	1.987	1.971	1.65	1.637	20.5	5.19	5.95	5.57	225	Pass	
	1297	797029.7	399374.3	57.721	2.093	2.105	1.745	1.755	20	0.56	-0.01	0.28	225	Pass	
	1298	797018.0	399435.4	56.91	2.09	2.089	1.772	1.771	18	2.58	2.62	2.60	225	Pass	
	1299	797031.4	399482.1	55.284	1.964	1.966	1.629	1.631	20.5	6.17	6.08	6.13	225	Pass	
	1300	797064.2	399442.1	56.611	2.042	2.041	1.698	1.697	20.5	2.7	2.74	2.72	UTP	Pass	
	1301	797068.9	399382.6	57.101	2.039	2.029	1.761	1.752	16	6.98	7.43	7.21	UTP	Pass	
	1302	797070.3	399334.3	56.685	2.091	2.094	1.75	1.752	19.5	1.08	0.94	1.01	UTP	Pass	
	1303	797118.7	399342.1	56.3	2.117	2.125	1.791	1.798	18	1.07	0.7	0.89	UTP	Pass	
	1304	797111.7	399407.2	57.053	2.076	2.066	1.75	1.741	18.5	2.55	3.02	2.79	225	Pass	
	1305	797105.3	399453.2	55.296	2.006	2.01	1.679	1.682	19.5	5.1	4.91	5.01	174	Pass	
	1306	797145.3	399442.0	55.411	2.012	2.012	1.613	1.613	25	0.34	0.34	0.34	149	Pass	
6-Mar-17	1307	797159.8	399398.7	56.112	2.045	2.031	1.713	1.701	19.5	3.35	4.01	3.68	225	Pass	
	1308	797162.1	399355.2	56.101	2.173	2.182	1.895	1.903	14.5	2.02	1.62	1.82	225	Pass	
	1309	797246.6	399265.5	49.11	1.875	1.877	1.411	1.412	33	1.33	1.23	1.28	66	Fail	1309-1
	1310	797230.1	399284.7	48.993	1.869	1.876	1.403	1.409	33	1.45	1.09	1.27	77	Fail	1310-1
	1311	797247.4	399338.2	49.117	1.956	1.958	1.564	1.565	25	2.86	2.76	2.81	189	Pass	
	1312	797226.5	399372.8	47.999	1.97	1.986	1.601	1.614	23	3.78	3	3.39	225	Pass	
	1313	797225.7	399428.5	47.082	1.984	1.983	1.637	1.637	21	4.7	4.75	4.73	205	Pass	
	1314	797242.7	399411.5	47.295	1.991	1.982	1.601	1.594	24.5	1.71	2.16	1.94	159	Pass	
	1315	797204.5	399395.8	50.052	1.994	1.996	1.606	1.608	24	1.72	1.62	1.67	167	Pass	
	1316	797179.5	399310.2	55.017	1.961	1.964	1.551	1.553	26.5	1.56	1.41	1.49	225	Pass	
7-Mar-17	1317	797179.1	399346.7	54.06	1.966	1.967	1.59	1.591	23.5	3.5	3.45	3.48	225	Pass	
	1318	797167.5	399390.3	55.981	1.96	1.982	1.626	1.644	20.5	6.37	5.32	5.85	225	Pass	
	1319	797170.7	399434.3	54.43	1.952	1.947	1.566	1.562	24.5	3.41	3.66	3.54	204	Pass	
	1309-1	797246.6	399265.5	49.11	2.015	2.013	1.679	1.677	20	4.22	4.31	4.27	201	Pass	
	1310-1	797230.1	399284.7	48.993	2.002	2.006	1.666	1.669	20	4.68	4.48	4.58	225	Pass	
	1320	797029.0	399319.7	57.159	1.991	1.993	1.612	1.613	23.5	2.37	2.27	2.32	225	Pass	
	1321	797026.5	399394.3	58.154	2.022	1.996	1.639	1.618	23.5	1.02	2.29	1.66	213	Pass	
	1322	797026.1	399448.9	57.41	1.95	1.941	1.601	1.594	22	5.81	6.25	6.03	225	Pass	
	1323	797049.1	399472.8	56.224	1.92	1.945	1.568	1.588	22.5	6.7	5.49	6.10	225	Pass	
	1324	797059.6	399427.6	56.921	1.995	1.983	1.618	1.609	23.5	2.39	2.98	2.69	225	Pass	
	1325	797071.4	399363.3	57.123	2.013	2.001	1.656	1.646	21.5	2.98	3.56	3.27	225	Pass	
	1326	797105.7	399344.1	56.825	1.95	1.954	1.549	1.553	26	2.55	2.35	2.45	210	Pass	
	1327	797090.8	399398.7	57.693	1.945	1.944	1.56	1.56	24.5	3.75	3.8	3.78	195	Pass	
	1328	797089.0	399465.1	54.649	1.961	1.955	1.557	1.552	26	1.95	2.25	2.10	196	Pass	
	1329	797121.1	399447.7	55.893	2.012	2.029	1.644	1.658	22.5	2.33	1.51	1.92	207	Pass	
	1330	797145.6	399350.8	56.773	2.012	1.991	1.657	1.64	21.5	3.13	4.15	3.64	225	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
20-Mar-17	1331	797070.6	399334.4	56.856	1.997	1.996	1.638	1.637	22	3.42	3.46	3.44	225	Pass	
	1332	797013.9	399314.6	57.203	2.002	1.988	1.606	1.595	24.5	0.93	1.62	1.28	169	Pass	
	1333	797022.5	399350.7	58.206	1.993	1.997	1.632	1.635	22	3.47	3.27	3.37	174	Pass	
	1334	797021.5	399392.7	58.514	1.989	1.988	1.594	1.593	25	1.46	1.51	1.49	152	Pass	
	1335	797024.3	399436.7	57.998	2.011	2.002	1.681	1.674	19.5	4.77	5.19	4.98	225	Pass	
	1336	797031.0	399472.9	56.58	1.98	1.97	1.651	1.642	20	5.93	6.41	6.17	225	Pass	
	1337	797046.4	399452.4	57.289	1.96	1.966	1.646	1.651	19	7.66	7.38	7.52	225	Pass	
	1338	797046.8	399414.5	57.876	2.02	2.011	1.694	1.686	19.5	4.64	5.06	4.85	225	Pass	
	1339	797057.6	399382.6	58.179	1.988	1.99	1.649	1.651	20.5	5.04	4.94	4.99	225	Pass	
	1340	797069.4	399353.2	57.801	2.038	2.05	1.726	1.737	18	4.9	4.34	4.62	225	Pass	
	1341	797076.4	399325.9	56.652	2.028	2.05	1.658	1.676	22.5	1.57	0.5	1.04	225	Pass	
	1342	797221.4	399336.7	49.926	2.081	2.079	1.76	1.759	18	2.73	2.83	2.78	225	Pass	
	1343	797244.0	399335.7	49.654	2.109	2.076	1.784	1.756	18	1.45	2.99	2.22	225	Pass	
	1344	797240.4	399363.8	49.194	2.102	2.094	1.759	1.752	19.5	0.55	0.93	0.74	225	Pass	
	1345	797246.6	399394.7	48.324	1.986	1.982	1.628	1.625	22	3.91	4.1	4.01	225	Pass	
	1346	797235.8	399432.2	47.115	1.99	1.978	1.661	1.651	20	5.59	6.16	5.88	205	Pass	
	1347	797211.8	399426.4	48.681	2.041	2.022	1.681	1.666	21.5	1.77	2.69	2.23	210	Pass	
	1348	797220.3	399387.0	48.775	1.898	1.898	1.527	1.527	24.5	6.37	6.37	6.37	191	Pass	
	1349	797209.0	399358.2	50.173	1.977	1.97	1.656	1.65	19.5	6.55	6.88	6.72	225	Pass	
21-Mar-17	1350	797209.4	399315.9	50.988	2.138	2.128	1.82	1.812	17.5	0.81	1.27	1.04	225	Pass	
	1351	797225.6	399288.5	50.401	1.989	2.01	1.605	1.622	24	2.17	1.14	1.66	152	Pass	
	1352	797252.4	399301.8	49.964	2.068	2.061	1.767	1.761	17	4.46	4.79	4.63	225	Pass	
	1353	797256.8	399329.8	49.48	1.976	1.977	1.584	1.585	25	2.12	2.07	2.10	225	Pass	
	1354	797238.8	399351.4	49.532	1.976	1.966	1.656	1.648	19.5	6.69	7.16	6.93	225	Pass	
	1355	797228.7	399379.8	48.991	1.943	1.929	1.572	1.561	23.5	4.7	5.39	5.05	225	Pass	
	1356	797226.7	399414.5	48.393	1.94	1.964	1.567	1.586	24	4.65	3.47	4.06	225	Pass	
	1357	797202.9	399426.9	49.515	1.972	1.947	1.625	1.604	21.5	5.09	6.29	5.69	225	Pass	
	1358	797200.7	399405.8	50.33	2.011	1.997	1.666	1.655	20.5	3.82	4.49	4.16	225	Pass	
	1359	797210.1	399365.9	50.07	2.01	2.004	1.685	1.68	19.5	5.07	5.35	5.21	225	Pass	
	1360	797207.2	399346.8	50.339	2.013	2.001	1.671	1.662	20.5	3.94	4.52	4.23	225	Pass	
22-Mar-17	1361	797055.3	399320.6	57.046	1.93	1.933	1.528	1.53	26.5	3.18	3.03	3.11	207	Pass	
	1362	797054.1	399366.5	58.404	1.92	1.913	1.533	1.527	25.5	4.5	4.84	4.67	225	Pass	
	1363	797051.8	399416.3	58.099	1.935	1.938	1.521	1.524	27	2.3	2.14	2.22	213	Pass	
	1364	797045.5	399468.7	56.619	1.94	1.945	1.584	1.588	22.5	5.76	5.51	5.64	225	Pass	
	1365	797074.6	399476.8	54.838	1.988	1.992	1.593	1.596	25	1.48	1.29	1.39	225	Pass	
	1366	797083.1	399417.8	57.72	2.016	2.02	1.673	1.677	20.5	3.75	3.56	3.66	UTP	Pass	
	1367	797097.3	399361.7	57.913	1.977	1.982	1.669	1.673	18.5	7.4	7.17	7.29	178	Pass	
	1368	797117.9	399471.7	53.366	1.863	1.851	1.576	1.566	18	12.95	13.51	13.23	138	Fail	1368-1
	1369	797151.2	399473.6	51.164	1.968	1.958	1.592	1.584	23.5	3.45	3.94	3.70	201	Pass	
	1370	797176.9	399318.1	55.23	2.02	2.038	1.723	1.739	17	6.51	5.68	6.10	UTP	Pass	
23-Mar-17	1368-1	797117.9	399471.7	53.366	1.962	1.983	1.607	1.624	22	5	3.98	4.49	203	Pass	
	1371	797232.4	399258.7	50.532	2.01	2.004	1.647	1.642	22	2.71	3.01	2.86	171	Pass	
	1372	797203.5	399268.1	50.271	1.983	1.961	1.604	1.586	23.5	2.7	3.78	3.24	161	Pass	
	1373	797233.0	399293.6	50.496	1.978	1.989	1.632	1.641	21	4.95	4.42	4.69	178	Pass	
	1374	797217.0	399328.5	50.69	1.989	1.973	1.673	1.659	19	6.43	7.18	6.81	194	Pass	
	1375	797228.3	399353.3	49.691	2.094	2.074	1.862	1.844	12.5	7.81	8.69	8.25	UTP	Fail	No retest

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
24-Mar-17	1376	797206.5	399366.4	50.388	2.026	2.02	1.721	1.716	17.5	5.74	6.02	5.88	225	Pass	
	1377	797206.1	399409.6	49.846	2.047	2.044	1.757	1.755	16.5	5.94	6.08	6.01	225	Pass	
	1378	797231.6	399421.2	48.361	2.037	2.032	1.681	1.677	21	2.15	2.39	2.27	225	Pass	
	1379	797246.3	399398.5	48.439	2.028	2.028	1.682	1.682	20.5	3.08	3.08	3.08	196	Pass	
	1380	797253.1	399380.0	48.809	2.025	2.017	1.698	1.691	19.5	4.41	4.79	4.60	190	Pass	
	1381	797152.0	399354.1	57.266	2.039	2.054	1.733	1.745	17.5	5.19	4.49	4.84	219	Pass	
	1382	797144.5	399388.2	57.778	2.007	1.996	1.615	1.606	24.5	1	1.54	1.27	166	Pass	
	1383	797136.6	399417.0	57.474	2.007	2.013	1.648	1.653	22	3.06	2.77	2.92	179	Pass	
	1384	797125.1	399452.0	55.735	2.116	2.106	1.773	1.764	19.5	0.02	0.5	0.26	187	Pass	
	1385	797175.9	399470.4	49.46	2.103	2.121	1.757	1.772	19.5	0.35	-0.5	-0.08	193	Pass	
11-Apr-16	1386	797245.5	399402.5	48.621	1.976	1.976	1.607	1.607	23	3.59	3.59	3.59	225	Pass	
	1387	797213.9	399362.6	50.055	1.984	1.97	1.658	1.646	19.5	6	6.67	6.34	225	Pass	
	1388	797226.6	399311.1	50.978	2.017	2.017	1.618	1.618	24.5	0.18	0.18	0.18	225	Pass	
	1389	797207.5	399273.5	50.605	2.034	2.008	1.704	1.682	19.5	3.91	5.13	4.52	155	Pass	
	1390	797240.1	399275.4	50.463	2.022	2.014	1.672	1.666	21	3.09	3.48	3.29	150	Pass	
	1391	797043.0	399346.5	59.138	1.955	1.954	1.587	1.586	23	3.29	3.34	3.32	146	Pass	
	1392	797033.8	399411.8	59.711	1.999	1.994	1.594	1.59	25.5	-0.65	-0.4	-0.53	146	Pass	
	1393	797032.3	399469.6	57.47	1.964	1.935	1.591	1.568	23.5	2.67	4.11	3.39	163	Pass	
	1394	797058.7	399447.6	58.038	1.932	1.935	1.529	1.531	26.5	1.98	1.83	1.91	142	Pass	
	1395	797057.4	399394.7	59.118	1.934	1.925	1.566	1.558	23.5	4.08	4.53	4.31	168	Pass	
21-Apr-17	1396	797069.4	399374.7	58.685	1.906	1.904	1.531	1.529	24.5	4.7	4.8	4.75	146	Pass	
	1397	797044.8	399350.5	59.262	2.001	1.992	1.605	1.598	24.5	-0.18	0.27	0.05	142	Pass	
	1398	797036.9	399382.3	59.807	2.034	2.031	1.678	1.676	21	1.1	1.24	1.17	144	Pass	
	1399	797040.3	399435.9	59.458	2.06	2.063	1.687	1.689	22	-0.96	-1.11	-1.04	156	Pass	
	1400	797067.4	399414.6	59.095	2.093	2.099	1.739	1.744	20.5	-1.03	-1.32	-1.18	161	Pass	
	1401	797074.9	399376.6	58.778	2.031	2.036	1.668	1.672	22	0.74	0.5	0.62	175	Pass	
	1402	797211.0	399254.7	51.34	2.066	2.086	1.699	1.715	21.5	-0.82	-1.79	-1.31	218	Pass	
	1403	797174.6	399261.1	52.873	1.966	1.98	1.625	1.637	21	4.59	3.91	4.25	202	Pass	
	1404	0.0	0.0	0	2.058	2.05	1.717	1.711	20	1.12	1.51	1.32	167	Pass	
	1405	0.0	0.0	0	2.035	2.039	1.723	1.726	18	3.76	3.57	3.67	206	Pass	
	1406	0.0	0.0	0	2.089	2.08	1.754	1.747	19	0.32	0.75	0.54	162	Pass	
	1407	0.0	0.0	0	2.002	1.995	1.634	1.629	22.5	1.56	1.9	1.73	145	Pass	
	1408	0.0	0.0	0	1.948	1.948	1.567	1.567	24.5	2.79	2.79	2.79	207	Pass	
	1409	0.0	0.0	0	1.956	1.965	1.564	1.571	25	1.78	1.33	1.56	210	Pass	
	1410	0.0	0.0	0	2.049	2.048	1.789	1.788	14.5	6.5	6.55	6.53	164	Pass	
	1411	0.0	0.0	0	1.994	1.999	1.676	1.68	19	4.93	4.69	4.81	UTP	Pass	
	1412	0.0	0.0	0	2.026	2.035	1.654	1.661	22.5	0.39	-0.06	0.17	166	Pass	
	1413	0.0	0.0	0	2.01	2.006	1.69	1.687	19	4.24	4.43	4.34	203	Pass	
	1414	0.0	0.0	0	1.994	2.001	1.652	1.658	20.5	3.49	3.15	3.32	185	Pass	
	1415	0.0	0.0	0	2.038	2.035	1.761	1.759	15.5	5.86	6	5.93	161	Pass	
	1416	0.0	0.0	0	2.076	2.057	1.806	1.789	15	4.83	5.7	5.27	209	Pass	
	1417	0.0	0.0	0	1.972	1.983	1.637	1.646	20.5	4.72	4.19	4.46	144	Pass	
	1418	0.0	0.0	0	2.087	2.081	1.776	1.771	17.5	1.88	2.16	2.02	168	Pass	
	1419	0.0	0.0	0	2.073	2.081	1.775	1.782	17	3.22	2.85	3.04	UTP	Pass	
	1420	0.0	0.0	0	1.952	1.951	1.624	1.624	20	5.95	6	5.98	218	Pass	
	1421	0.0	0.0	0	2.026	2.026	1.719	1.719	18	4.45	4.45	4.45	216	Pass	

Date	Test #	Corrected GPS Coord E	Corrected GPS Coord N	Corrected Range-finder Height (m)	Field Wet Density (t/m³)	Field Wet Density @ 90° (t/m³)	Calc Dry Density (t/m³)	Calc Dry Density @ 90° (t/m³)	Lab Water Content (%)	Air Voids (%)	Air Voids @ 90° (%)	Average Air Voids (%)	Average Corrected Shear Strength (kPa)	Pass/Fail	Re-test Number
	1422	0.0	0.0	0	2.097	2.095	1.802	1.801	16.5	2.53	2.62	2.58	190	Pass	
	1423	797077.5	399326.4	57.979	2.051	2.045	1.689	1.684	21.5	0.05	0.34	0.20	174	Pass	
	1424	797071.0	399315.6	57.595	2.026	2.029	1.716	1.718	18	4.22	4.08	4.15	151	Pass	
	1425	797104.3	399353.3	57.823	2.07	2.061	1.781	1.773	16	3.88	4.3	4.09	165	Pass	