SOILWATER CONSULTANTS

COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	
Prepared for:	TRONOX MANAGEMENT PTY LTD
Date of Issue:	23/06/2014
Project No.:	TRX-007-1-5
Document Ref:	Tronox_Cooljarloo_West_ASS_Program_C.3

Distribution:

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Soilwater Consultants (SWC)

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This report documents the results of a detailed Acid Sulphate Soil (ASS) Survey that was conducted for the proposed Cooljarloo West Mineral Sands Project, to be developed by Tronox Management (Tronox). This mineral sands project will involve dredge mining of ore contained within the Yoganup Formation and subsequent reconstruction and rehabilitation of the mine voids.

The ASS Survey involved sampling 40 Reverse-circulation (RC) drillholes, at 1 m vertical intervals, strategically located across the deposit. Depth of drilling varied from 12 – 72 m, intersecting all Superficial Formations, with a total 1,806 samples collected and field screen tested for pH_F and pH_{FOX}. Incubation and detailed ASS testing was undertaken on selected samples to confirm the screen test results and to quantify the potential acidity and buffering capacity of the materials likely to be disturbed during mining. In addition, multi-element composition and potential mobilisation under neutral and acidic leach conditions was determined on selected samples.

The results of the ASS Survey identified that Actual Acid Sulphate Soils (AASS) were unlikely to be present at this deposit and that Potential Acid Sulphate Soils (PASS) were confined to the basal portion of the Guildford Formation and the clayey sediments associated with a large lacustrine system located along the western margin of the deposit. A strong relationship between PASS distribution and 'black' soil colour, as provided in the geological drilling data, was identified, thus enabling block modelling based on soil colour to be undertaken to quantify PASS volumes. Given this relationship with soil colour, field identification of PASS materials will be achievable, thus providing an effective management strategy for the indentification and investigation of PASS.

This report also addressed the potential downstream impacts of PASS materials on the various processing by-products to facilitate the establishment of cost effective and environmentally sound PASS monitoring programs to assess impacts. In addition, a variety of PASS management strategies were also considered to allow for appropriate management of PASS during mining (i.e. disposal and storage solutions of PASS).

This report represents the first stage in ASS management for the site and continued investigation should be undertaken as the project develops to ensure that no undue environmental impacts occur in response to mining.

DOCUMENT STATUS RECORD

Project Title:	COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY
Project No.:	TRX-007-1-5
Client:	TRONOX MANAGEMENT PTY LTD

Revision History					
Revision Code*	Date Revised	Revision Comments	Signatures		
			Originator	Reviewer	Approved
A.1	22/10/13	Internal review of draft report	HC	KF	
B.1	28/11/13	Draft report issued to client	HC	ASP	ASP
C.2	31/01/14	Final report issued to client	HC	MT	ASP
C.3	10/06/14	Revised report issued to client	HC	SC	ASP
C.4	23/06/14	Revised report issued to client	HC	SC	ASP

Revision Code*

A - Report issued for internal review

B - Draft report issued for client review

C - Final report issued to client

LIMITATIONS

The sole purpose of this report and the associated services performed by Soilwater Consultants (SWC) was to undertake an Acid Sulfate Soils (ASS) Survey for the proposed Cooljarloo West Project. This work was conducted in accordance with the Scope of Work presented to Tronox Management ('the Client'). SWC performed the services in a manner consistent with the normal level of care and expertise exercised by members of the earth sciences profession. Subject to the Scope of Work, the ASS study was confined to Cooljarloo West Deposit (geographical extent). No extrapolation of the results and recommendations reported in this study should be made to areas external to this project area. In preparing this study, SWC has relied on relevant published reports and guidelines, and information provided by the Client. All information is presumed accurate and SWC has not attempted to verify the accuracy or completeness of such information. While normal assessments of data reliability have been made, SWC assumes no responsibility or liability for errors in this information. All conclusions and recommendations are the professional opinions of SWC personnel. SWC is not engaged in reporting for the purpose of advertising, sales, promoting or endorsement of any client interests. No warranties, expressed or implied, are made with respect to the data reported or to the findings, observations and conclusions expressed in this report. All data, findings, observations and conclusions are based solely upon site conditions at the time of the investigation and information provided by the Client. This report has been prepared on behalf of and for the exclusive use of the Client, its representatives and advisors. SWC accepts no liability or responsibility for the use of this report by any third party.

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1 INTRODUCTION

Tronox Management Pty Ltd (Tronox) are proposing to mine the heavy mineral sand resources at the Cooljarloo West Deposit, which is located immediately to the west of their existing Cooljarloo Operations. Mining of this resource will involve excavation of a considerable volume of *in situ* material that has been deposited throughout the Quaternary Period (i.e. has experienced several cycles of marine transgression and regression) and exists in a saturated or variably-saturated condition. With the increasing awareness of Acid Sulfate Soils (ASS) on the Swan Coastal Plain (SCP) (DoE, 2006), Tronox commissioned Soilwater Consultants (SWC) to undertake this Survey to confirm the presence or absence of Actual Acid Sulfate Soils (AASS) and Potential Acid Sulfate Soils (PASS) in this region.

The approach taken in this ASS Survey followed the assessment framework outlined in the revised guidelines for the Identification and Management of Acid Sulfate Soils and Acidic Landscapes (DEC, 2013). This assessment framework is shown in Figure 1.1.

Other sources referred to in the preparation of this ASS Survey were:

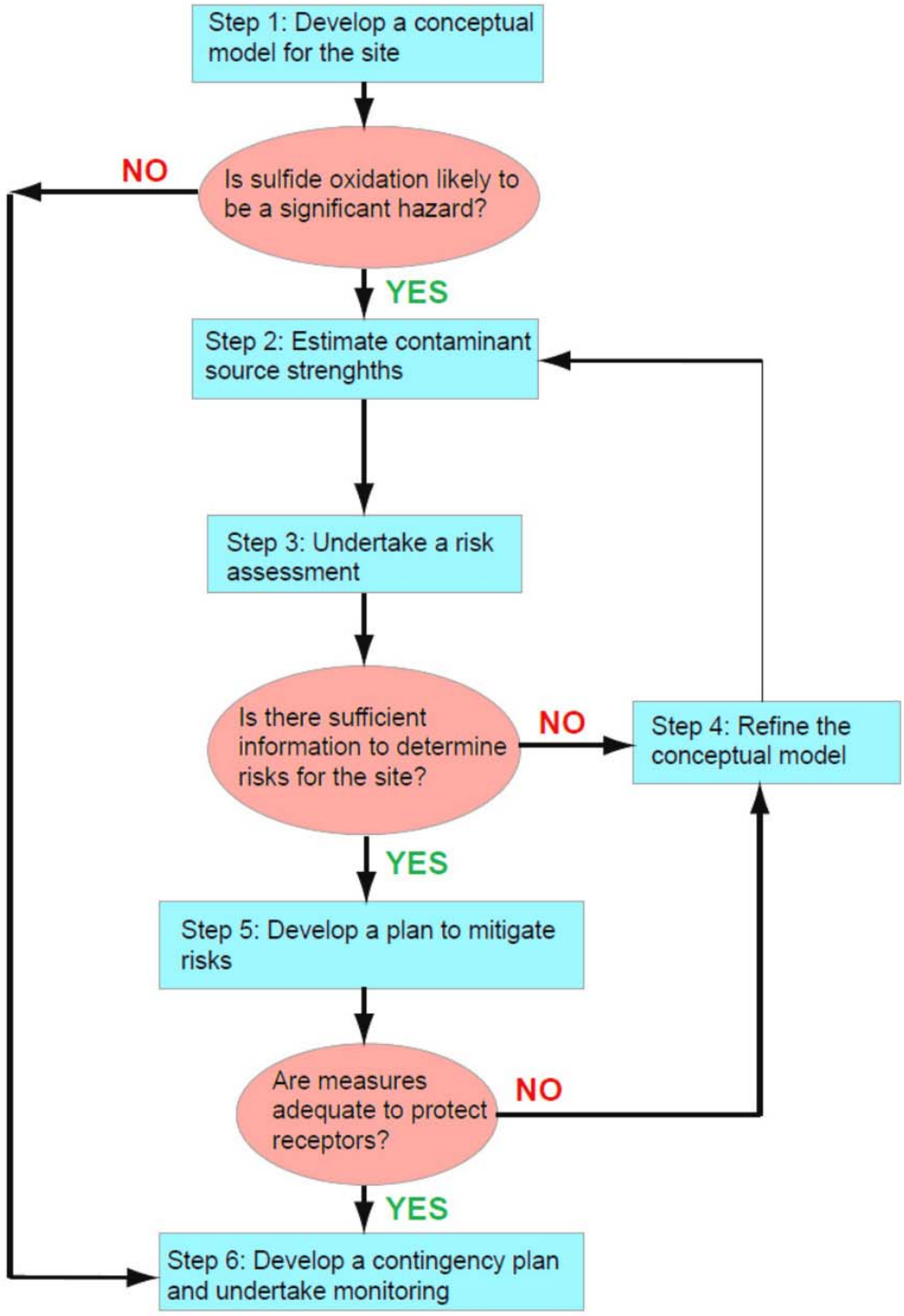
- Treatment and Management of Soils and Water in Acid Sulfate Soil Landscapes (DEC, 2011).
- Acid Sulfate Soils Manual (Stone and Ahern *et al.*, 1998).
- Analysis of Acid Sulfate Soils – Part 1: Dried sample – pre-treatment of samples (Standards Australia, 2006).
- Preparation of Acid Sulfate Soil Management Plan (ASSMP) (DoE, 2003).

The tasks undertaken by SWC included:

- Desktop analysis – This phase involves the review and interpretation of all available data related to ASS in the broader study area, including previous drilling data (i.e. data already obtained by Tronox Geologists), geological and morphological setting and ASS and PASS risk maps developed by government agencies. This review is required to establish the local and regional setting of the site and to incorporate the existing knowledge data that the Geologists have already collected.
- Screen laboratory testing which involved analysing all samples collected in the field (approximately 1,800 from 42 drillholes) for pH_F and pH_{FOX}.
- Review of screen test results and selection of samples for detailed ASS testing.
- Chip-tray incubation on selected drillholes to further characterise the sulfide oxidation and acidification process under ‘natural’ conditions.
- Review and development of relationships from screen test and detailed ASS results, in order to develop general management strategies for the handling and utilisation of all AASS and PASS materials within the Study Area.
- Compilation of all laboratory data and management plan into final report.

The general objectives of this ASS Survey were to:

- Establish whether ASS is present or absent within the sediments to be disturbed by mining operations at the Cooljarloo West Deposit.
- Quantify the pyritic content and spatial distribution of ASS at the site (i.e. determine the source strength).
- Assess the potential for both direct and indirect disturbance of ASS at this site.
- Assess the potential risk of metals release to the environment following sulfide disturbance.
- Propose strategies for the management of PASS within the proposed Cooljarloo West Mine Site.



TRONOX MANAGEMENT PTY LTD	Figure 1.1: Framework for assessing environmental risks associated with ASS (DEC, 2013)	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		

2 SITE DESCRIPTION

2.1 LOCATION OF COOLJARLOO WEST DEPOSIT

The proposed Cooljarloo West mine site is located approximately 150 km NNW of Perth along the Brand Highway, directly west of the existing Cooljarloo mineral sands mine site, within the Shire of Dandaragan (Figure 2.1). The maximum proposed disturbance area covers approximately 2,250 ha.

2.2 DESCRIPTION OF THE PROPOSED COOLJARLOO WEST DEPOSIT

The heavy mineral sands deposit consists of three strandlines (western, central and eastern) which run on a northwest-southeast strike, along a length of approximately 5 km (Figure 2.2). Mining is planned to follow a combination of dry overburden removal and wet (dredge) ore extraction methods, from four separate pits varying from approximately 54.3 to 109.4 ha, with intervening channels that will be used to float the dredge between pits. Details for each proposed mine pit are provided in Table 2.1. Following ore processing post-mine operations plan to backfill pits using tailings sand, slime and principal soil materials (overburden) to maintain pre-mine landscape function, supporting pre-existing land-use and remnant native vegetation.

Table 2.1: Details of the 3 proposed mine pits within the Cooljarloo West Project Area.

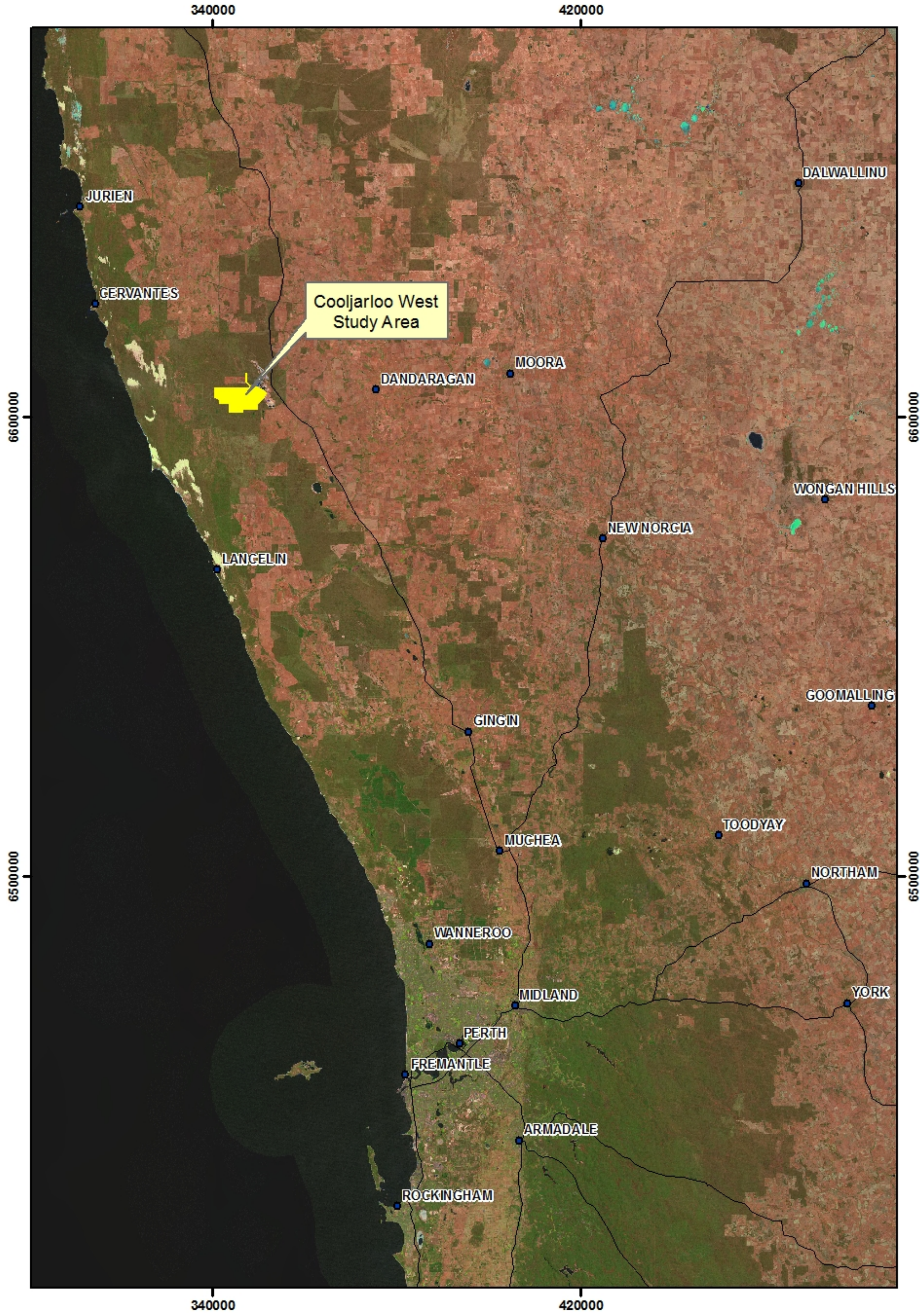
Pit	Area (ha)	Bottom elevation (m)
1	109.4	27
2	101.0	32
3	54.3	23
4	83.5	30

Dredge mining of open pits generally results in negligible groundwater dewatering and thus the potential for indirect disturbance of ASS at the Cooljarloo West Project is considered small.

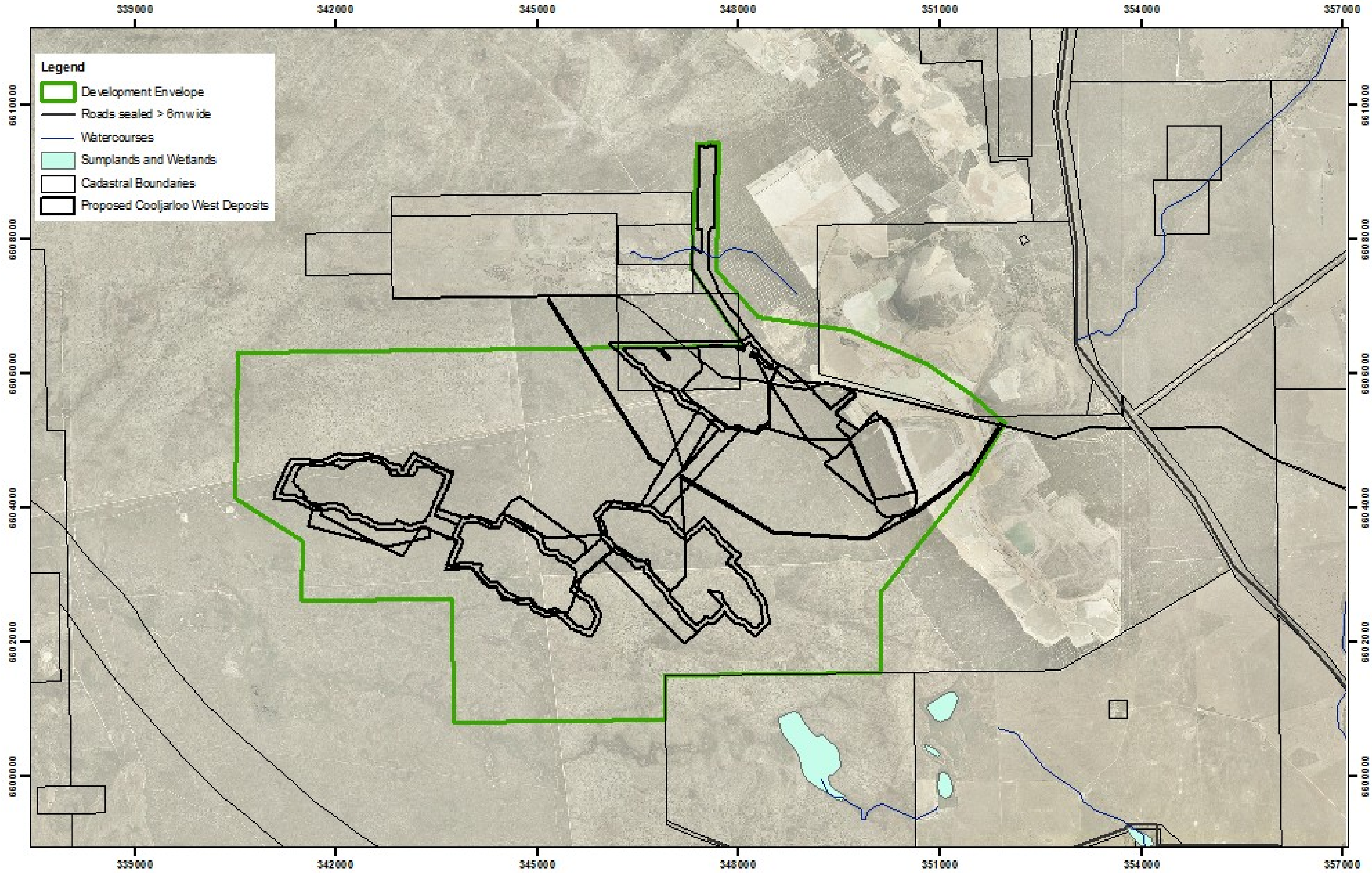
2.3 SITE ENVIRONMENT

2.3.1 GEOMORPHOLOGY OF THE COOLJARLOO WEST DEPOSIT

The Cooljarloo West deposit lies adjacent to the foot slopes of the Gingin Scarp, within the eastern portion of the Swan Coastal Plain (SCP; Figure 2.3). The Gingin Scarp was formed following sea level transgression and regression events during the late Pliocene (2.0 – 1.6 Mya; Kendrick, 1991) and represents an old erosional surface. During marine transgression/regression events the land surface corresponding to the present day Swan Coastal Plain developed in alluvial, fluvial, colluvial and aeolian depositional environments resulting in a complex of landforms and soil types within the gently undulating, westerly sloping regional land surface varying from 100 m AHD to 140 M AHD (West to East; Figure 2.4).



TRONOX MANAGEMENT PTY LTD	Figure 2.1: Regional location of the Cooljarloo West Project Area
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	



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COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY

Figure 2.2: Site layout of the proposed Cooljarloo West Project Area.

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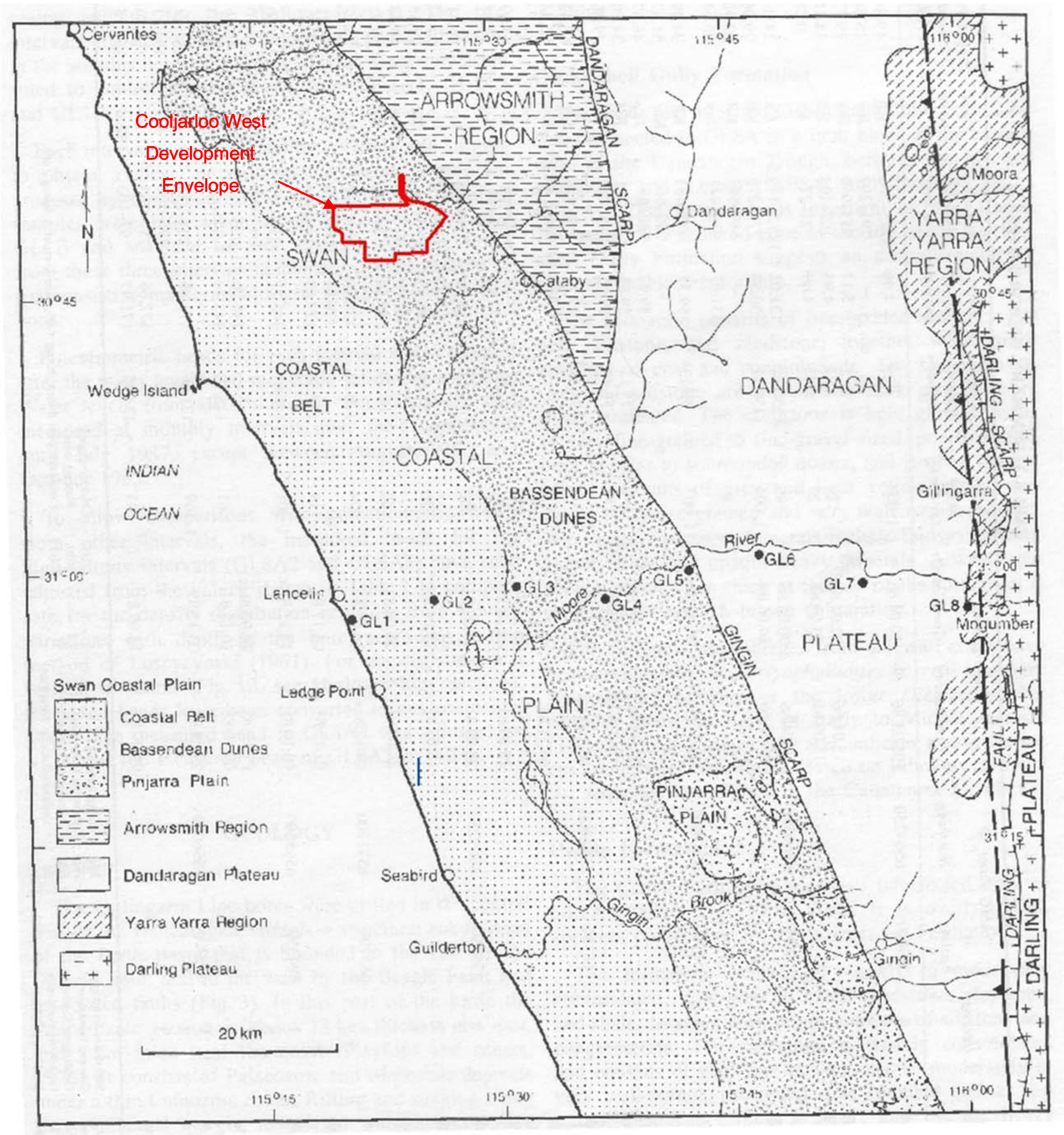
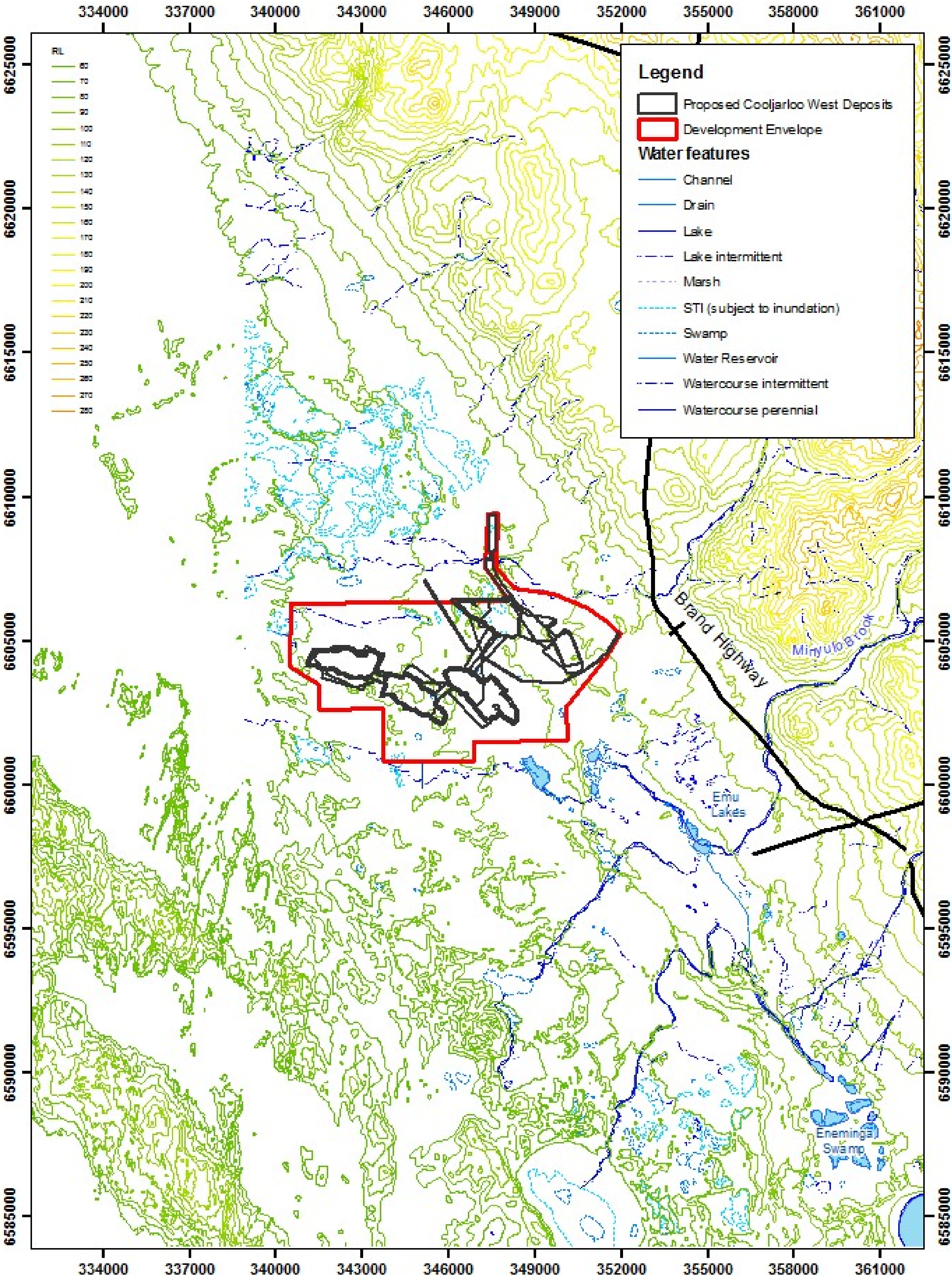


TRONOX MANAGEMENT PTY LTD	Figure 2.3: Regional physiography of the Cooljarloo West Project Area.	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		



TRONOX MANAGEMENT PTY LTD	Figure 2.4: Local surface topography	soilwater GROUP
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2.3.2 Geology of the Cooljarloo West Deposit

The Cooljarloo West Deposit occurs as several strandlines of deposition (shoreline) events within the northern extension of the north-south elongate Perth Basin, which is composed of up to 12 km of sediments ranging in age from Permian to Quaternary (Mory and Iasky, 1996). The general stratigraphic sequence of these sedimentary layers is shown in Table 2.2 and consists of: Quaternary Bassendean dunes or colluvial sands; underlain by alluvial/colluvial clays of the Guildford Formation which overly late Tertiary sands of the Yoganup Formation; underlain by the Mesozoic Yarragadee Formation. Surficial parts of these formations have been either formed or strongly influenced by marine transgression and regression events since the Early to Mid-Tertiary (*ca.* 50 Mya). The ore (heavy minerals rutile and zircon) of the proposed Cooljarloo West deposit lies primarily within the Yoganup Formation.

Table 2.2: Stratigraphic sequence in the northern Perth Basin (Mory and Lasky, 1996)

Age	Formation	Maximum thickness (m)	Lithology
Quaternary			
Pleistocene	Bassendean/Colluvial sand	15	Dunal, colluvial sand
	Guildford Formation	30	Clay, minor sand
Tertiary – Quaternary			
(Pleistocene – Pliocene)	Yoganup Formation	30	Sand, conglomerate
Mesozoic			
Late Cretaceous	Osborne Formation	100	Glauconitic shale, siltstone, sandstone
Early Cretaceous	Leederville Formation	650	Sandstone, siltstone, shale
Middle – Late Jurassic	Parmelia Formation	850	Sandstone, siltstone
	Yarragadee Formation	1,000	Sandstone, minor shale
Early – Middle Jurassic	Cockleshell Gully Formation	1,500	Sandstone, shale
Palaeozoic			
Permian	Sue Coal Measure	1,838	Sandstone, shale, coal

2.3.3 Regional Geology

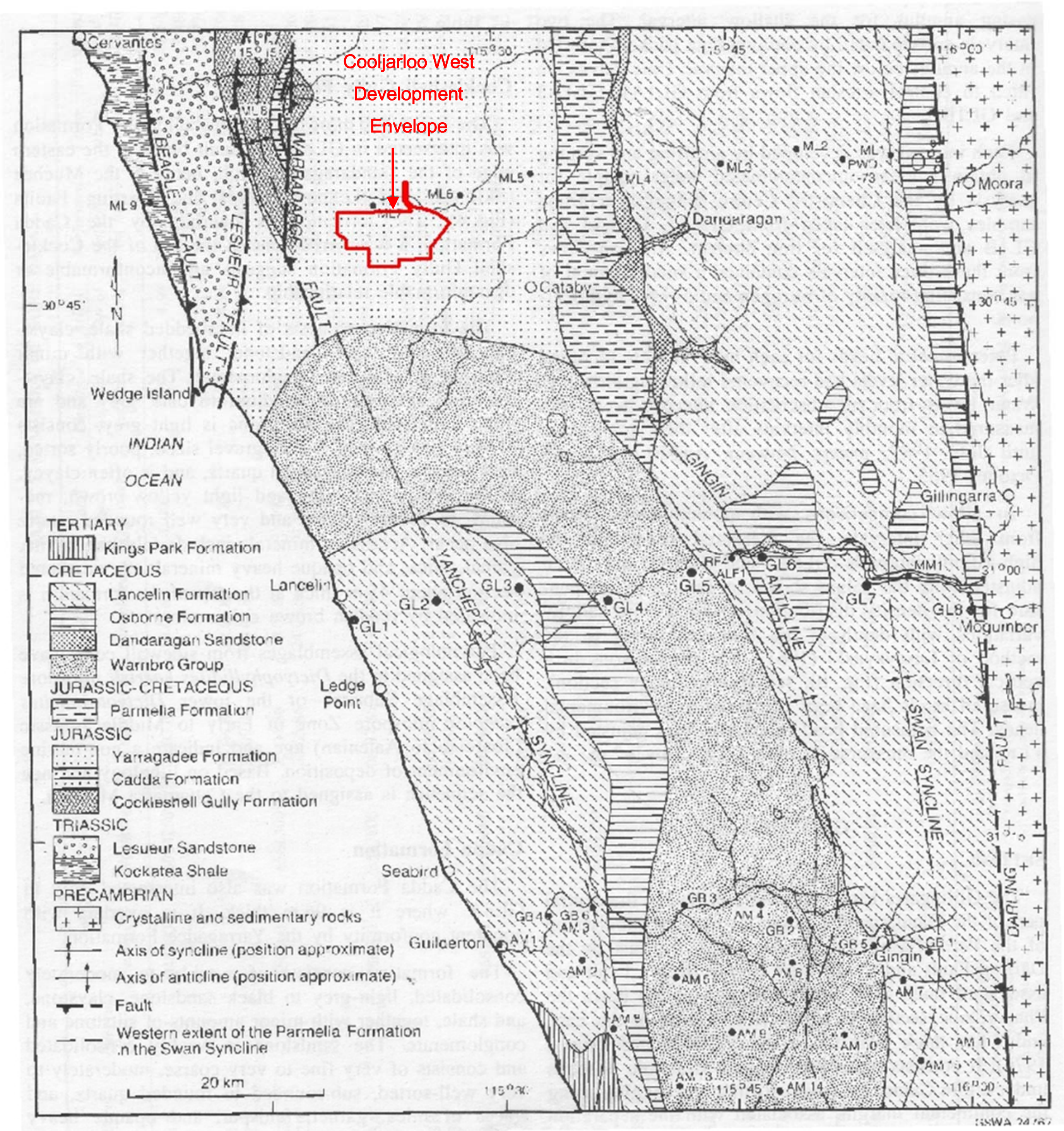
The regional geology (basement) in the vicinity of the Study Area is shown in Figure 2.5. The sedimentary layer containing the heavy mineral deposit (i.e. Yoganup Formation) is underlain by the Yarragadee sediments which comprise the effective basement. Two borehole lines (the Moora and Gillingarra) drilled during groundwater investigations conducted by the GSWA are located in the vicinity of the Study Area. Geological cross-sections for the Moora borehole line (Briese, 1979) and Gillingarra borehole line (Moncrieff, 1989) are shown in Figure 2.6. The geology in the Study Area is shown in the cross section of the Moora Line, consisting of surficial formations (i.e. Bassendean, Guildford and Yoganup) overlying the Yarragadee Formation.

The Yarragadee Formation is unconformably overlain by the superficial formations and the top of the formation has been eroded, weathered and in some areas undergone laterization. It is composed predominately of sandstone inter-bedded with minor amounts of shale, siltstone and thin layers of black carbonaceous material (Kern, 1988; Nidagal, 1995).

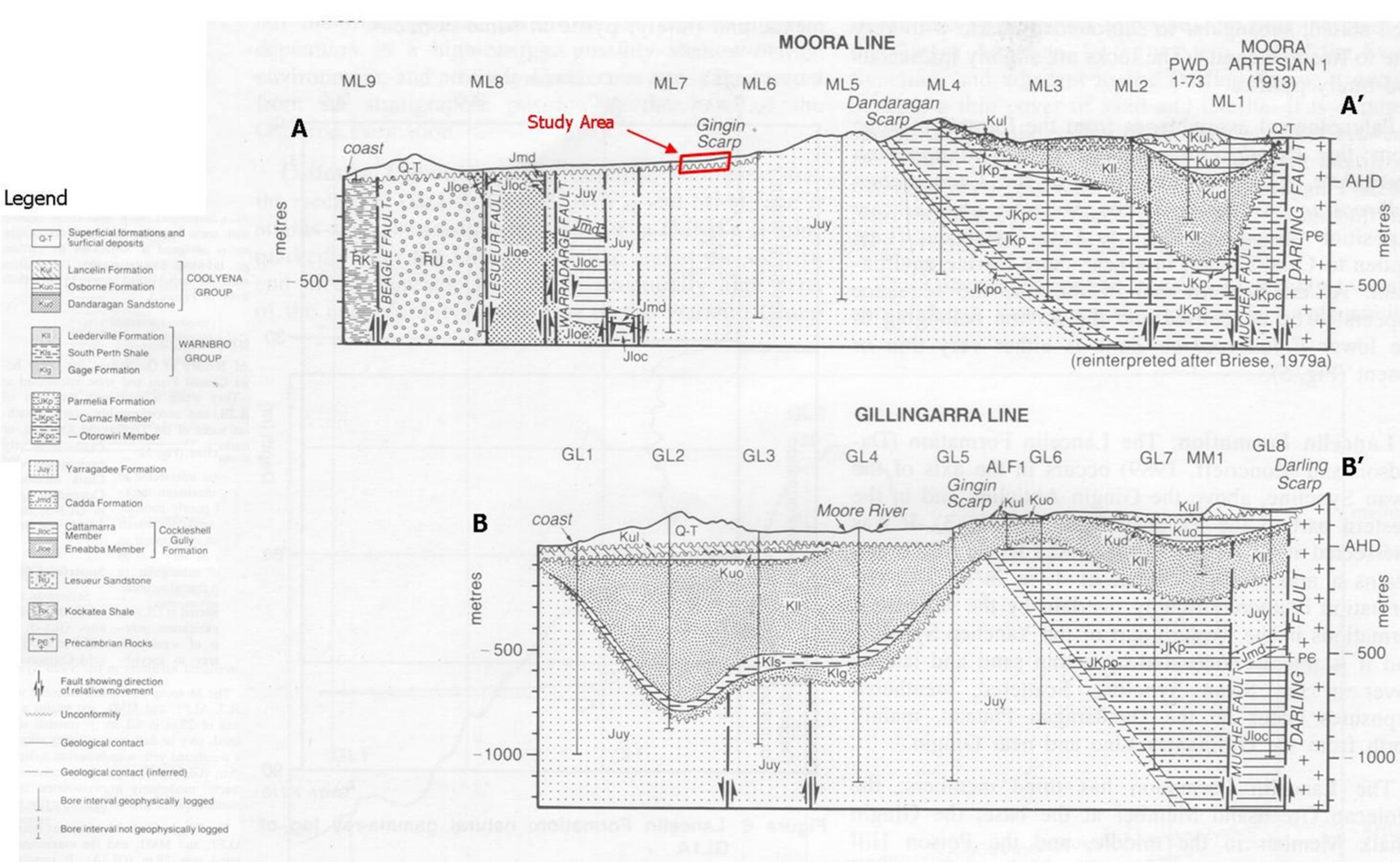
The Yoganup Formation is a shoreline deposit which unconformably overlies the Yarragadee Formation, resulting in an abrupt contact (Moncrieff, 1989). The Yoganup Formation consists primarily of discontinuous; 'friable' beach sand and dune sediments which lie along the base of the Gingin Scarp and were deposited and developed during successive marine transgression and regression events (Baxter, 1977; Wilde and Walker, 1982). The depositional environment is likely to have been similar to that of the current coastline (e.g. Quindalup and Spearwood dune systems), with an active shoreline, dunal and inter-dunal sequences with coastal vegetation and stranded lagoonal and estuarine water bodies. This active shoreline is the key factor in formation of heavy mineral deposits, with the constant wave action sorting and concentrating the heavy minerals.

Following the latest known regression of sea levels during the Pliocene (Late Tertiary), alluvial and colluvial conditions were favoured resulting in the deposition of the Guildford Formation which overlies and in some cases inter-fingers with the Yoganup Formation (Nidagal, 1994). These depositional conditions continued throughout the Pleistocene resulting in the formation of thick (up to 40 m) deposits of sandy clay to clay sediments. Isolated sand lenses do exist within the more clay dominated portions of the Guildford sediments, thought to be a response to heterogeneous parent material and depositional environment. These sand lenses can retain considerable water, resulting in isolated regions of groundwater within the predominately unsaturated clays (Plate 2.1). The formation consists of a clayey facies and a sandy facies, with the clay facies generally dominating the eastern side close to the Gingin Scarp, whilst towards the west the sandy facies is more dominant. The clay facies generally consists of dark grey to brown and minor black clay to sandy clay with minor lenticular beds of very fine to coarse sand. The upper portion of the clays, particularly those close to the Gingin Scarp are usually mutli-coloured red, yellow and brown from oxidation (Plate 2.2). The sandy facies consists of grey to brown, fine to coarse quartz sand with minor clay.

Disconformably overlying the Guildford Formation is the Bassendean sands, a series of discontinuous aeolian sand dunes occurring over the central area of the coastal plain. The depth of the formation varies considerably depending on the topography, but averages around 4 5 m in thickness with a maximum of up to 10 m, and forms an important role in controlling surface water movement throughout the region (URS, 2003). The materials consist of white to light brownish grey, moderately sorted quarts sand. Grains are generally sub-angular to sub-rounded and fine to medium in size. It has been noted during previous investigations that a thin layer of ferruginized sand has formed where contact with the water table is made.



TRONOX MANAGEMENT PTY LTD	Figure 2.5: Regional Geology	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		



TRONOX MANAGEMENT PTY LTD	Figure 2.6: Geological Cross Sections of Borehole Lines
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

soilwater GROUP

2.3.4 SOILS OF THE COOLJARLOO WEST DEPOSIT

The soils occurring within the Study Area have been mapped at a regional scale by the Department of Agriculture (Figure 2.7). As the project area occurs near a boundary of major physiographic regions (i.e. Gingin Scarp and SCP), the soils in the region exhibit a diverse array of materials and characteristics, ranging from clays through sandy clays to sands, with varying quantities of ironstone gravels and ferruginous zones throughout. Through the western and central portion of the Study Area the soils are associated with the Bassendean Soil – Landscape System, which consists primarily of shallow to deep pale grey aeolian dunal sand abruptly overlying the alluvial/colluvial Guildford Formation clays (Plate 2.3).

On the eastern margin of the Study Area, soils which correspond to the Nyalgarda Soil – Landscape System are present in defined areas, consisting primarily of shallow sandy duplex soils. A typical profile associated with this soil – landscape system is shown in Plate 2.4. A characteristic of these profiles is a defined, usually thin layer of gravels which occurs at the texture contrast boundary which represents a colluvial deposition (Plate 2.5).

The surficial soils (Bassendean sands and Guildford clays) throughout the majority of the Study Area exist for the most part in an unsaturated, oxidising state, with yellow to reddish brown sands and sandy clays extending to the underlying Yoganup Formation. In some areas of local topographic lows groundwater levels within the superficial formation are close to the land surface resulting in permanent reducing and waterlogged conditions. This reducing environment results in grey clays without the characteristic iron precipitation prevalent elsewhere in the Guildford Formation. A characteristic soil profile for these conditions is shown in Plate 2.6, with pale grey clay rich subsoils indicative of reduced conditions. This profile was proximal to a dry creek bed (Minyulo Brook) but experienced steady seepage of water from the trench wall at the texture contrast boundary, indicating the presence of groundwater in the late stages of the low rainfall climate phase (i.e. May).

Plate 2.1: Sand lenses within the Guildford Formation clay sediments.

Plate 2.2: Mottled red/brown to yellow clays of the Guildford Formation

Plate 2.3: Deep aeolian dunal sand characteristic of the Bassendean Soil – Landscape System.

Plate 2.4: Characteristic profile of the Nyalgarda Soil – Landscape System – Shallow sandy duplex.

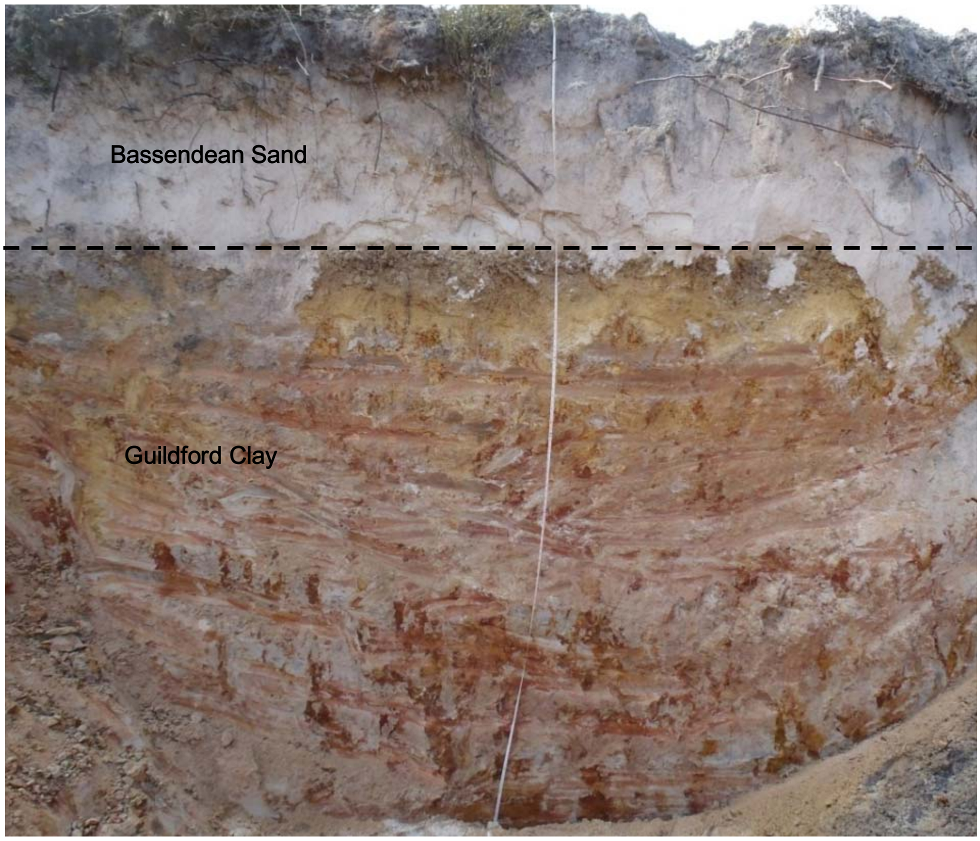
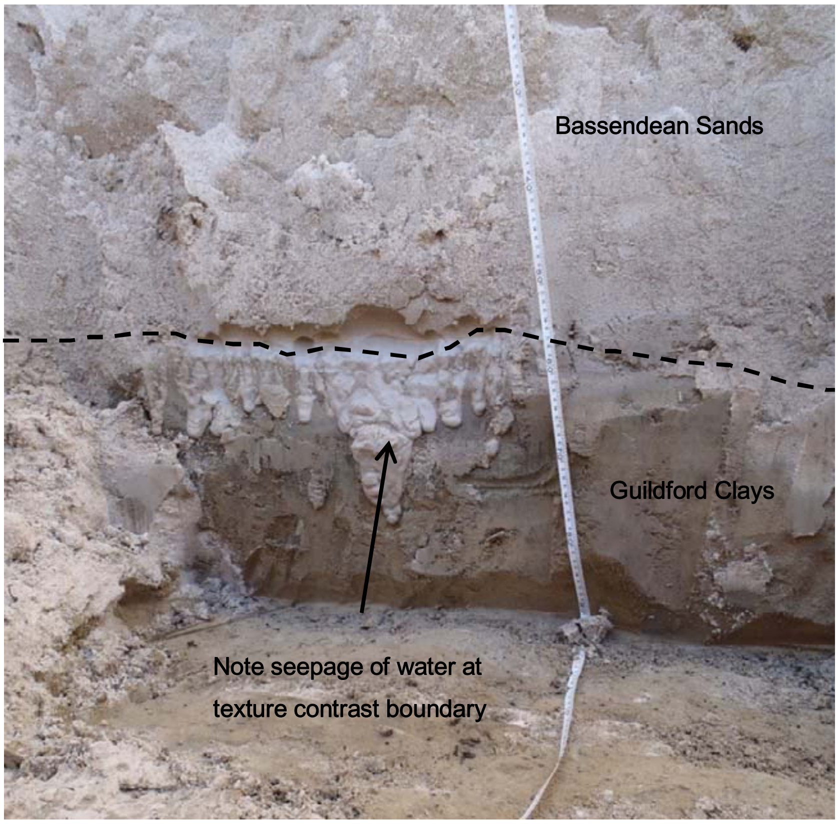


Plate 2.5: Defined gravel layer appearing at the texture contrast boundary between sands and clay.

Plate 2.6: Pallid grey Guildford clays within the topographic low, indicating saturated, reducing conditions.



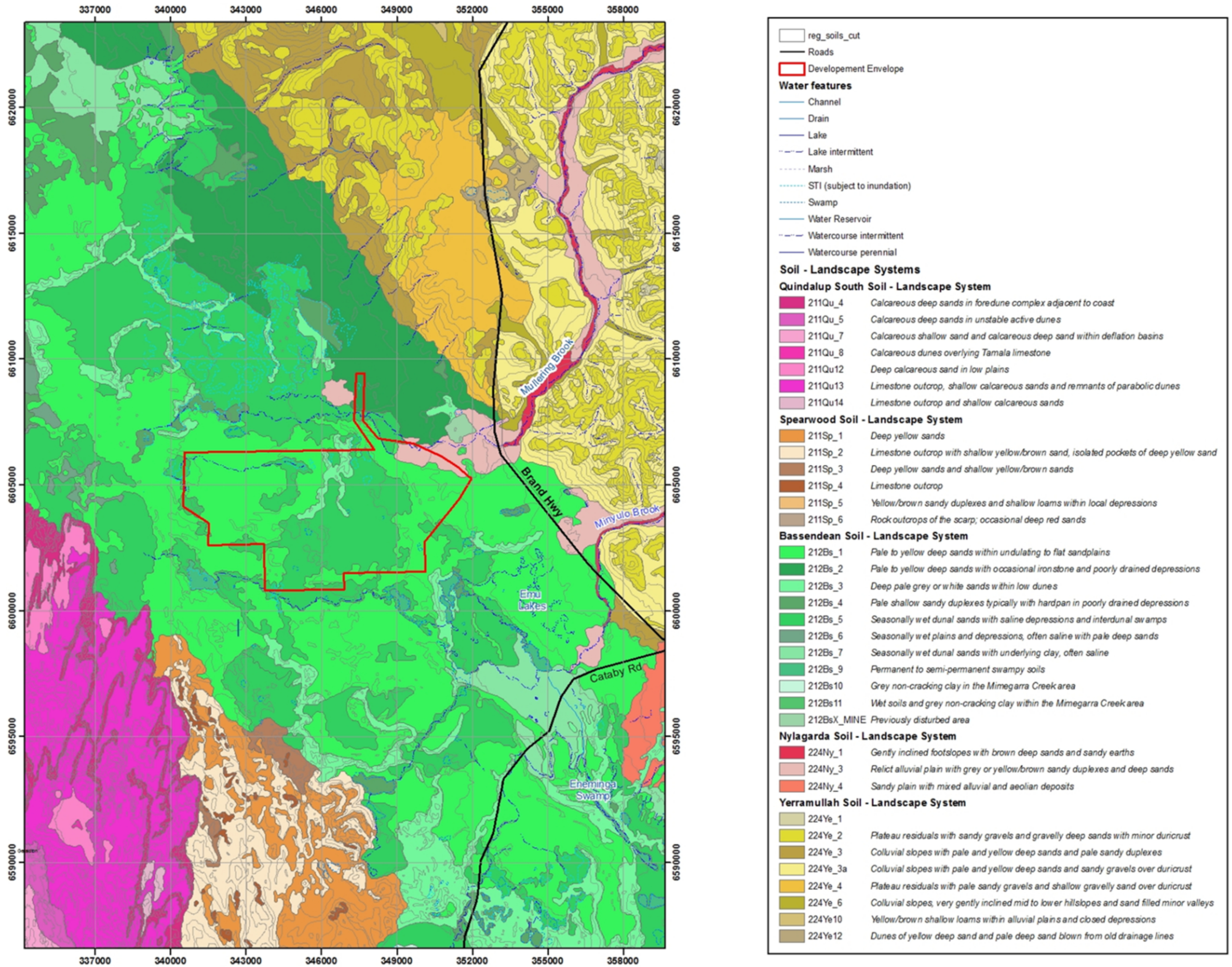


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Figure 2.7: Regional Soil Mapping within the Cooljarloo West Project Area

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2.3.5 REVIEW OF THE GEOLOGICAL AND METALLURGICAL DRILLING DATA

A detailed understanding of the local soils, geology and hydrology of the Cooljarloo West Deposit has been developed through a review of the exploration and geological drilling data. For this deposit approximately 160,000 samples have been collected since drilling began (Figure 2.8) and analysed for the following geological/soil parameters:

- Particle size distribution: - % fines <63 μm fraction oversize (slimes) and >2000 μm fraction (oversize).
- Lithology/stratigraphy.
- Soil colour.
- Heavy mineral content.

Composites taken from within the ore zone undergo additional analysis of particle size consisting of a standard sieve analysis of % sand silt and clay fractions (<63 μm, <106 μm, <212 μm, <350 μm and <500 μm %).

From ASS investigations conducted at other mineral sands mine sites on the SCP (SWC, 2004, 2006a, b, 2007, 2008, 2009) it has been observed that the distribution of soils with dark grey, grey black and black colours, from the geological drilling data, closely correspond to the distribution of PASS at these sites. Given this relationship, the distribution of soils with these colours (i.e. dark grey, grey black and black) was mapped for the Cooljarloo West project area to identify locations where PASS may occur. These locations were further filtered to remove all soils with elevated heavy mineral contents, as this will impart a blackish colour on the soils. Following the removal of these highly mineralised samples the distribution of the remaining dark grey, grey black and black soils is shown in Figure 2.9.

Cross sections showing the distribution of the various soils and geological formations, as identified using the fines fraction from the drilling data, are presented in Figure 2.10 to Figure 2.20. The cross sections show that the Cooljarloo West region is typical of the broader SCP, consisting of a surficial aeolian Bassendean Sand, overlying a thick clayey Guildford Formation over a sandy Yoganup Formation. These superficial sediments all overlie the Jurassic Yarragadee Formation, which represents the base of the mineralised deposit. Of particular interest is a thick layer of heavy clay occurring on the western margin of the western pits. This clay body most likely represents a large lacustrine system that formed prior to or contemporaneously with the deposition of the Yoganup Formation, blocking the westerly extension of the mineralised deposit; the location of this lacustrine system is shown in Figure 2.9. A review of the colour data identified that the majority of the clays in this lacustrine system are black, thus suggesting an organic-rich material, which is suitable to host sulfides.

From experience at numerous other mineral sands operations on the SCP, with a similar geological setting, PASS materials are likely to occur at the Guildford – Yoganup Formation and the Yoganup – Yarragadee Formation discontinuities. The vertical distribution of black soils at the Cooljarloo Deposit clearly shows a likely similar PASS distribution.

Based on this review of the geological drilling data, the potential distribution of ASS throughout the Cooljarloo West Deposit was mapped (Figure 2.21).

TRONOX MANAGEMENT PTY LTD	Figure 2.8: Distribution of exploration and geological drillholes at the Cooljarloo West Deposit, with cross section locations shown	soilwater GROUP
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TRONOX MANAGEMENT PTY LTD	Figure 2.9: Distribution of black soils throughout the Cooljarloo West Deposit, with lacustrine clay system shown	soilwater GROUP
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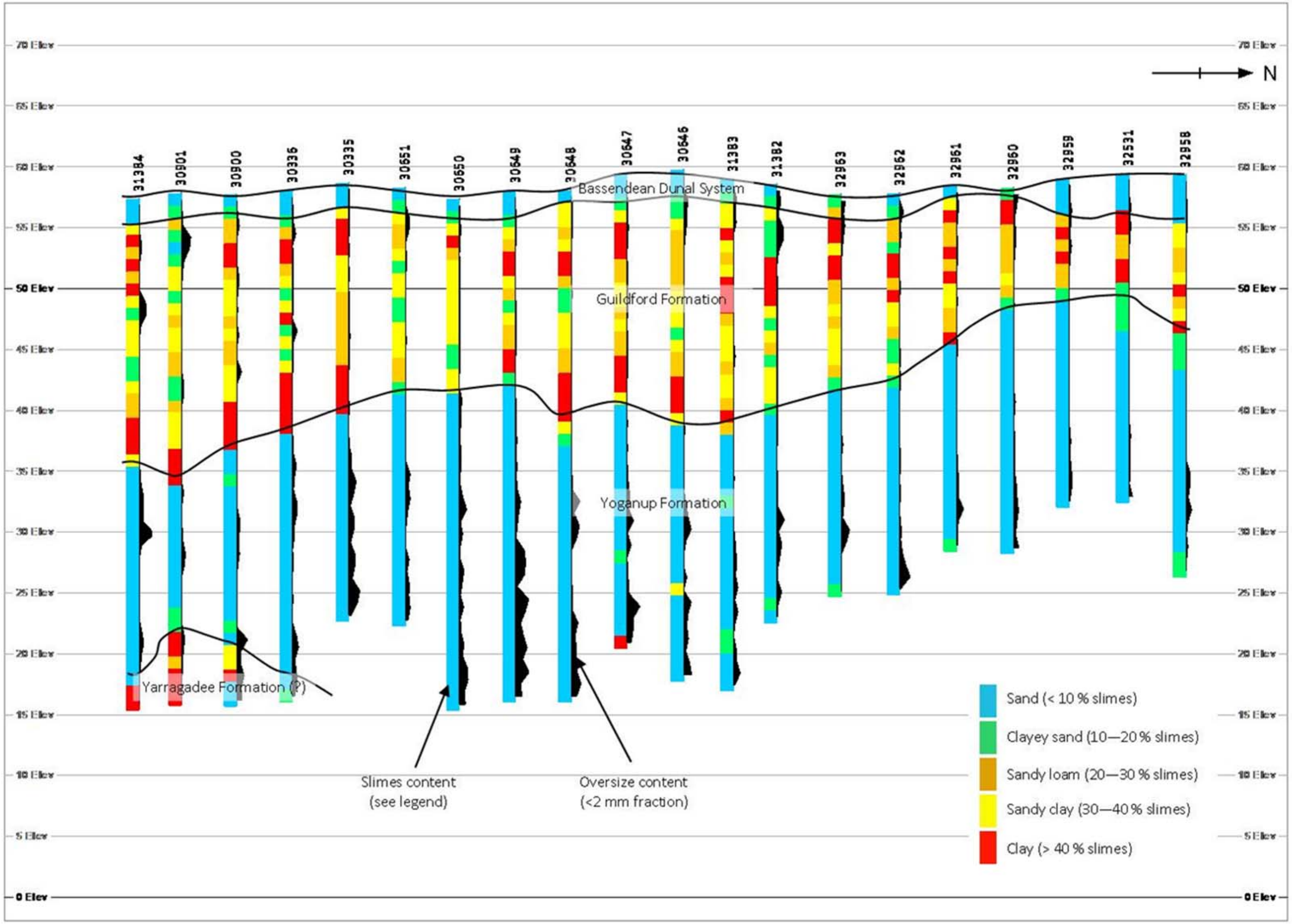
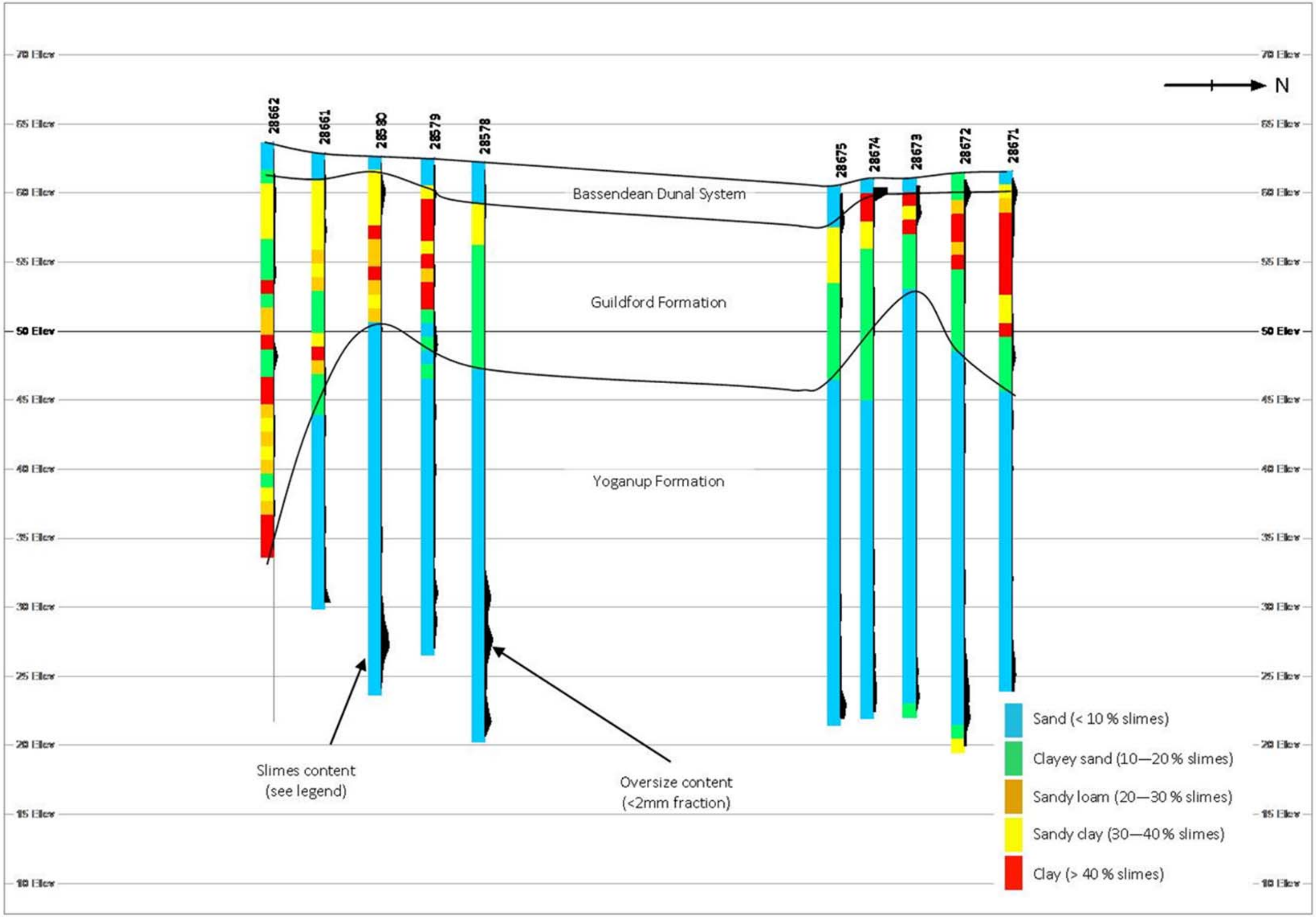


TRONOX MANAGEMENT PTY LTD	Figure 2.10: Fines distribution along Cross Section 1 (see Figure 2.8 for location)	
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		



TRONOX MANAGEMENT PTY LTD	Figure 2.11: Fines distribution along Cross Section 2 (see Figure 2.8 for location)
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

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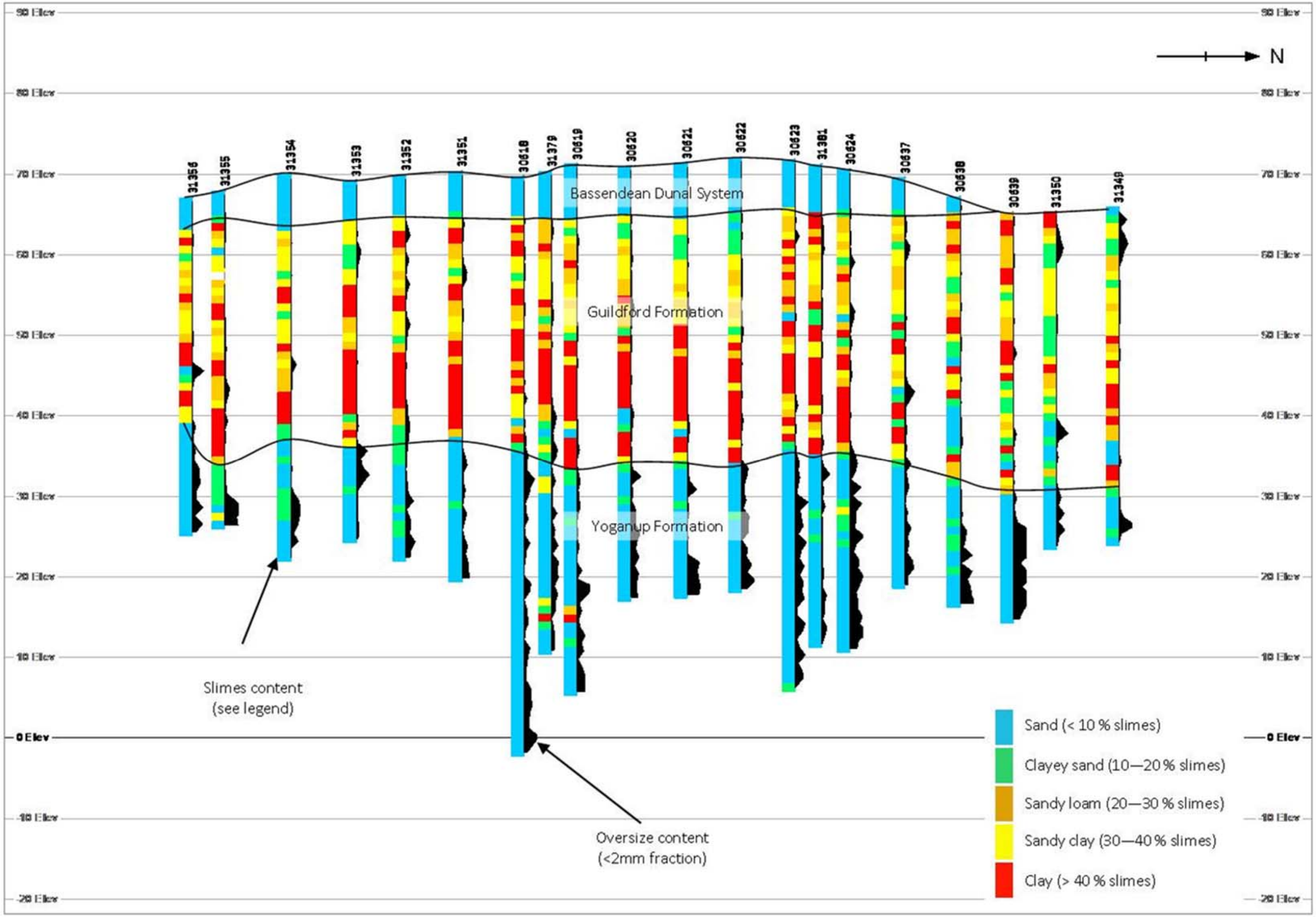

TRONOX MANAGEMENT PTY LTD	Figure 2.12: Fines distribution along Cross Section 3 (see Figure 2.8 for location)
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

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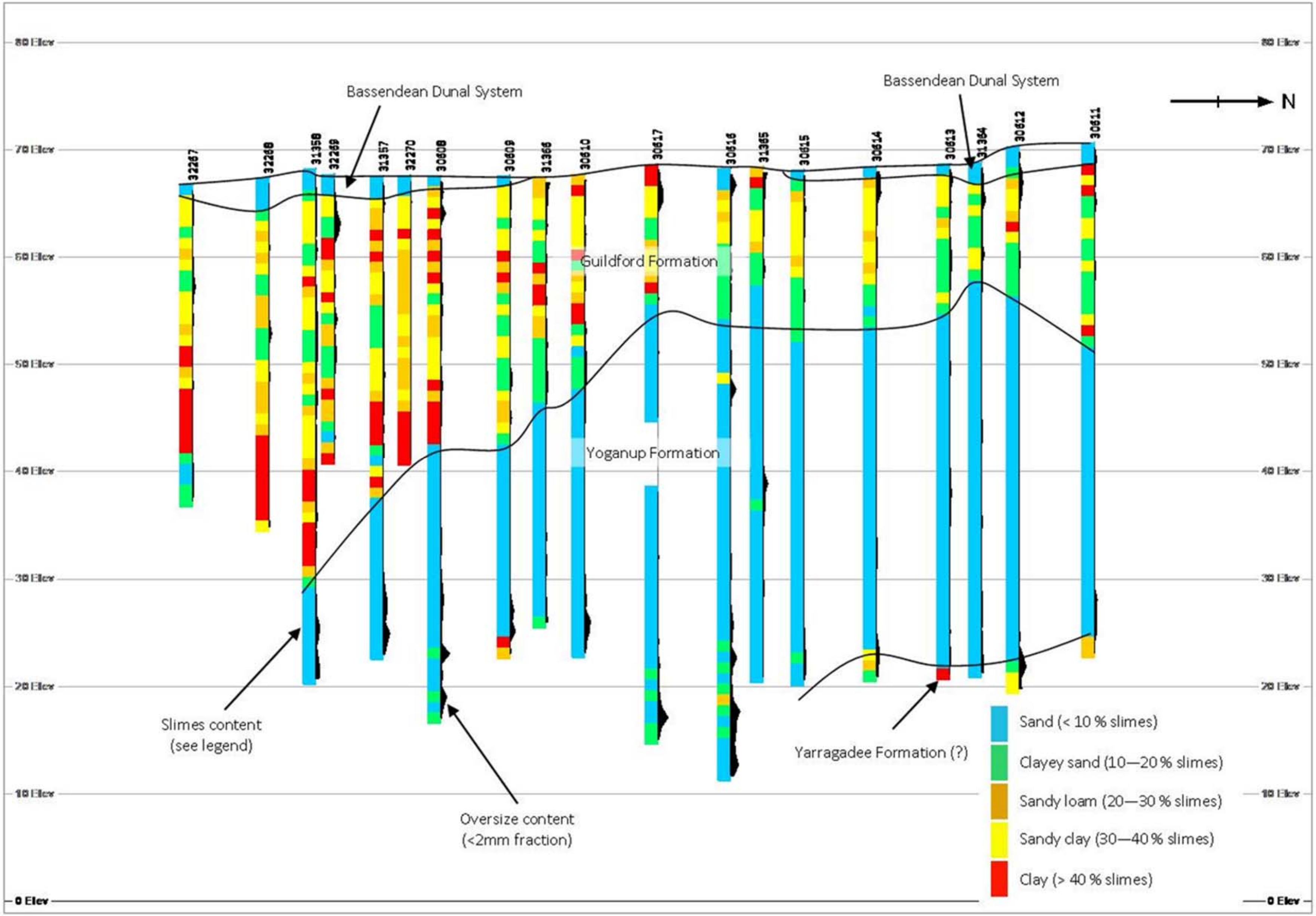

TRONOX MANAGEMENT PTY LTD	Figure 2.13: Fines distribution along Cross Section 4 (see Figure 2.8 for location)
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

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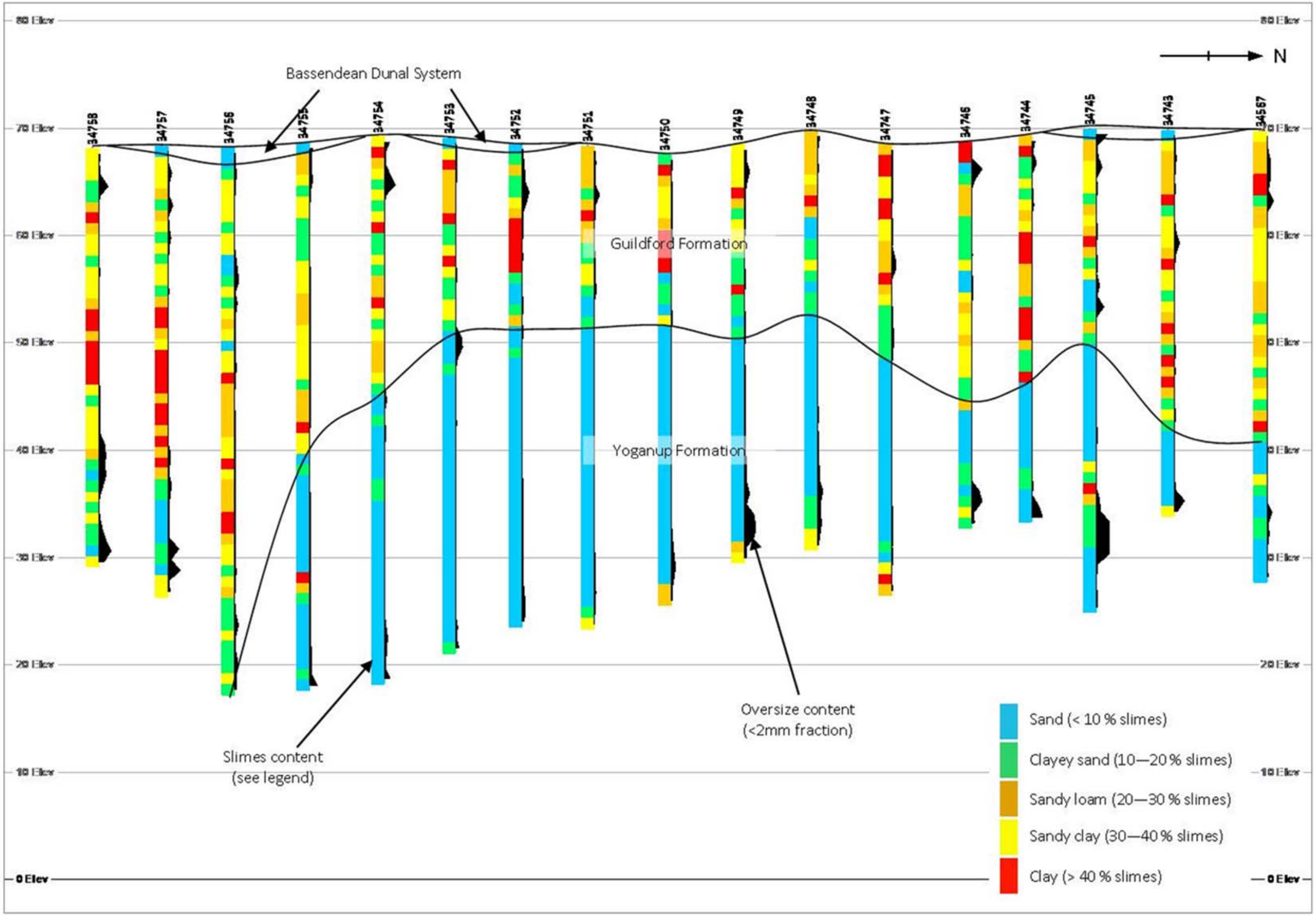

TRONOX MANAGEMENT PTY LTD	Figure 2.14: Fines distribution along Cross Section 5 (see Figure 2.8 for location)	soilwater GROUP
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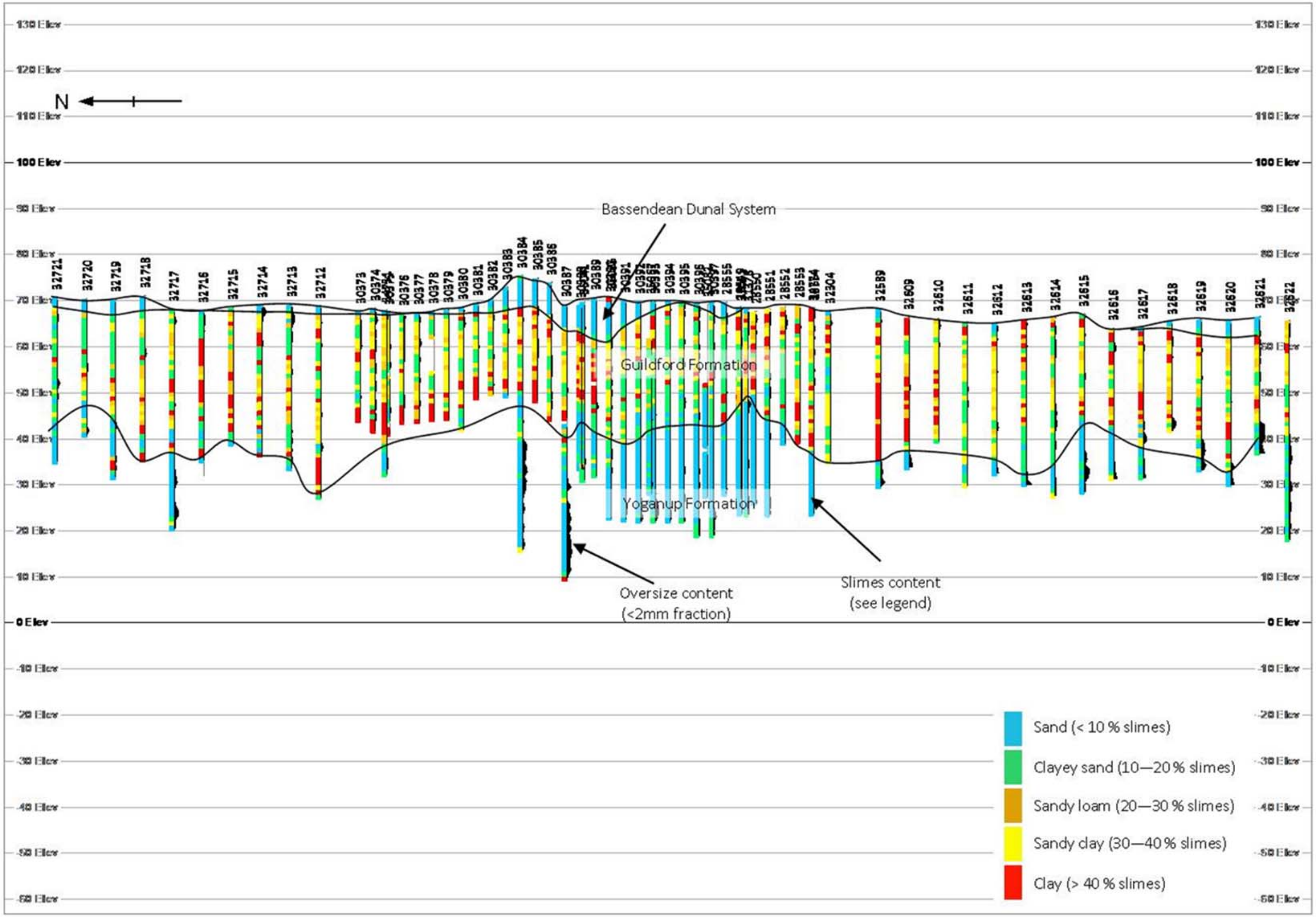
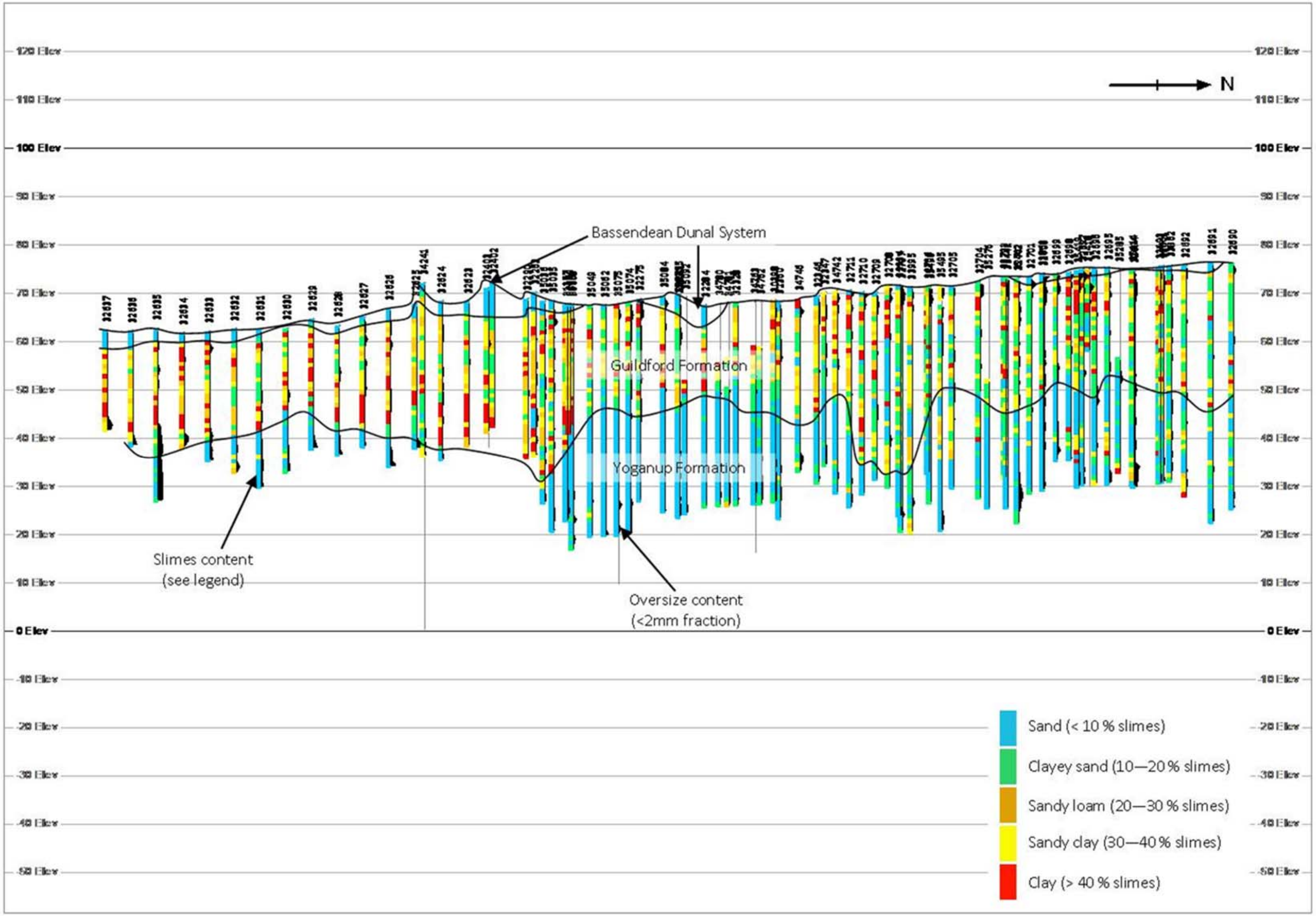
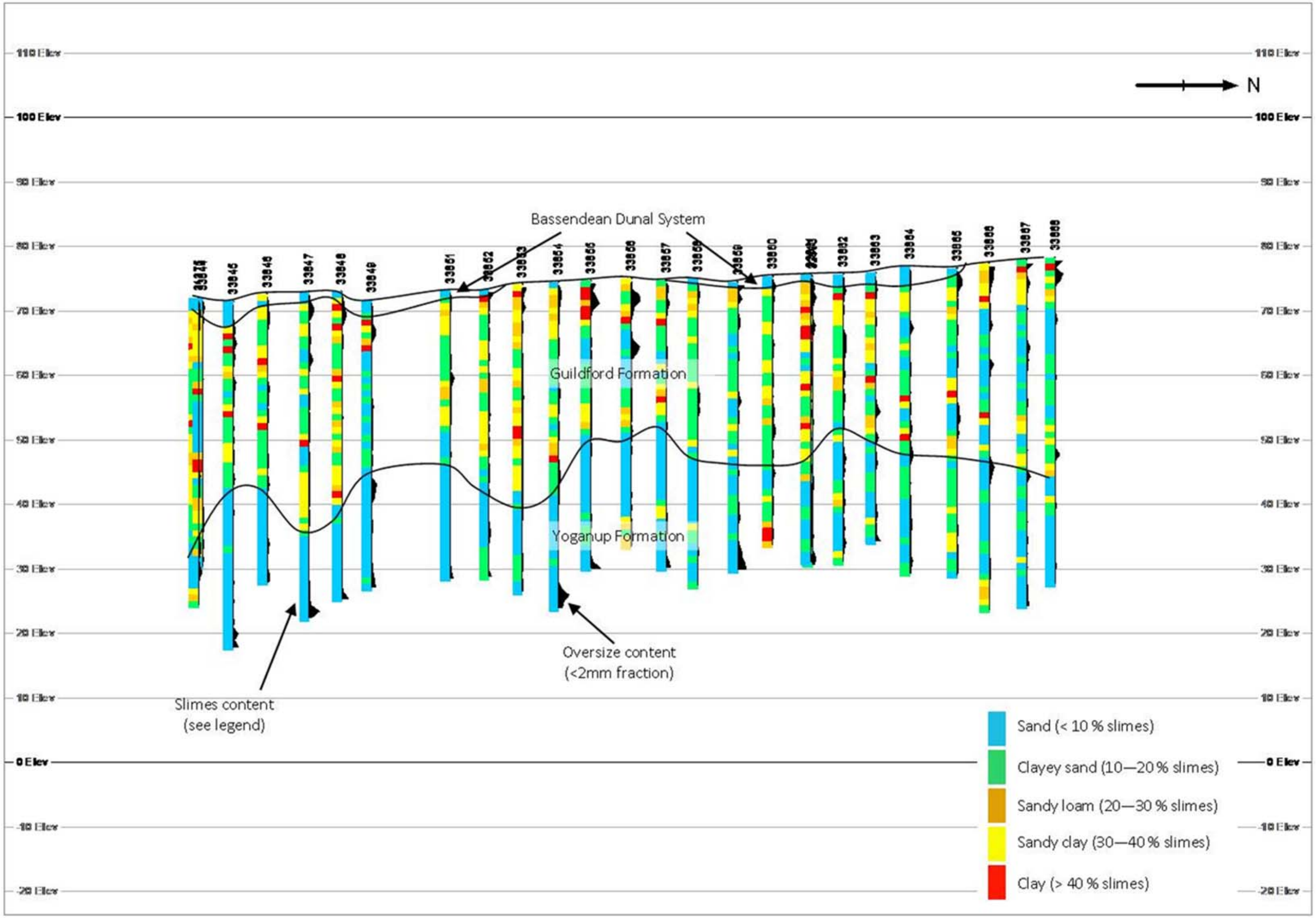


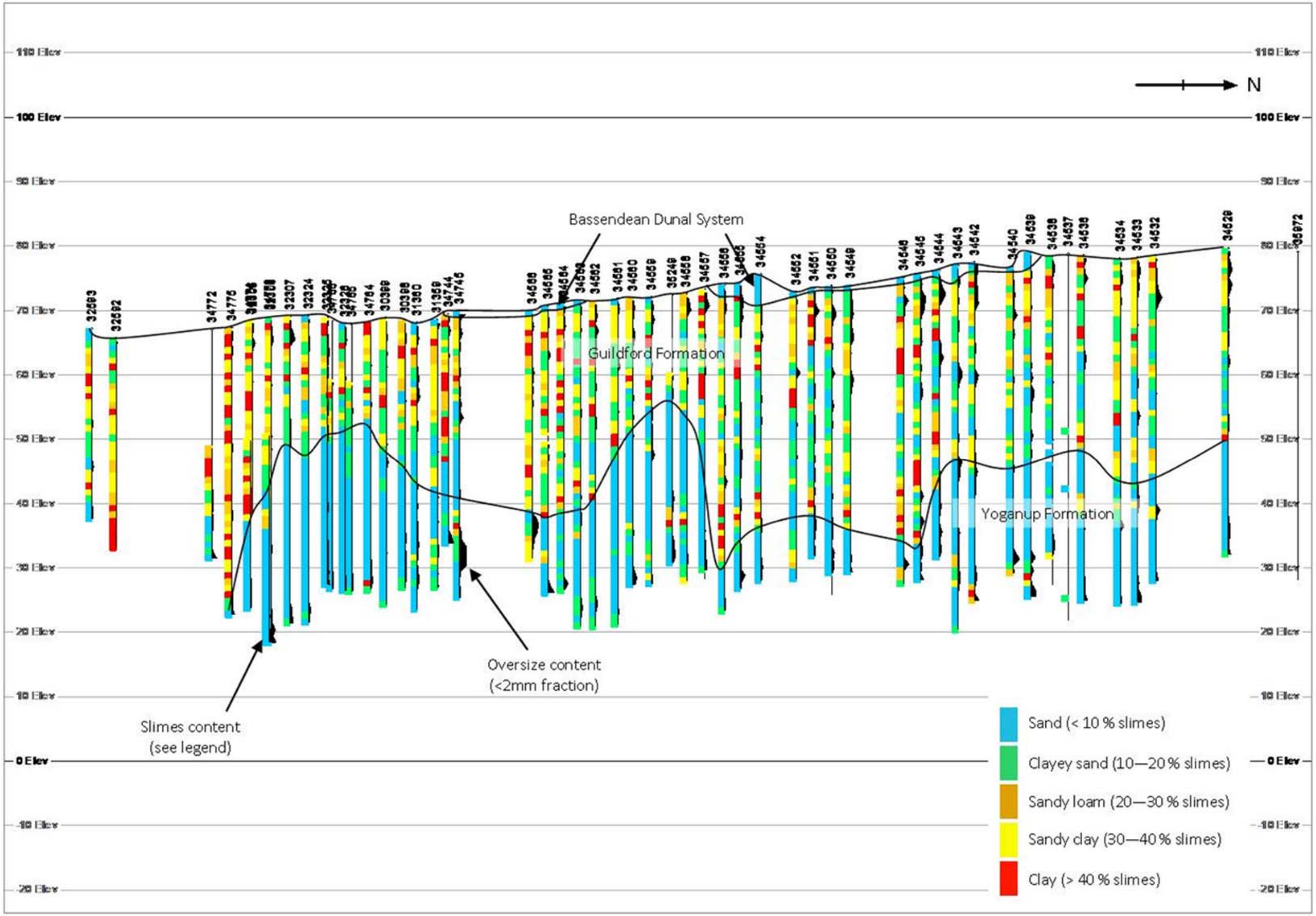
TRONOX MANAGEMENT PTY LTD	Figure 2.15: Fines distribution along Cross Section 6 (see Figure 2.8 for location)
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	



TRONOX MANAGEMENT PTY LTD	Figure 2.16: Fines distribution along Cross Section 7 (see Figure 2.8 for location)
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

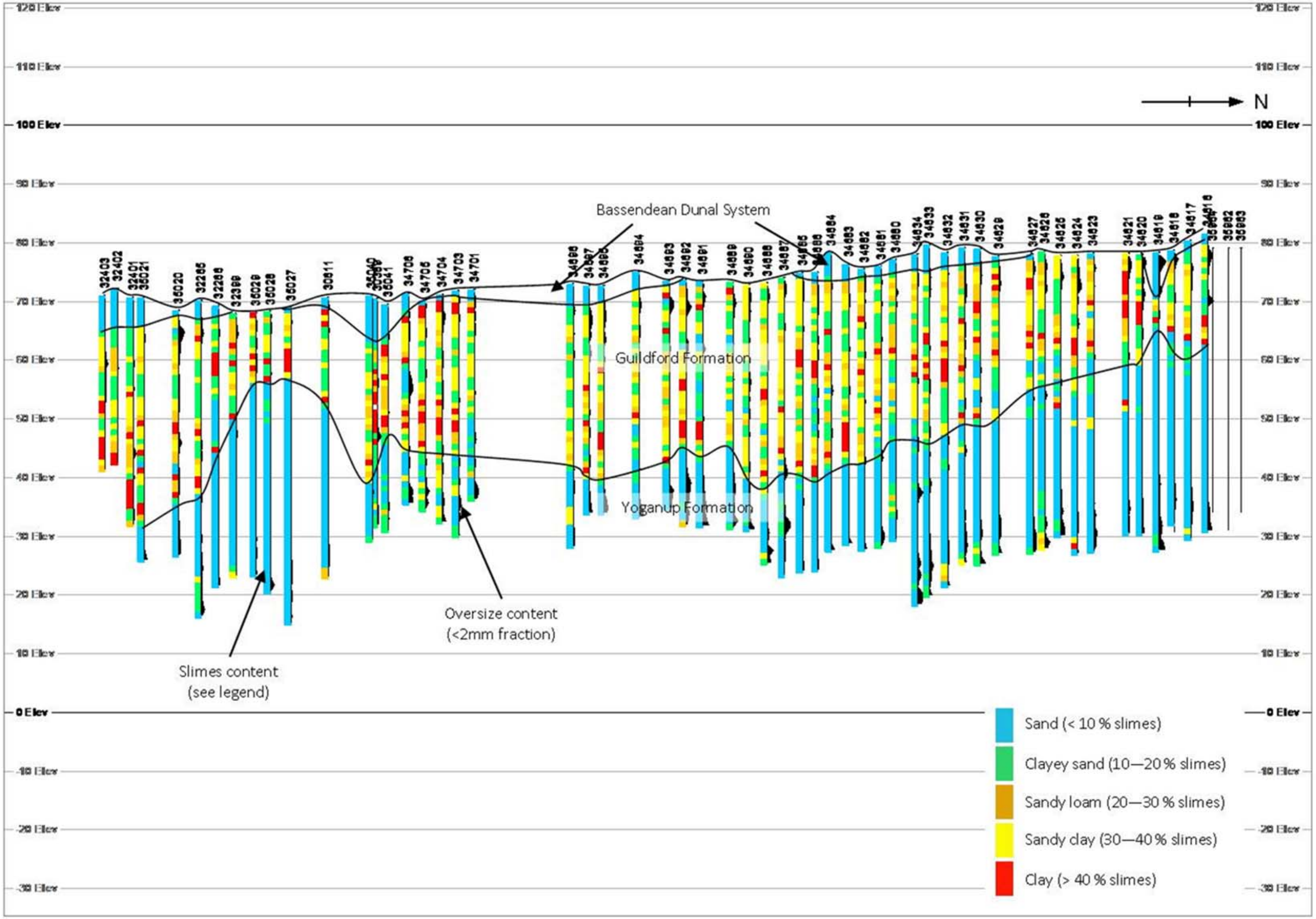


TRONOX MANAGEMENT PTY LTD	Figure 2.17: Fines distribution along Cross Section 8 (see Figure 2.8 for location)	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		

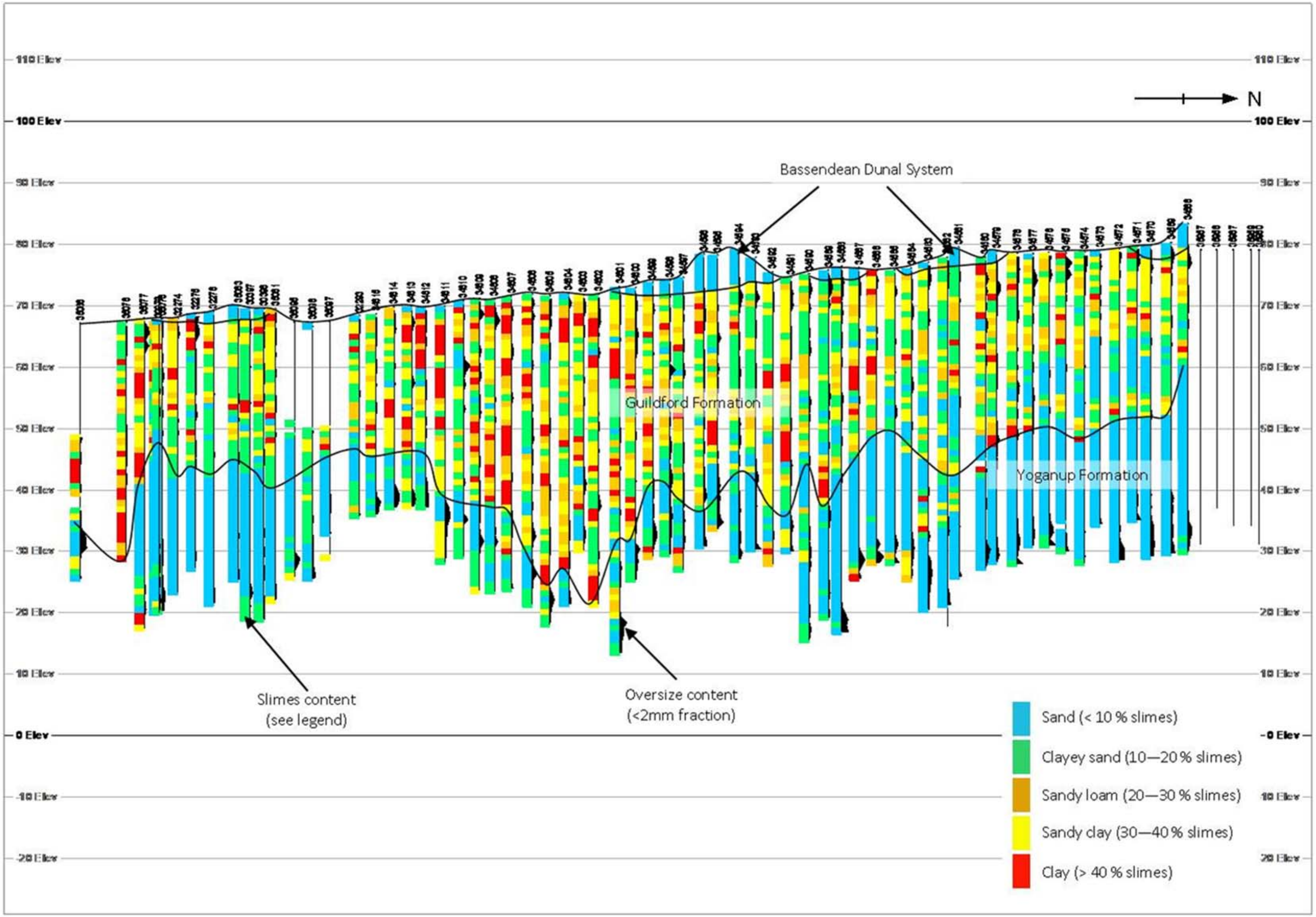


TRONOX MANAGEMENT PTY LTD	Figure 2.18: Fines distribution along Cross Section 9 (see Figure 2.8 for location)
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

soilwater GROUP

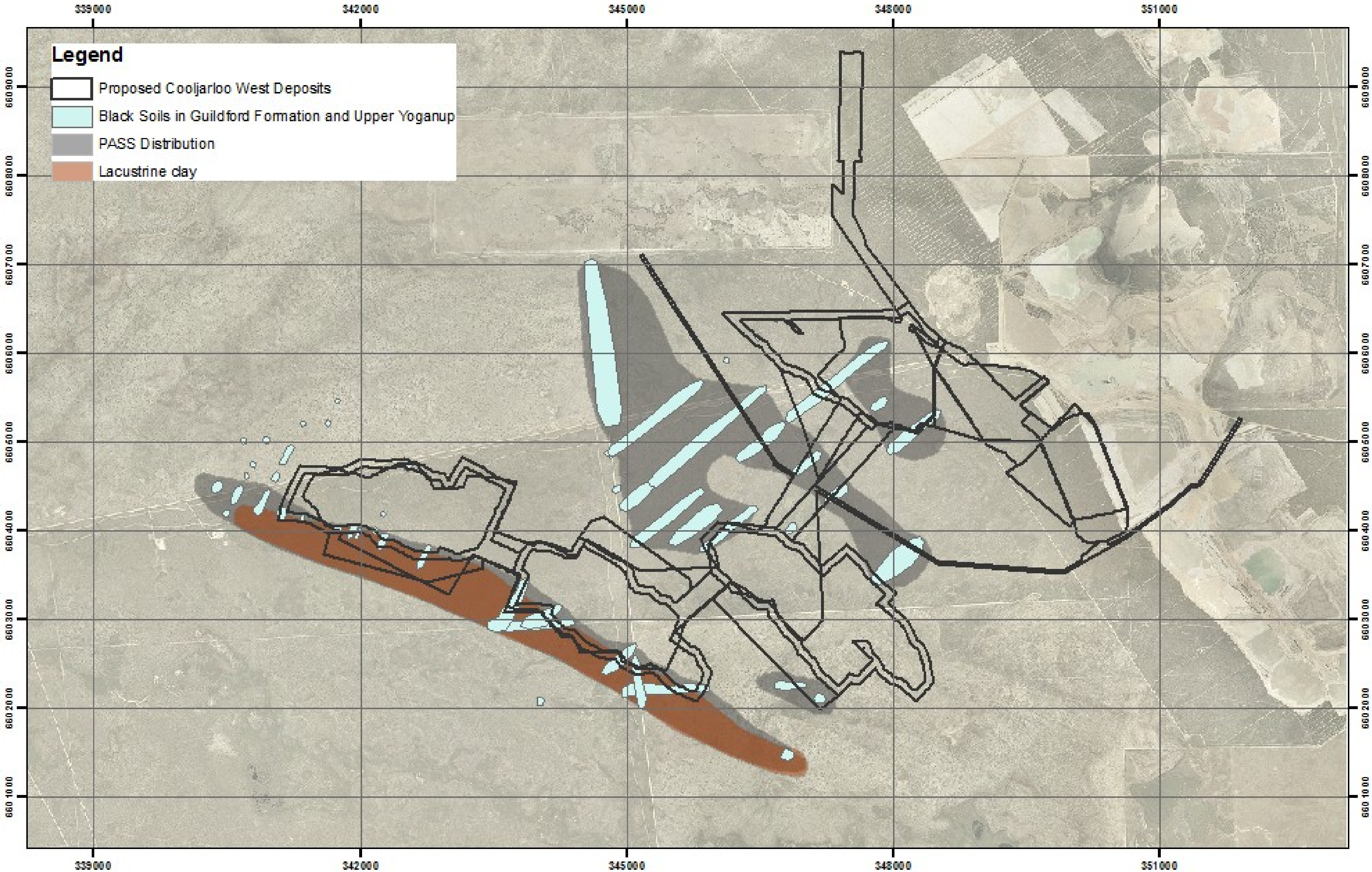


TRONOX MANAGEMENT PTY LTD	Figure 2.19: Fines distribution along Cross Section 10 (see Figure 2.8 for location)	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		



TRONOX MANAGEMENT PTY LTD	Figure 2.20: Fines distribution along Cross Section 11 (see Figure 2.8 for location)
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

soilwater GROUP



TRONOX MANAGEMENT PTY LTD	Figure 2.21: Proposed distribution of ASS within the Cooljarloo West Minesite based on the desktop review of the geological drilling data
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

soilwater GROUP

3 METHODOLOGY

3.1 ACID SULFATE SOILS SAMPLING

The most recent drilling was carried out in July and August 2013. A total of 40 holes were drilled using a Reverse Circulation (RC) drillrig across the Cooljarloo West Project Area, with their location shown in Figure 3.1. The holes were selected by SWC following the review of the geological drilling data (Section 2.3.5), targeting the distribution of black and dark grey soils across the site (Figure 2.9 and Figure 2.21). Depth of drilling was variable, ranging from 12 to 72 m (average 42 m) and all holes extended to at least 2 m below the base of the proposed mine pit. Samples were collected at 1 m vertical intervals directly from the cyclone outlet and place immediately into sealable plastic containers and placed into a field freezer maintained at < 4°C. Based on this sampling density and intensity a total of 1,806 samples were collected for laboratory testing.

3.2 SCREEN TESTING

All samples collected in the field (1,806 samples; Section 3.1) were analysed for the following screen test parameters, according to Stone *et al.* (1998) and the DEC guidelines (DEC, 2009):

pH_F – 1:5 soil/water extraction. This parameter measures the existing acidity of the material and determines if previous oxidation of sulfides has occurred (i.e. presence of AASS) and the potential buffering capacity of the material.

pH_{FOX} – pH of the material following the addition of 30 % hydrogen peroxide (buffered to pH 5.5) to rapidly oxidise any sulfides present.

3.3 INCUBATION TESTING

In addition to the above testwork, samples from four representative drill holes were selected for chip-tray incubation, with the resulting pH (pH_{INC}) assessed following the 8 week incubation period. The purpose of undertaking the chip-tray incubation was to further characterise the sulfide oxidation and acidification process under 'natural' conditions. In total 135 samples were assessed for pH_{INC}. The methodology followed, which is outlined in Fitzpatrick *et al.* (2010), involved taking a 30–50 g subsample from each 1 m vertical interval within each chosen drillhole and placing into a chip-tray. The chip-tray samples were kept moist and stored in a 40ºC oven to facilitate the sulfide oxidation and acidification process. The pH_{INC} was determined at the end of the 8 week incubation.

3.4 DETAILED ANALYSIS

Detailed ASS analysis was undertaken at Envirolabs Perth (NATA Accredited) to confirm the screen test results and to quantify the actual and potential acidity, and the buffering capacity, of the materials to be disturbed by the proposed mining activity. The analysis undertaken on selected samples included:

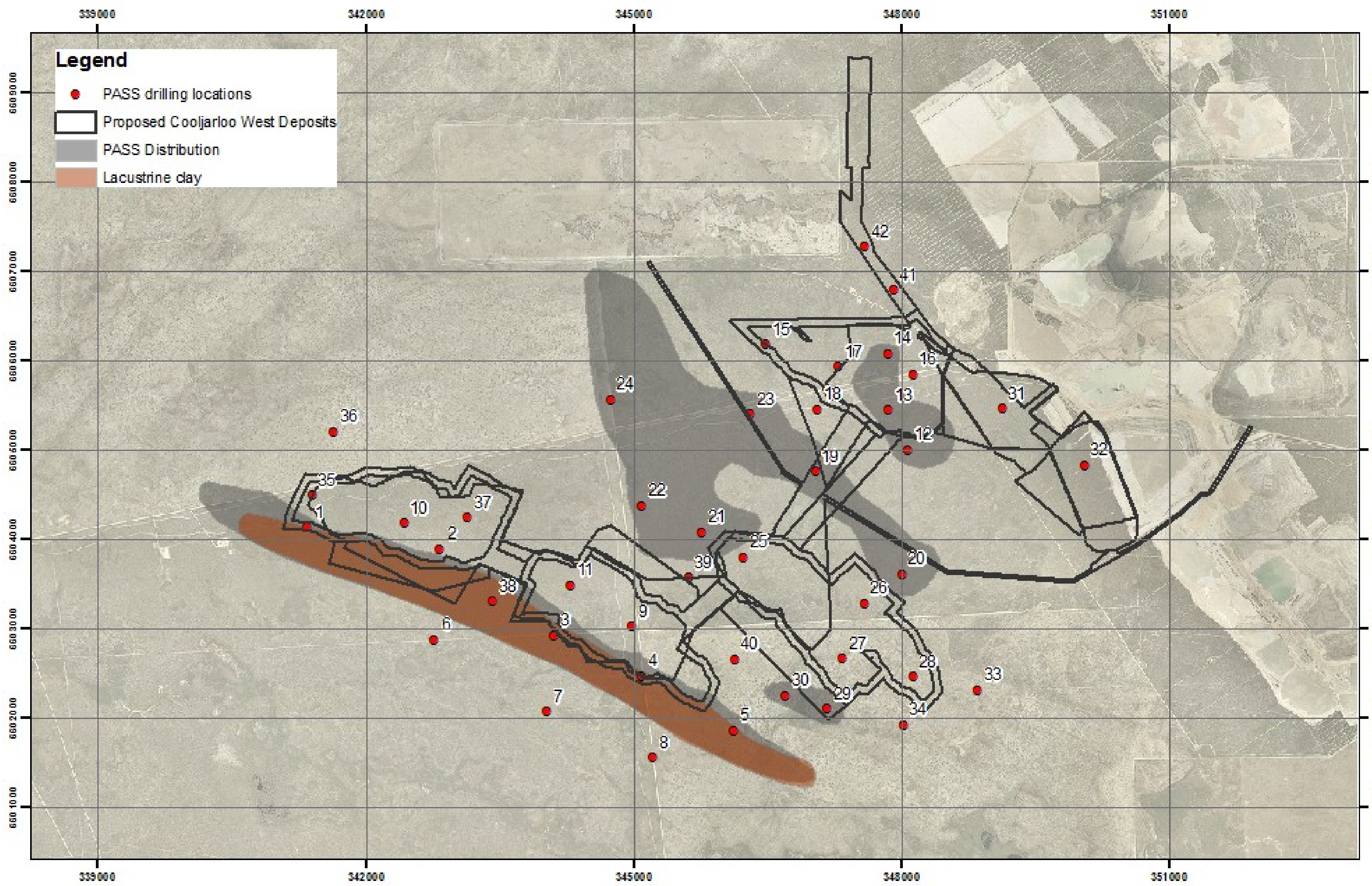
- Total Actual Acidity (TAA): provides a measure of the acidity contained within the sample *in situ*. This was undertaken on samples with a pH_F < 5 and was measured by titrating a filtered 1:20 1M KCl extract to pH 5.5 using a known molarity of NaOH.
- Chromium Reducible Sulfur (S_{CR}): is a direct measure of the sulfidic (pyritic) content in the soils, and thus is used to establish the potential sulphuric acid generating capacity of soils (i.e. if soils are PASS).

- Acid Neutralising Capacity (ANC) and Total Inorganic Carbon (TIC) of selected samples from each lithological unit. Acid Neutralising Capacity is the natural capacity of soil to buffer against acidfication. It is measured by addition of HCl to a sample, followed by back titration utilising NaOH to determine the amount of unreacted acid – the amount of consumed acid is then taken as the ANC. Total Inorganic Carbon is determined by LECO combustion, where prepared samples are combusted at 1,350°C in an oxygen atmosphere using a LECO CT-142 analyser. Carbon is oxidized to form CO_2 and the gaseous outflow is measured to determine the % of inorganic carbon.
- Multi-element compositions, including Ag, Al. As, B, Ba, Bi, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Pb, Sb, Se, Sn, Sr, U, V and Zn. This is required to assess the potential for metalliferous drainage to occur following the disturbance of the soil materials. Multi-element compositions are analysed through Acid Digestion by ICP–AES and ICP–MS according to US EPA 3015, APHA 3120 and 3125 methods.
- Metal / metalloid mobilisation: this is undertaken to assess the bioavailability or mobilisation potential of the various metals. Typically soils within the Swan Coastal Plain (SCP) have elevated levels of several elements, well above the corresponding DEC guidelines. Although this is the case, these metals are located within the mineral crystal structure of the soils and are therefore not available to leaching solutions, unless significant acidification occurs. Testing of metal bioavailability is conducted under neutral and acidic conditions using the Australian Standard Leach Procedure (ASLP; AS 4439.3-1997), with leachates analysed for the metals and metalloids listed above.

In addition the following parameters were also calculated:

- Carbonate neutralising potential (CarbNP) – derived from TIC (i.e. CarbNP = TIC × 81.7): The standard ANC testing procedure (outlined above) can overestimate the buffering potential of a sample as it includes buffering effects of primary silicate minerals, the dissolution of which are generally slow kinetically (particularly ferromagnesian silicates and feldspars) under circum-neutral conditions (pH 6 – 8) (White and Brantley, 1995); and are therefore ineffective at neutralising acid generation from pyrite oxidation. For this reason the TIC content of each sample was used to calculate CarbNP which is generally a more accurate reflection of a given materials ability to buffer acid generation under normal weathering conditions.
- Acid Base Accounting (ABA): is a series of calculations using pH, TAA, S_{CR}, ANC and CarbNP results to predict the likelihood of sulfidic material generating net acid drainage.

In this investigation only S_{CR} analysis was conducted to quantify the amount of potential acidity present (i.e. PASS). The decision to use only S_{CR} analysis, instead of a full SPOCAS Suite, was based on the acidity trail being strongly influenced by non-pyritic sources of acidity (i.e. due to the hydrolysis of Fe and Al oxides and hydroxides) and organic matter, likely resulting in an overestimate of the potential extent and magnitude of PASS. In contrast, S_{CR}, only measures sulfur associated with inorganic FeS_2 (Sullivan and Bush *et al.*, 1999).



TRONOX MANAGEMENT PTY LTD	Figure 3.1: Location of selected PASS drill holes
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

soilwater GROUP

PN: TRX-007-1-5 Prepared by: Date: MM/DD/YY Reviewed by: Date: MM/DD/YY Revision:

4 RESULTS

4.1 SCREEN TEST

The pH_F and pH_{FOX} profiles for all drillholes are shown in Figure 4.1 and the spread of the pH_F and pH_{FOX} results for all samples tested are shown in Figure 4.2. The pH_F values ranged from 2.86 to 9.46, with 60% of the soils having a field pH of between 5 and 7 (i.e. moderately to slightly acidic). The inherent acidic nature of these soils is typical for soils on the SCP (McArthur and Bettenay, 1974) and reflects their poor buffering capacity and natural equilibrium between the soil particle surface and the surrounding soil solution (i.e. adsorption/desorption and surface hydrolysis reactions) (Hsu, 1989). Approximately 1.5% of the samples returned a pH_F of less than pH 5 which is indicative of previous oxidation having occurred. Only two of the samples tested a pH_F < 4, which suggests that AASS (i.e. previously oxidised soils with a high actual acidity) are unlikely to occur within the Cooljarloo West Project Area. The majority of the remaining 40% of samples returned a pH_F of greater than 7 with 46 samples returning a pH_F of > 8.5. This suggests that these soils have substantial buffering capacity.

The pH_{FOX} values for the samples tested ranged between 0.86 and 9.09. Around 35% of these samples returned a pH_{FOX} value of less than 4, indicating that a considerable proportion of the soils to be disturbed by mining are likely to contain appreciable sulfides. Around 50% of these samples had pH_{FOX} values of < 3 and 25% returned pH_{FOX} values of <2. Table 4.1 shows the pH_{FOX} distribution for each of the major lithological units that were identified within the Cooljarloo West Project Area. This data shows that the spread of pH_{FOX} was similar for all the units with maximum and average pH_{FOX} within the same range. The lowest pH_{FOX} results were obtained for the Yoganup formation and the lacustrine clay which had minimum pH_{FOX} of 0.86 and 1.28 respectively. Calculation of percentage of total samples for each unit that fell below pH 3 found that again the Yoganup formation and lacustrine clay were markedly different from the other lithological units. Of the 723 samples from the Yoganup formation that were tested, 41.9% were found to be PASS and 36.4% of the lacustrine samples were also found to be PASS.

Table 4.1: Distribution of pH_{FOX} values for each of the main lithological units identified within the Cooljarloo West Project Area.

Formation	No. of samples	% of samples pH_{FOX} <3	Minimum	Maximum	Average
Bassendean Sand	75	10.7	1.42	9.07	6.66
Guildford Clay	525	6.5	1.94	9.46	6.70
Basal Guildford Clay	163	4.3	2.5	9.27	6.83
Yoganup Formation	723	41.9	0.86	9.16	6.85
Lacustrine Clay	22	36.4	1.28	8.53	7.27

PASS samples as identified from the screen test results were found to be concentrated in three main locations within the stratigraphic profile – within the Lacustrine Clay; within portions of the basal 5m portion of the Guildford Formation; and within the Yoganup Formation that overlies the Yarragadee Formation.

Given the establishment of a previous relationship between soil colour and PASS distribution, the screen test results were categorised according to their colour attributes (Table 4.2 and Table 4.3). With the exception of the black/dark grey samples, the pH_F results showed similar trends with the majority of samples for each colour divided between the 5-7 and ≥ 7 categories (Table 4.2). Interestingly, the black/dark grey samples returned predominantly alkaline pH values, with

>50% of these samples having a pH ≥ 7 (Table 4.2), suggesting that these samples have some buffering capacity. However, when the pH_{FOX} distribution is considered in terms of colour, the dark grey/black soils had a significantly higher percentage in the < 3 and 3-4 range than the other soil colours with >50% of the Black/Dark grey soils returning pH_{FOX} of <3 (Table 4.3). This shows that the dark grey/black soils have a much higher propensity to contain sulfidic material than soils of other colours, and that any buffering capacity that is present is not sufficient to neutralise all potential acidity.

Table 4.2: Distribution of pH_F results according to soil colour

Colour	pH_F				
	<3	3-<4	4-<5	5-<7	≥7
Brown	0.00%	0.27%	3.27%	55.59%	40.87%
Black/Dark grey	0.00%	0.00%	0.50%	49.26%	50.25%
Grey	0.11%	0.00%	1.20%	67.47%	31.11%
Red/Orange/Yellow	0.00%	0.00%	0.00%	60.82%	39.18%
White/Pink	0.00%	0.00%	7.14%	71.43%	21.43%

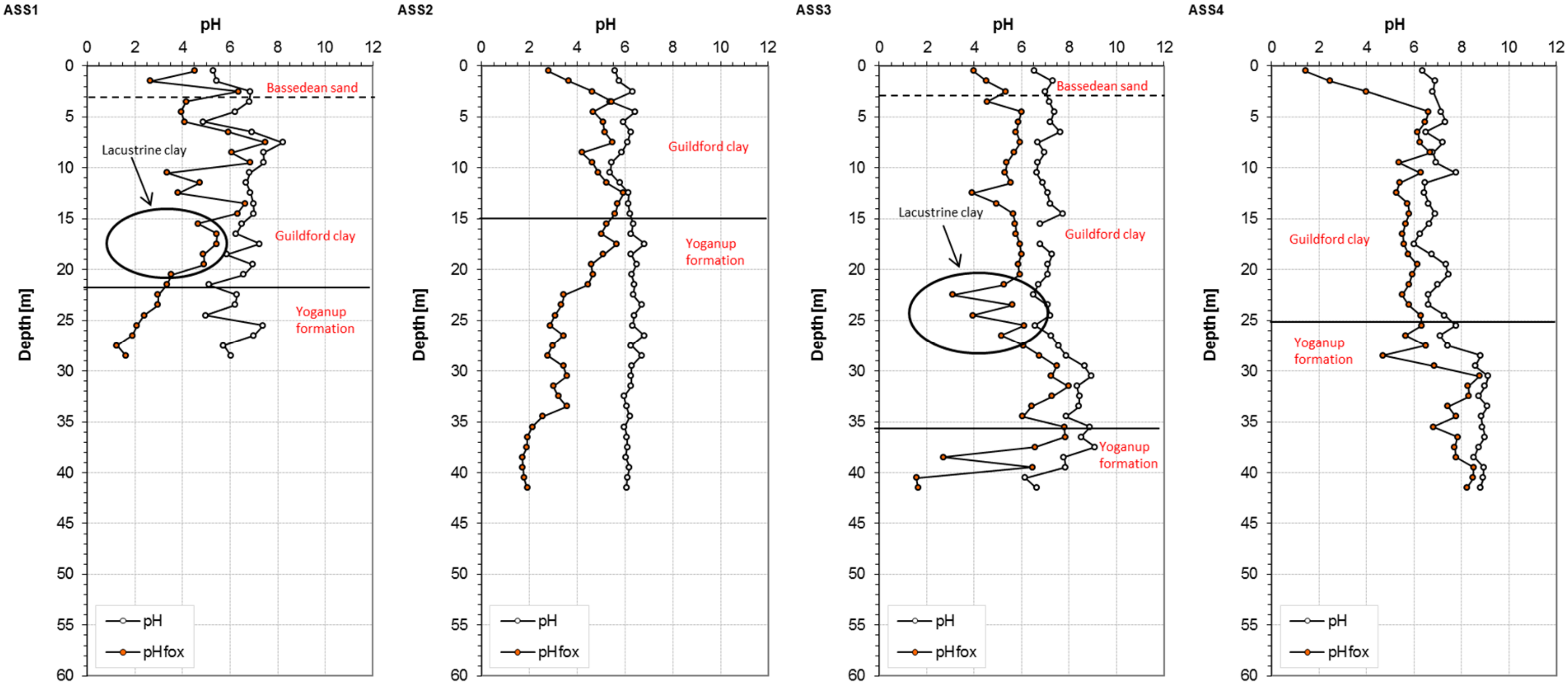
Table 4.3: Distribution of pH_{FOX} results according to soil colour

Colour	pH_{FOX}				
	<3	3-<4	4-<5	5-<7	≥7
Brown	21.80%	16.08%	17.17%	38.69%	6.27%
Black/Dark grey	51.49%	7.43%	6.44%	22.28%	12.38%
Grey	9.50%	16.27%	18.45%	53.06%	2.73%
Red/Orange/Yellow	3.09%	7.22%	19.59%	64.95%	5.15%
White/Pink	7.14%	14.29%	14.29%	64.29%	0.00%

4.2 INCUBATION TEST

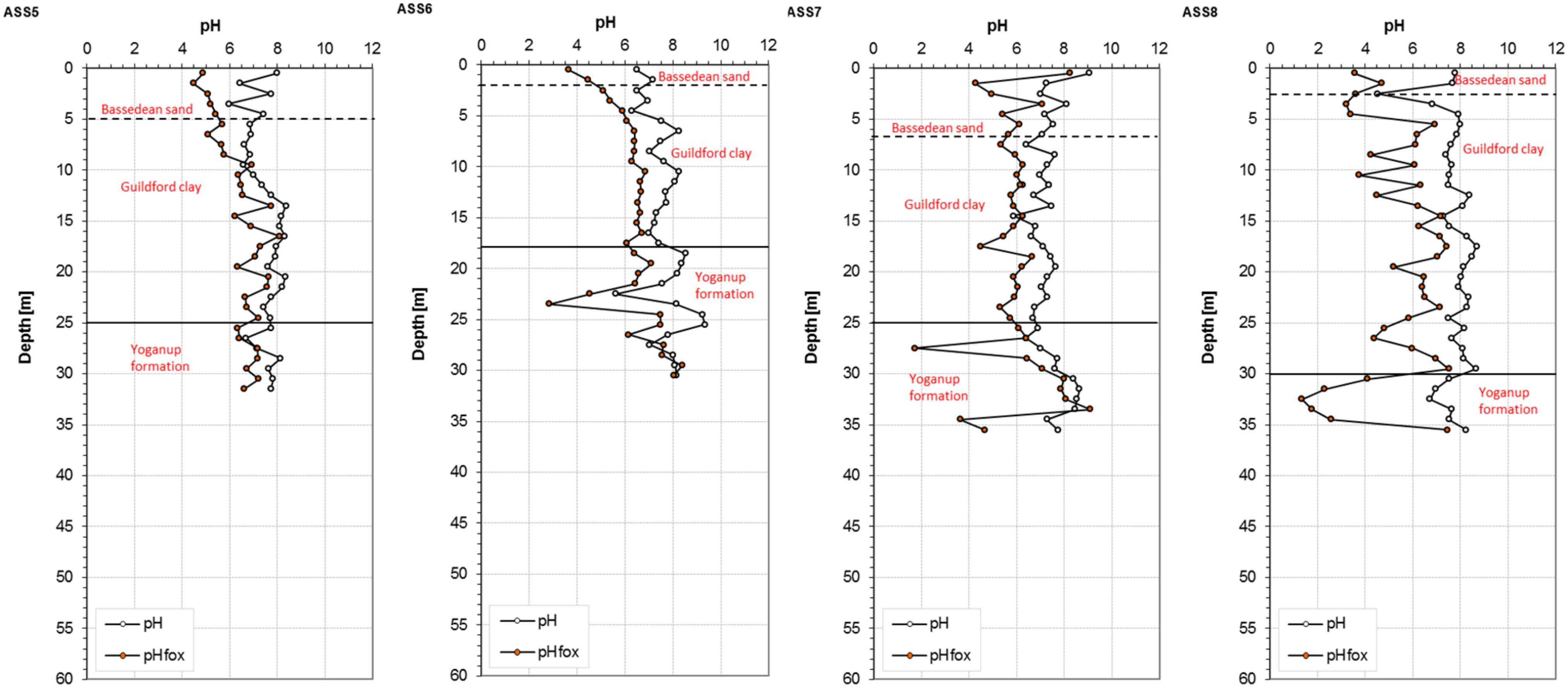
The results of the pH_{INC} testing are presented in Figure 4.3. From these results it can see that the depth trend for pH_{INC} was similar to that observed for pH_{FOX}. This result both confirms the pH_{FOX} data (i.e. the pH_{FOX} data are realistic) and that the sulfides within the superficial profile are relatively reactive, and thus there is a small management window (i.e. < 2 months) for handling prior to oxidation and acidification occurring. The pH_{INC} values were all greater than the corresponding pH_{FOX} data indicating that within the 8 week incubation period not all sulfides present had oxidised.

Plate 4.1: Incubation testing of representative soil profiles from within the Cooljarloo West Project Area

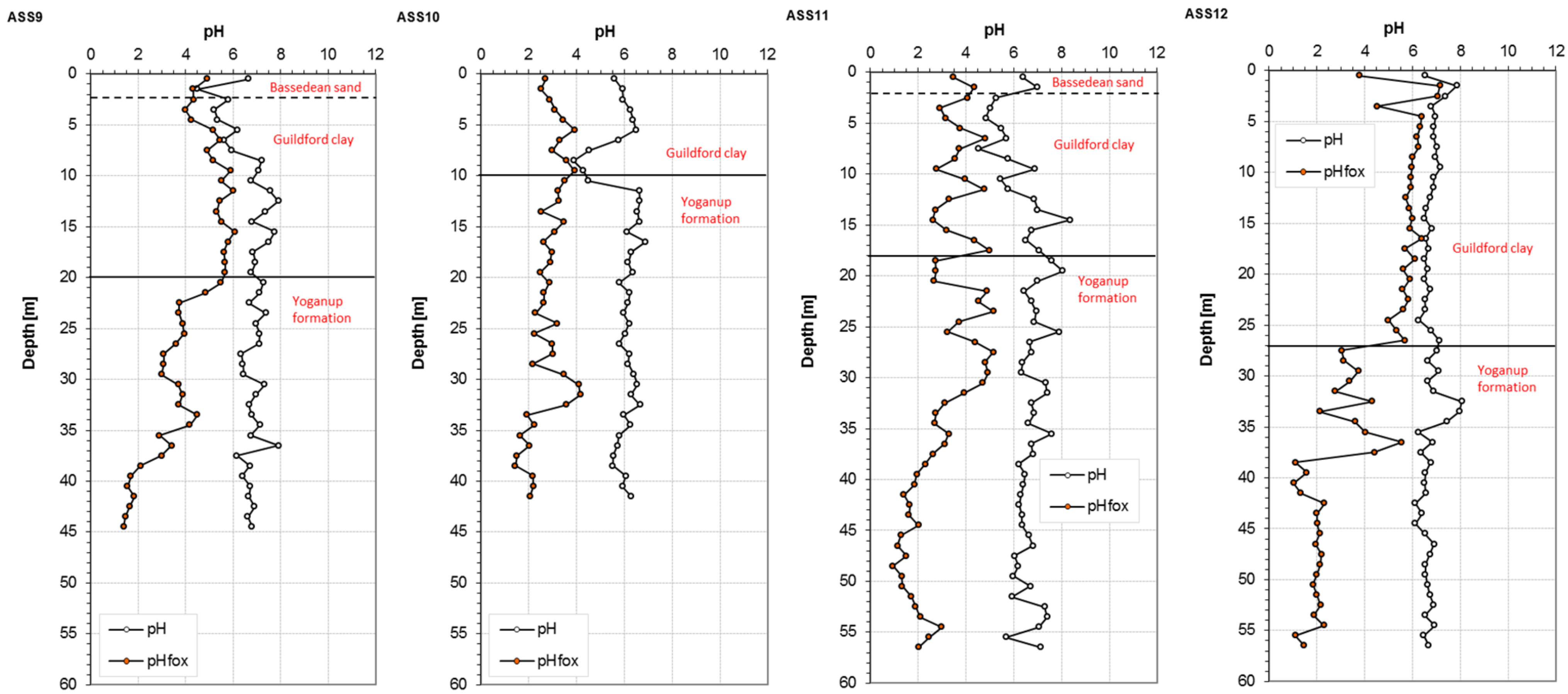


TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pHFOX depth profiles.
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

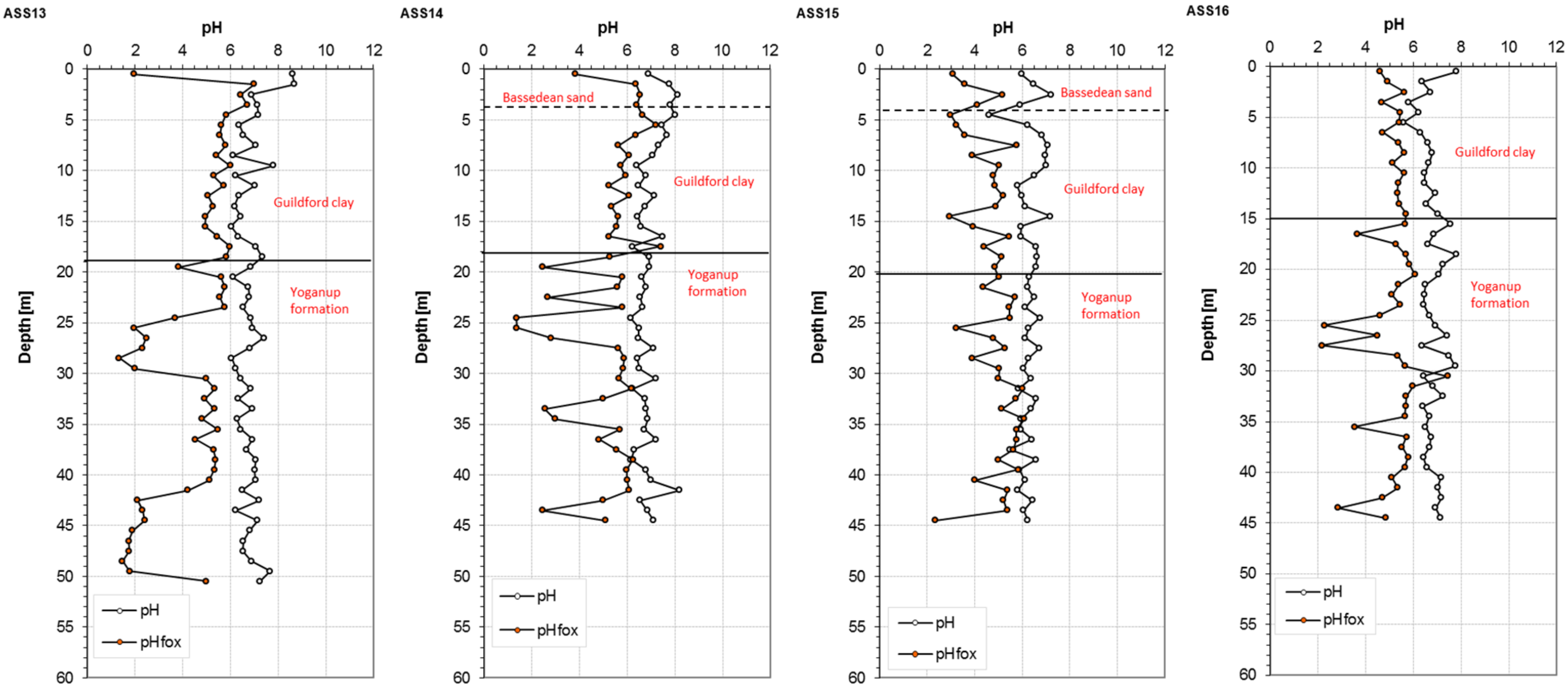
soilwater GROUP



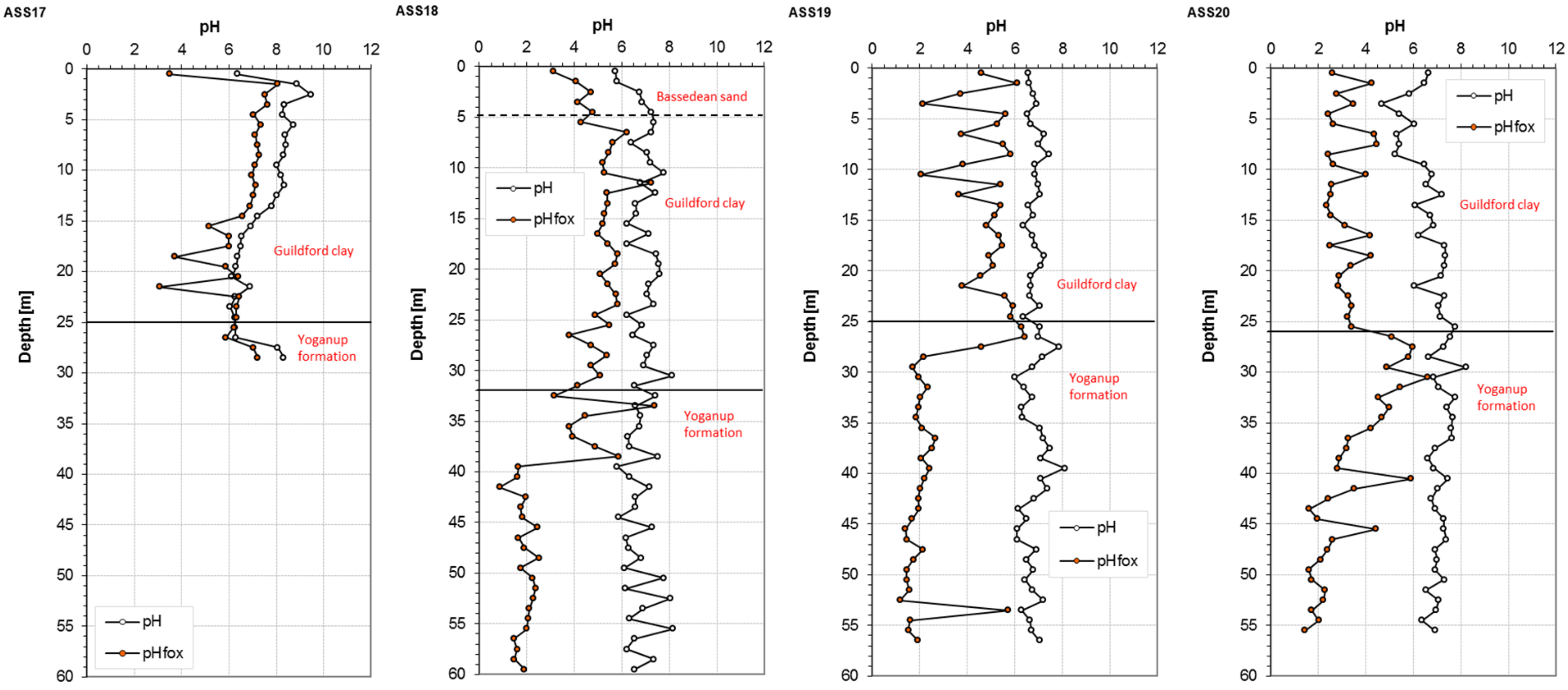
TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pH_{FOX} depth profiles *continued...*	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		



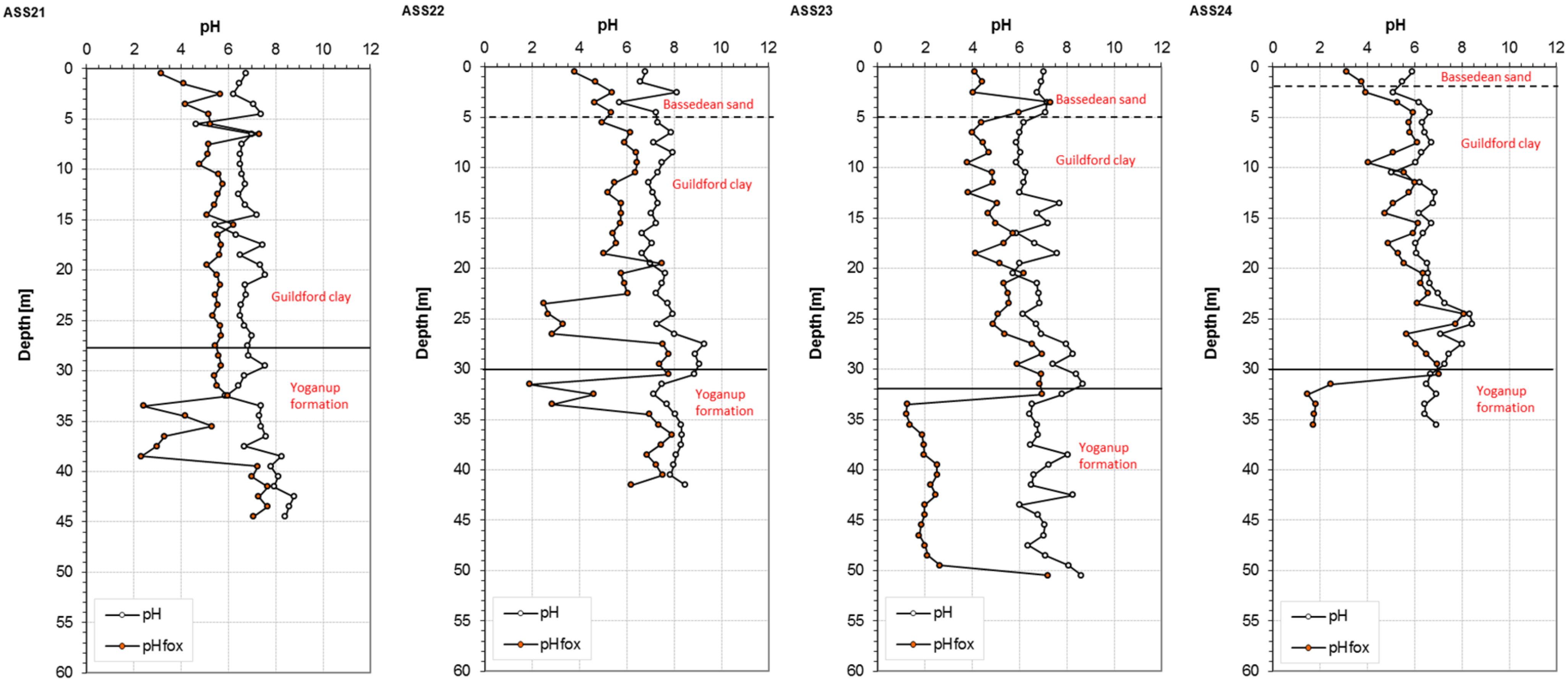
TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pH$_{FOX}$ depth profiles *continued...*	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		



TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pH_{FOX} depth profiles *continued...*	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		



TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pH_{FOX} depth profiles *continued...*
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

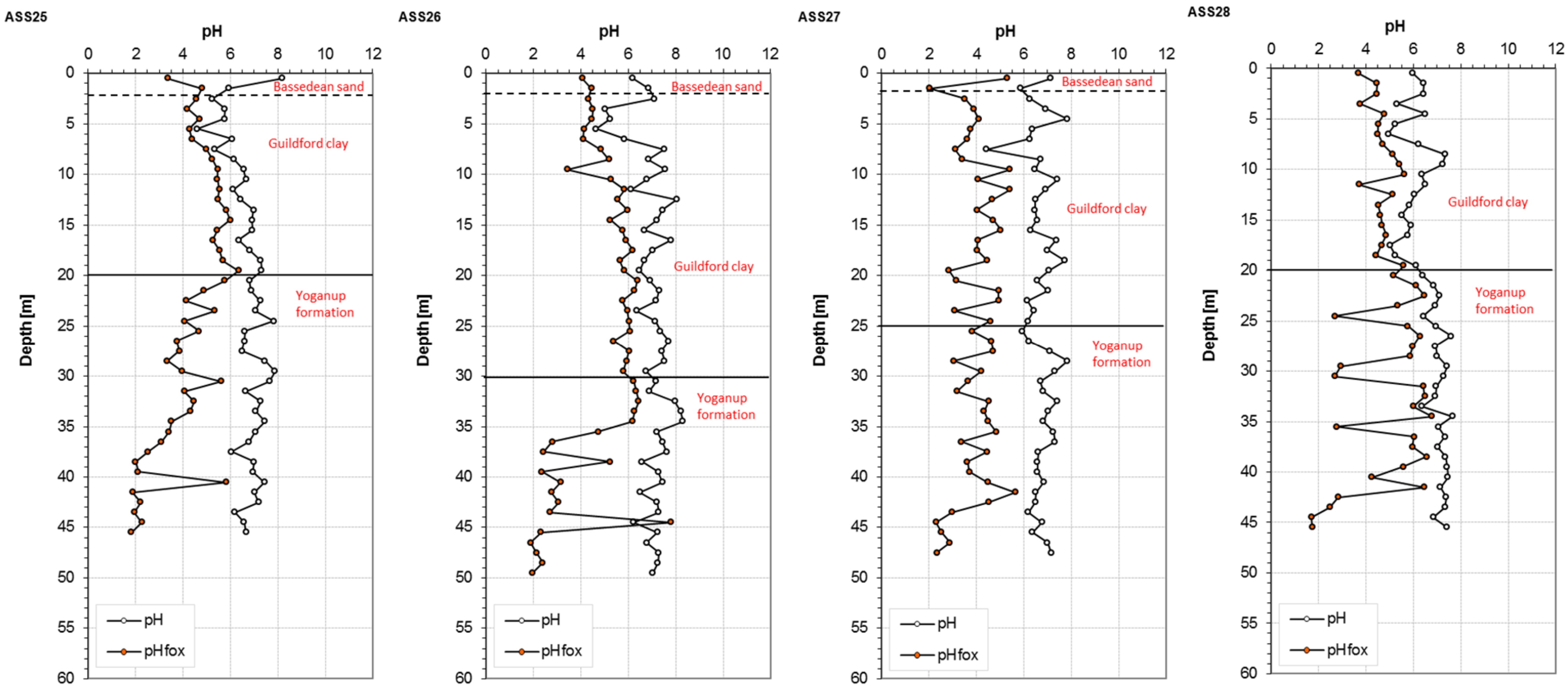


TRONOX MANAGEMENT PTY LTD

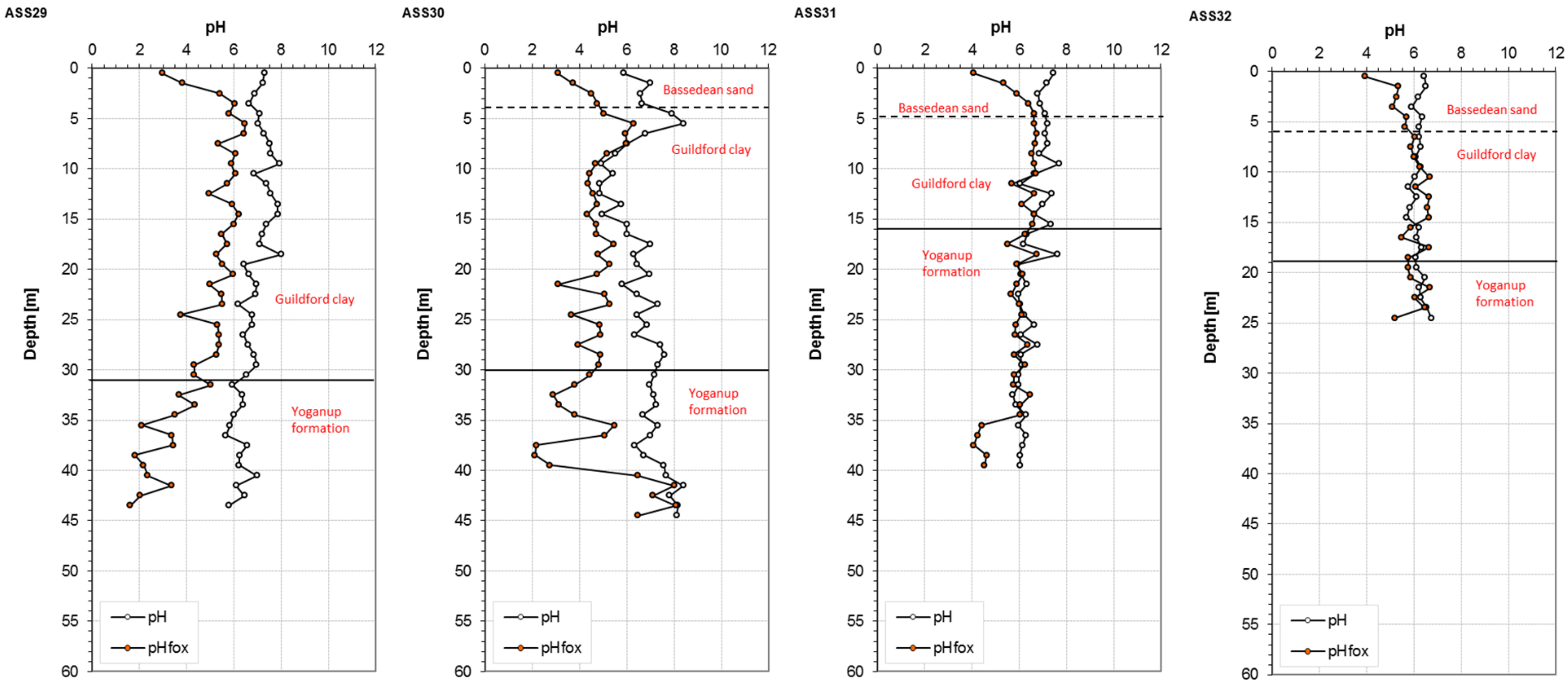
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY

Figure 4.1: pH & pH_{FOX} depth profiles *continued...*

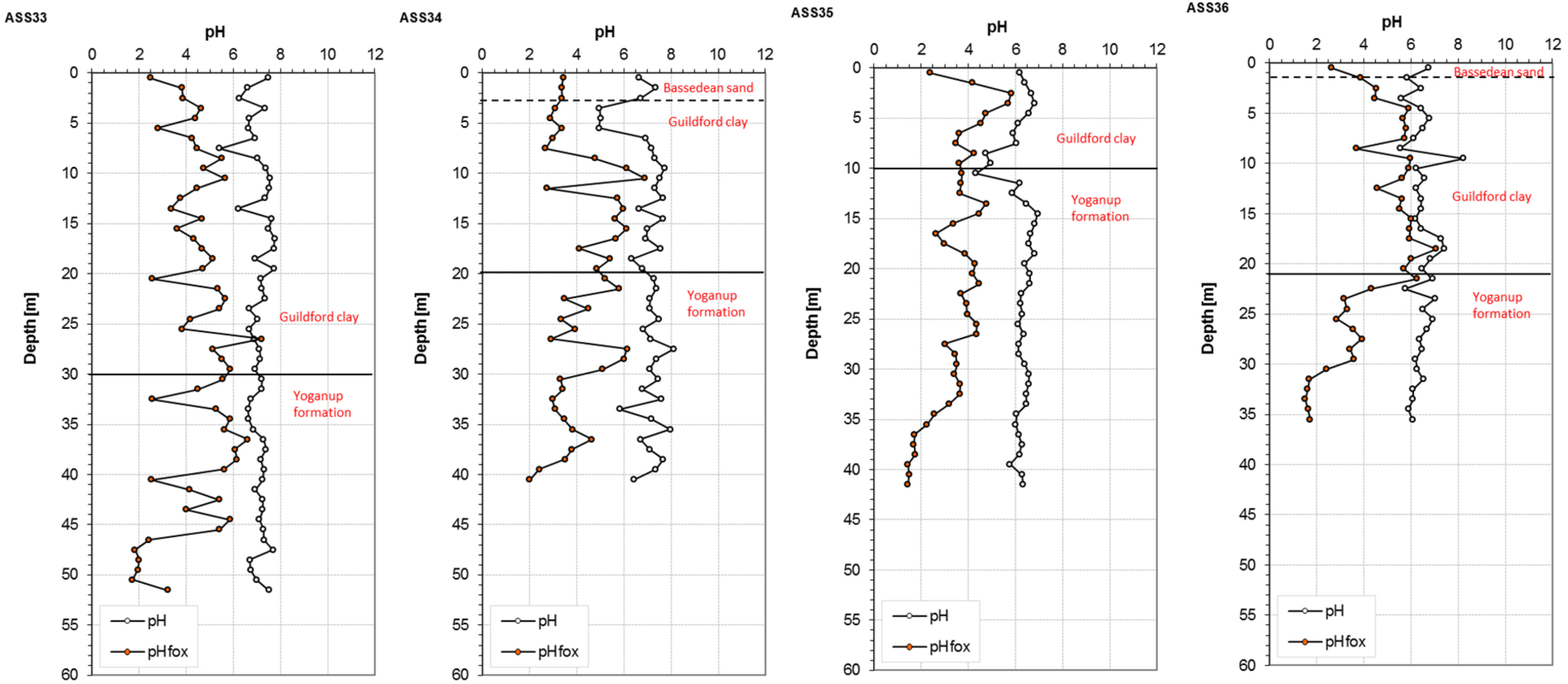
soilwater GROUP



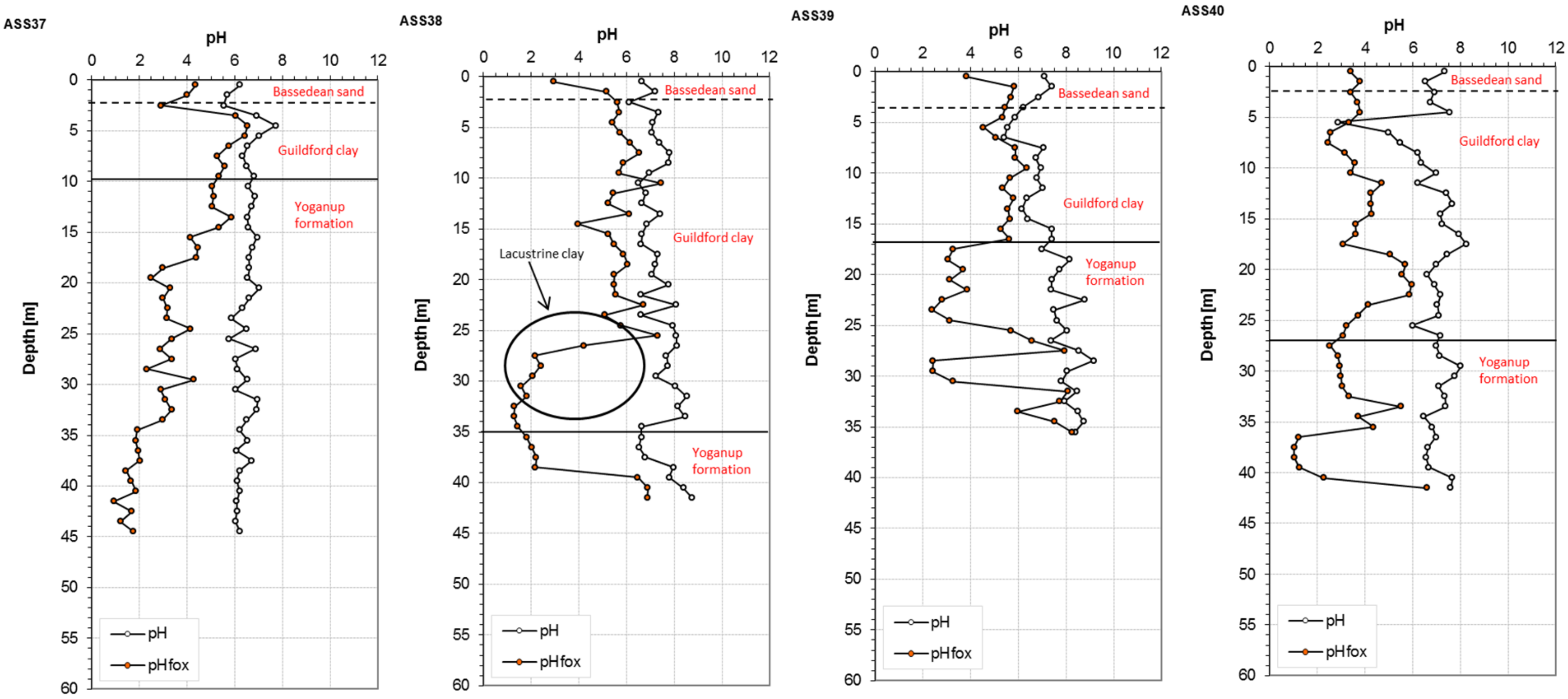
TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pH_{FOX} depth profiles *continued...*	soilwater GROUP
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY		



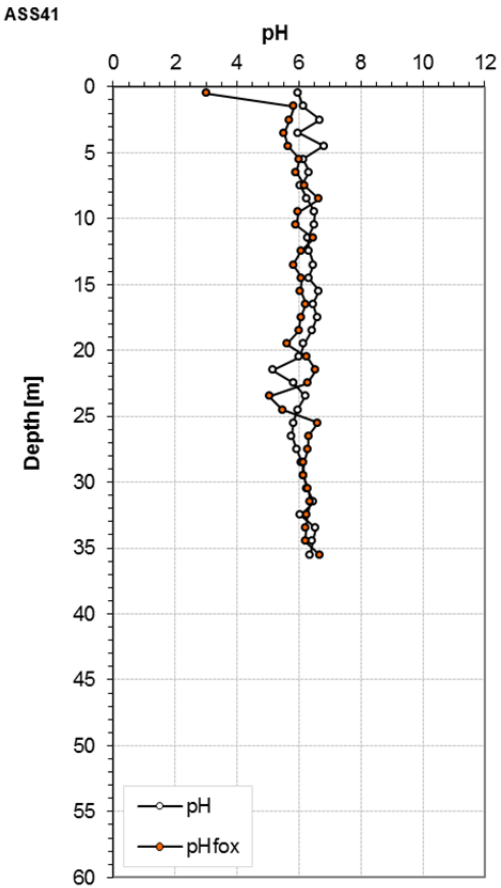
TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pH_{FOX} depth profiles *continued...*
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

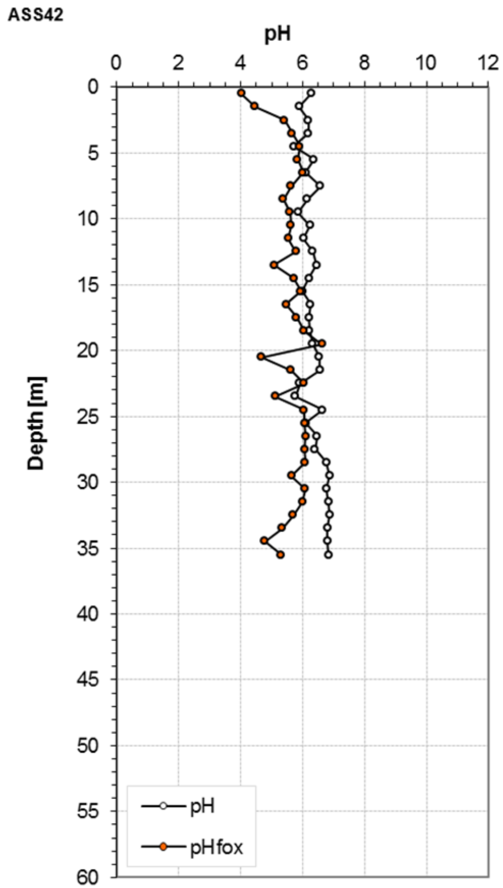


TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pHFOX depth profiles *continued...*
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

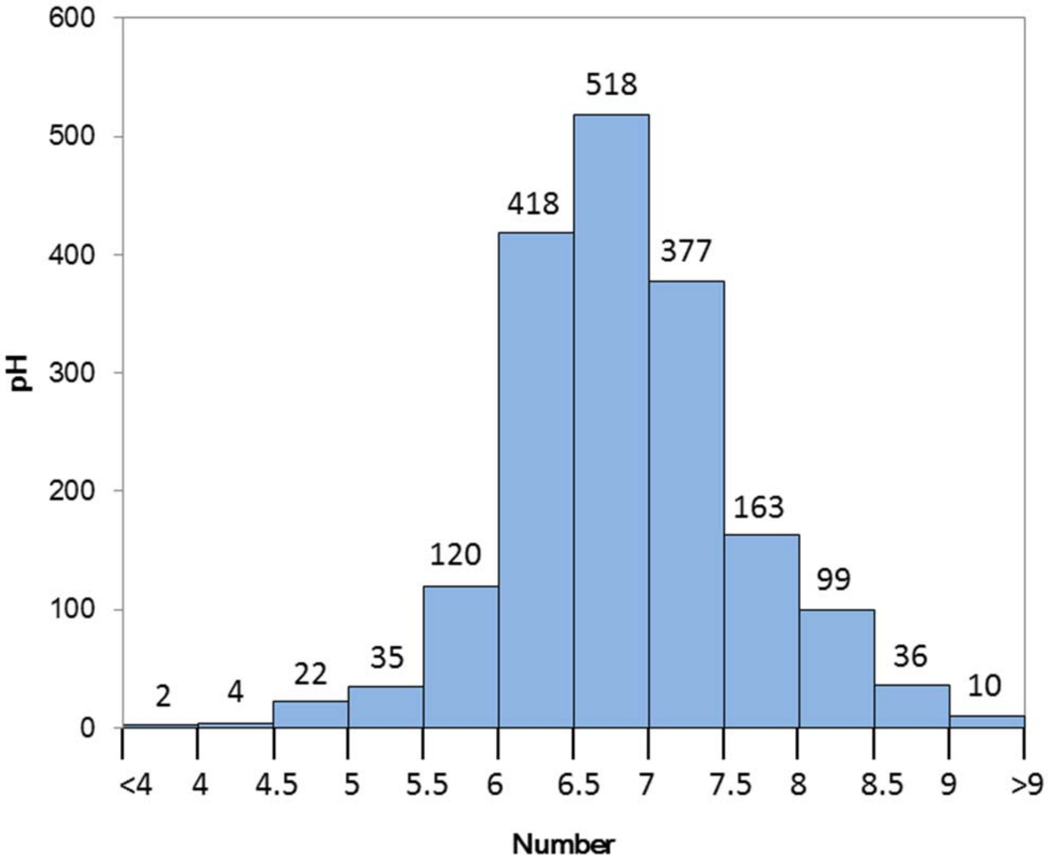


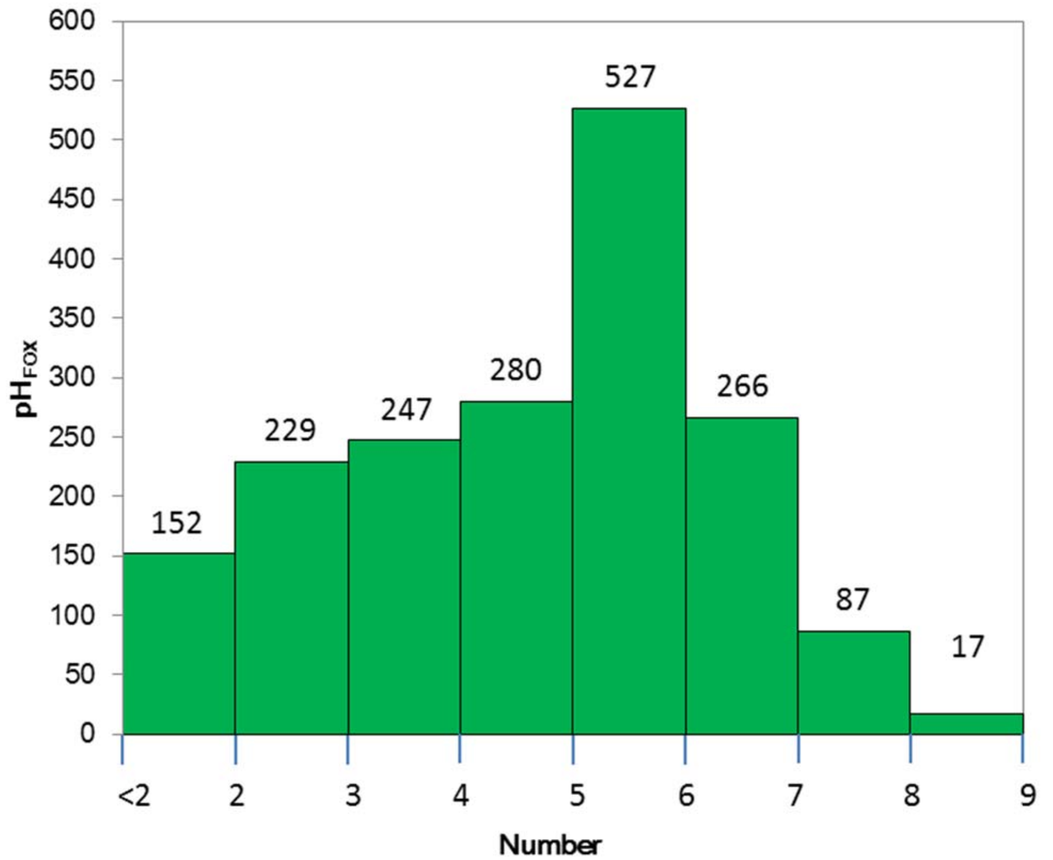
TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pH$_{FOX}$ depth profiles *continued...*
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	





TRONOX MANAGEMENT PTY LTD	Figure 4.1: pH & pH_{FOX} depth profiles *continued*...
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	



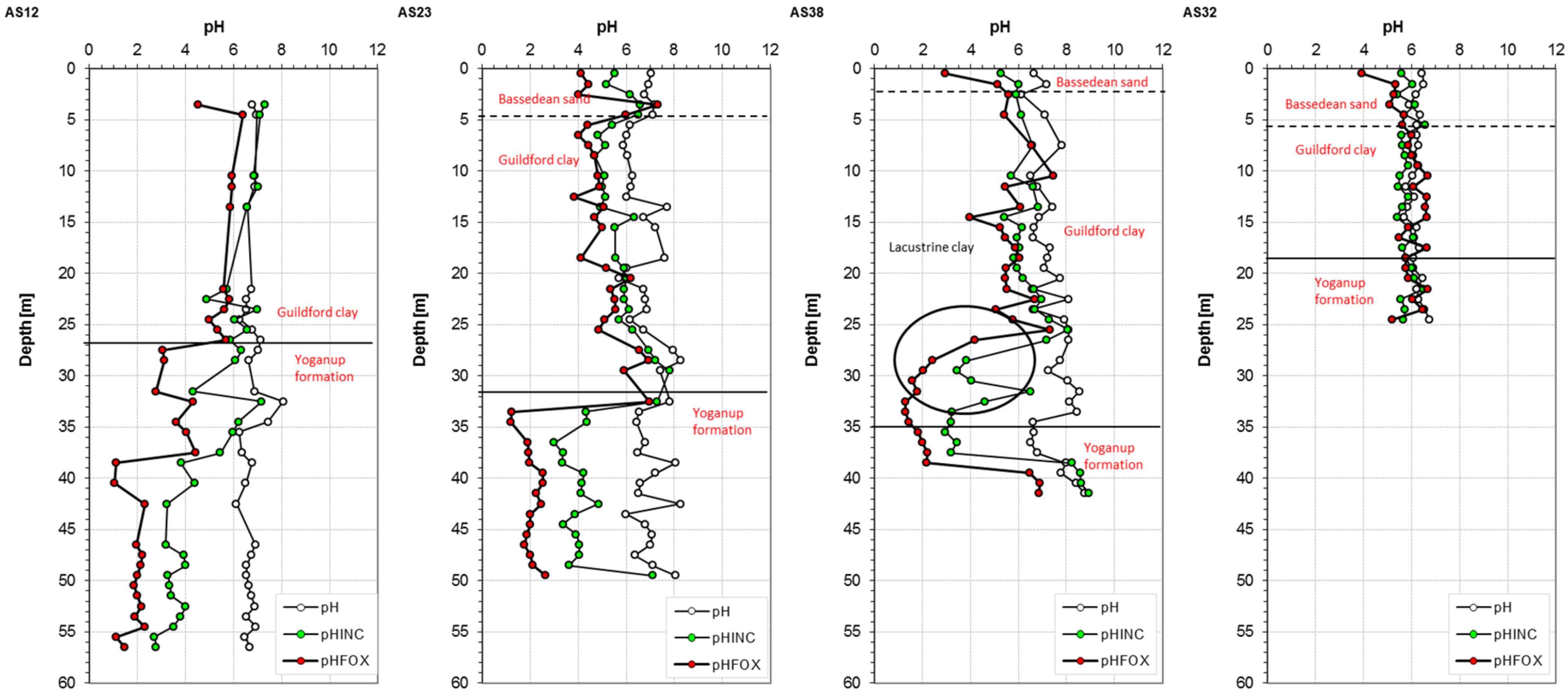


TRONOX MANAGEMENT PTY LTD

COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY

Figure 4.2: pH_F & pH_{FOX} histograms

soilwater GROUP



TRONOX MANAGEMENT PTY LTD	Figure 4.3: Results of Incubation testing (pH_{INC})
COOLJARLOO WEST ACID SULFATE SOIL (ASS) SURVEY	

4.3 DETAILED ASS ASSESSMENT

4.3.1 TAA ANALYSIS RESULTS

In order to quantify the amount of actual acidity within the surficial sediments at the Cooljarloo West deposit, all samples with a pH_F of less than 6.5 (31 samples; 1.7% of the total) were tested for Total Actual Acidity (TAA). The TAA (and corresponding pH_{KCl}[1]) for these samples are provided in Table 4.4, whilst their relationship is shown in Figure 4.4.

For all the samples tested, pH_{KCl} ranged from 4.7 to 9.6 with an average of 6.1, and the corresponding TAA ranged from below the detection limit (< 5) to 47 mol H^+/t with an average of 16.5 mol H^+/t. For samples with a pH_{KCl} of >pH7 there is no TAA and these samples returned TAA values of less than the detection limit. A reasonable relationship between pH_{KCl} and TAA was observed and it can be seen that a TAA value of 18 mol H^+/t (equivalent to the DEC action criteria) equates to a pH_{KCl} of around 5.15 (this equates to a pHF of approximately 4.5); hence all soils with a pHKCl of < 5.15 (or pHF < 4.5) will likely have a TAA exceeding the DEC Net Acidity action criteria (i.e. 18 mol H^+/t).

Table 4.4: pH_F, pH_{KCl} and TAA test results.

Hole ID	Depth From (m)	Colour	pH_F	pH_{KCl}	TAA (mol H^+/t)
36916	41	Black	6.08	5.7	5.1
36889	48	Black	6.88	5.3	44
36896	29	Black	8.05	5.9	<5
36918	10	Brown	4.49	5.8	5.1
36905	14	Brown	4.93	5.8	6.4
36905	12	Brown	4.85	5.3	16
36911	1	Brown	4.5	4.8	19
36909	0	Brown	6.35	6	<5
36917	38	Dark brown	6.02	5.2	29
36913	34	Dark brown	6.6	5.5	<5
36907	6	Dark grey	4.99	5.2	10
36902	34	Dark grey	6.37	5.7	19
36893	31	Dark grey	8.68	5.4	20
36920	8	Grey	4.75	5.6	5.1
36919	7	Grey	8.21	6	6.4
36897	5	Grey	4.61	5.2	7.6
36908	2	Grey	4.51	5	15
36916	19	Grey	6.54	5.4	16
36919	0	Grey	5.3	5.6	16
36916	27	Grey	6.02	5.1	19
36899	9	Grey	5.22	5.6	22

[1] Note pH_{KCl} is determined during TAA analysis. If the pH_{KCl} of a sample is >6.5 then it is considered that the soil has no actual acidity or existing acidity and therefore no TAA is required Ahern, C. R., Blunden, B., Sullivan, L. A. and McElnea, A. E. (2004) Soil Sampling, Handling, Preparation and Storage for Analysis of Dried Samples. In *Acid Sulfate Soils - Laboratory Methods Guidelines May 2004*. Department of Natural Resources, Mines and Energy. Indooroopilly, QLD.

Hole ID	Depth From (m)	Colour	pH_F	pH_{KCl}	TAA (mol H+/t)
36901	4	Grey	4.95	4.7	47
36899	12	Grey	6.53	6.3	<5
36907	5	Grey	2.86	5.4	<5
36907	24	Grey	7.1	6.3	<5
36920	10	Grey	4.33	6.2	<5
36924	18	Grey	6.36	5.9	<5
36892	32	Yellow grey	7.42	5.3	7.6
36892	31	Yellow grey	6.52	5.8	10
36913	7	Yellow grey	4.54	5	18
36914	6	Yellow grey	8.24	6.7	<5

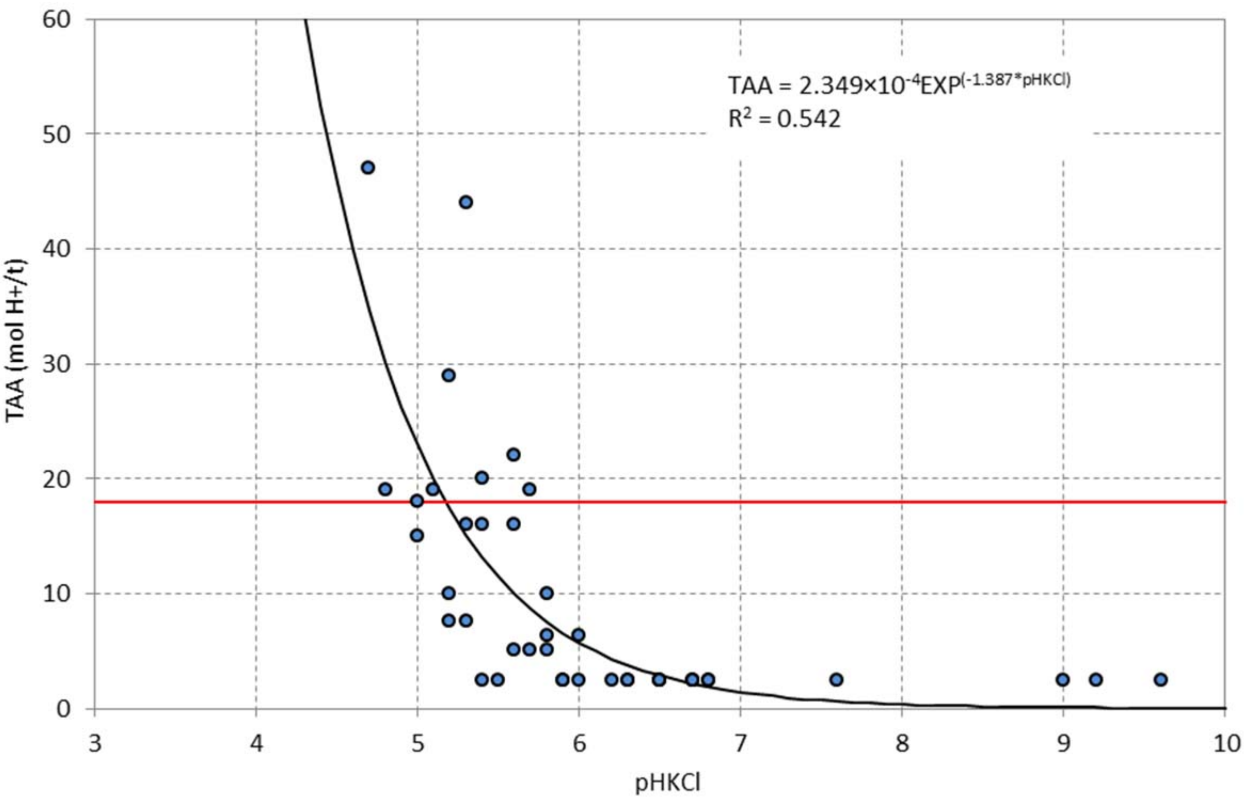


Figure 4.4: Relationship between pH_{KCl} and TAA

4.3.2 CHROMIUM REDUCIBLE SULFUR (S_{CR}) CONTENT

The S_{CR} content was determined for 53 SWC samples collected in the field. This analysis was undertaken to accurately quantify the amount of pyrite (or PASS) present in the soils and to develop a relationship with the pH_{FOX} values to enable the use of field peroxide results to accurately map the distribution of pyrite within the Cooljarloo West Deposit.

The S_{CR} results varied from below the limit of detection (< 0.005%) to 0.75% (equivalent to 467.8 mol H^+/t). The relationship between the S_{CR} and corresponding pH_{FOX} results are shown in Figure 4.5[2] A good relationship was observed (R^2 - 0.71), and the relationship is presented in Equation 3.1.

$$S_{CR}(\%) = 28{,}440e^{-7.03pHfox} \quad \textit{Eqn. 3.1}$$

The DEC (2009) utilise a S_{CR} value of 0.03% to distinguish PASS. Based on this value, and using Equation 3.1, the corresponding pH_{FOX} value is 2.1. Above this pH_{FOX} value the equation predicts the S_{CR} content of materials will fall below the critical 0.03% value. Although this relationship is considered an accurate reflection of the actual site conditions, a more conservative pH_{FOX} value of 3.4 was used, which represents the highest pH_{FOX} value with a corresponding S_{CR} content exceeding 0.03 %. This value should be used in any future field validation studies to identify surficial sediment with sufficient pyrite to cause potential environmental harm.

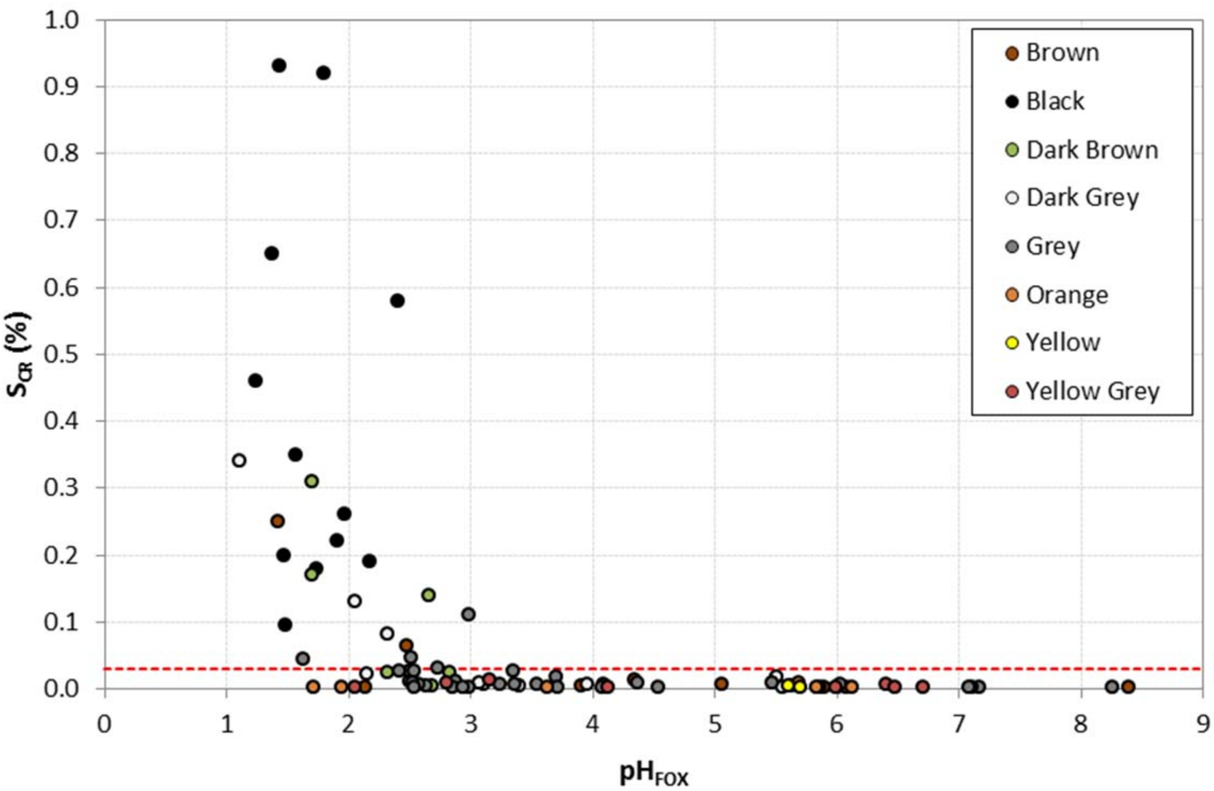


Figure 4.5: Relationship between pH_{FOX} and percentage Chromium Reducible Sulfur (S_{CR})

Anomalous results were found for six of the samples which returned both high S_{CR} (>0.03%) and high pH_{FOX} (>pH 5). It is possible that the high pH_{FOX} is due to armouring of the sulfides in the material rendering them unreactive. All samples returned high ANC values (>100 mol H^+/t) with the exception of the grey sandy loam from drillhole AS36 which had a low ANC. Acid Buffering Characteristic Curve (ABCC) tests were carried out on four of the samples and the results for these are presented in Figure 4.6. With the exception of the grey sandy loam material, all the samples were found to have high

[2] The S_{CR} values less than the LOR are reported as half the detection limit (i.e. S_{CR} = 0.0025%)

to very high buffering potential and therefore were found to be more than adequate at buffering significant volumes of acidity and as a result are excluded from the calculations for determining the pH_{FOX} value for distinguishing PASS.

Table 4.5: Details of the six samples with anomalous results for pH_{FOX} and % S_{CR}.

Drillhole ID	Depth (m)	pH_{FOX}	S_{CR} (%)	Description (colour and texture)
AS26	44.5	7.8	0.48	Dark grey sand
AS30	41.5	7.99	0.14	Dark grey sandy loam
AS22	40.5	7.51	0.12	Dark grey clayey sand
AS8	35.5	7.46	0.11	Dark brown clayey sand
AS19	53.5	5.73	0.22	Black clay
AS36	6.5	5.78	0.42	Grey sandy loam

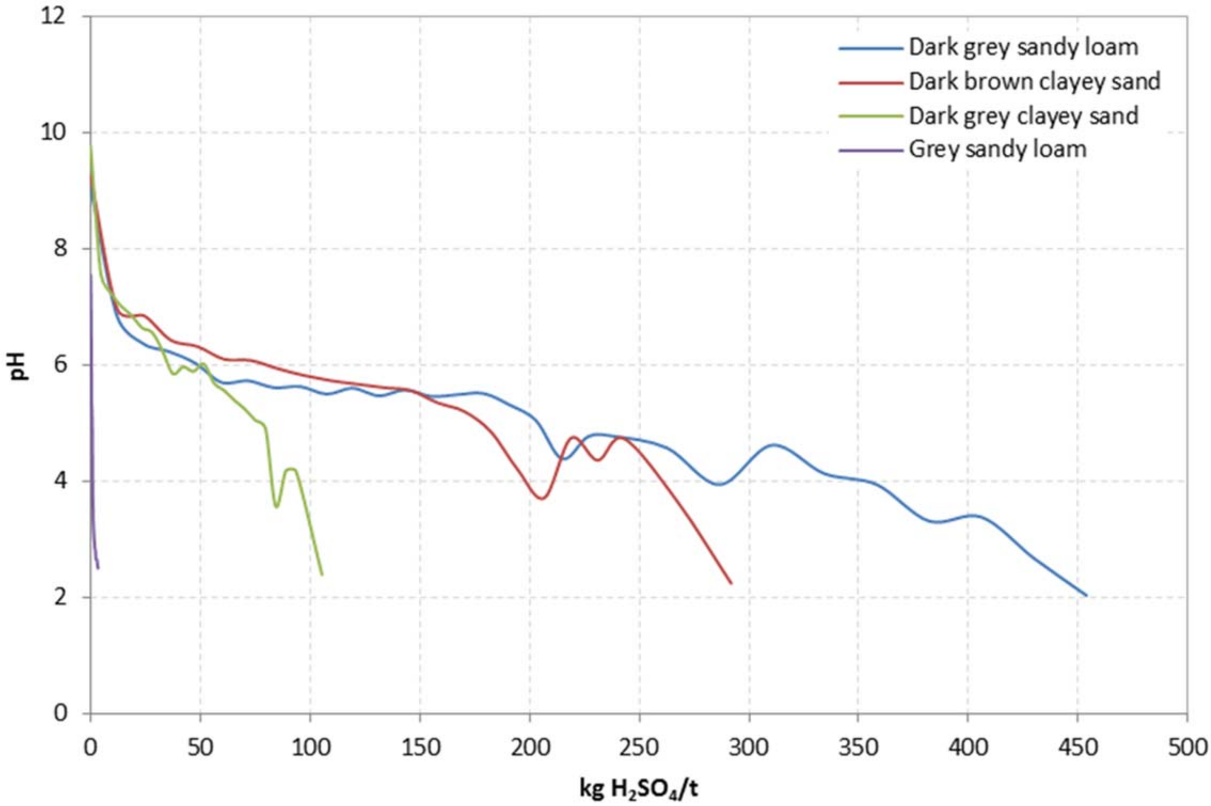


Figure 4.6: Acid Base Characteristic Curve Plots for four of the anomalous materials

4.3.3 ANC and TIC Results

The Acid Neutralising Capacity (ANC) and Total Inorganic Carbon (TIC) content of 32 of the samples selected were tested to determine the inherent buffering capacity of the surficial sediment within the Cooljarloo West Project Area. Samples were chosen on their pH_F results with on the samples that returned a pH. of >7 being tested and the results are presented in

Table 4.6 (N.B. materials which have a pH_F of less than 7 have negligible buffering potential and therefore a measure of their alkalinity is deemed unnecessary)

All materials were found to have low ANC contents with values ranging from 173.4 mol H⁺/t to below the detection limit. Four of the materials returned ANC of >100 mol H⁺/t which indicates a high buffering capacity. The clayey sand materials reported the highest ANC values overall and the clays generally had the lowest ANC. Carbonate Neutralising Potential (CarbNP) was calculated directly from the TIC content and is considered a more accurate measure of the readily available buffering capacity, as ANC only measure the buffering capacity from aluminosilicate dissolution which is general only relevant when the pH drops below 4 (Lollar, 2007) . The CarbNP of all the samples tested is presented in

Table 4.6 and values for CarbNP ranged from 31.9 to less than 0.005 mol H⁺/t. As with the ANC, the clayey sand materials returned the highest values with the majority of the clay materials returning CarbNP of less than the detection limit (<0.005 mol H⁺/t).

Table 4.6: ANC and TIC of the samples tested in this investigation.

SWC ID	Depth (m)	Colour	Texture	ANC (mol H⁺/t)	TIC (%)	CarbNP* (mol H⁺/t)
36890	35	Black	Clay	2.04	<0.001	<0.001
36894	38	Black	Clayey sand	1.02	0.04	0.33
36909	30	Black	Clay	3.06	<0.001	<0.001
36909	39	Black	Clay	3.06	<0.001	<0.001
36910	28	Black	Clayey sand	112.2	2.5	20.43
36910	41	Black	Clay	3.06	<0.001	<0.001
36914	40	Black	Clayey sand	67.30	1.5	12.2
36893	5	Brown	Sandy loam	1.02	0.02	0.16
36894	29	Brown	Clayey sand	173.4	3.9	31.9
36912	4	Brown	Sandy loam	0.82	<0.001	<0.001
36924	30	Brown	Clayey sand	112.2	2.5	20.4
36893	29	Dark brown	Clay	4.08	0.06	0.49
36912	24	Dark brown	Clay	0.61	<0.001	<0.001
36912	27	Dark brown	Clay	1.02	<0.001	<0.001
36919	26	Dark brown	Cay	<0.005	<0.001	<0.001
36894	30	Dark grey	Clay	2.04	0.02	0.16
36895	36	Dark grey	Clayey sand	41.81	1.0	8.17
36909	31	Dark grey	Clay	4.08	<0.001	<0.001
36909	32	Dark grey	Clay	2.04	0.02	0.16
36914	32	Dark grey	Clay	5.61	<0.001	<0.001
36915	42	Dark grey	Clayey sand	64.24	1.5	12.3
36922	28	Dark grey	Clay	0.51	<0.001	<0.001
36924	31	Dark grey	Clay	0.82	<0.001	<0.001
36924	32	Dark grey	Clay	0.61	<0.001	<0.001
36892	7	Grey	Sandy loam	<0.005	<0.001	<0.001
36910	20	Grey	Clayey sand	6.32	0.17	1.39
36914	0	Grey	Sand	3.06	<0.001	<0.001

SWC ID	Depth (m)	Colour	Texture	ANC (mol H⁺/t)	TIC (%)	CarbNP* (mol H⁺/t)
36924	6	Grey	Sandy clay	0.92	<0.001	<0.001
36893	0	Orange	Sandy loam	0.41	0.02	0.16
36894	33	Orange brown	Clayey sand	25.49	3.7	30.2
36914	32	Orange brown	Clayey sand	132.6	3.1	25.4
36893	30	Yellow grey	Clay	<0.005	<0.001	<0.001
36894	6	Yellow grey	Clayey sand	3.06	<0.001	<0.001

*CarbNP calculated from the TIC

4.3.4 Multi-Element Composition

Table 4.7 details the 20 samples that were selected from each major lithological unit for multi-element composition with the results of the analysis provided in Table 4.8. The results were compared to the DEC Ecological Investigation Levels (EIL), to identify element enrichments that may pose a risk to the environment following disturbance. The results show that in general the materials had low to negligible metal content with the concentrations of metals in the samples reporting as less than the detection limit or below the corresponding EIL. This is to be expected given that the soils throughout the SCP are predominately sandy (i.e. quartz-rich), and thus they have a relatively low capacity to adsorb and hold metals and metalloids.

Slightly elevated concentrations of V and As (i.e. above EIL) were observed in a small number of samples (three), and this is not considered a likely environmental risk as they are likely to be isomorphically substituted with Fe in the mineral crystal lattice, and thus not available for leaching.

Table 4.7: Selected samples from each major lithological unit for multi-element composition.

Hole ID	Depth (m)	Colour	Texture
36911	29	Grey	Clayey sand
36894	23	Dark brown	Clay
36894	24	Dark brown	Clay
36910	34	Orange brown	Clayey sand
36907	25	Dark brown	Clay
36911	1	Brown	Sandy loam
36912	22	Dark grey	Clayey sand
36918	9	Brown	Sandy loam
36919	20	Grey	Clay
36921	11	Grey	Clayey sane
36924	6	Grey	Sandy clay
36910	27	Orange	Clayey sand
36914	6	Yellow grey	Clayey sand
36915	27	Dark grey	Clayey sand
36892	31	Yellow grey	Clay
36892	32	Yellow grey	Clay
36894	26	Dark brown	Clay

Hole ID	Depth (m)	Colour	Texture
36914	29	Brown	Clayey sand
36913	48	Black	Clay
36907	33	Dark grey	Sandy loam

Table 4.8: Multi-element composition of representative soil materials.

	Drill hole	AS9	AS22	AS22	AS7	AS40
Element	EIL (mg/kg)	29 m	23 m	24 m	34 m	25 m
Aluminium	-	1,400	18,000	18,000	390	4,600
Antimony	-	<7	<7	<7	<7	<7
Arsenic	*20*	<2	2	5	<2	<2
Cadmium	*3*	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	*400*	6	52	38	2	10
Cobalt	*50*	<1	36	10	<1	<1
Copper	*100*	<1	7	3	<1	<1
Iron	-	2,100	5,100	8,200	2,400	1,900
Lead	*600*	8	30	17	1	9
Manganese	*500*	27	13	20	28	20
Mercury	*1*	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	*60*	2	21	20	<1	2
Strontium	-	13	19	21	2	2
Tin	*50*	<1	<1	<1	<1	<1
Uranium	-	<1	3	<1	<1	<1
Vanadium	*50*	7	**74**	37	1	11
Zinc	*200*	5	8	23	<1	10

Table 4.8: *Continued…*

	Drill hole	AS9	AS3	AS10	AS1	AS36
Element	EIL (mg/kg)	1 m	22 m	9 m	20 m	11 m
Aluminium	-	11,000	4,200	10,000	6,200	8,200
Antimony	-	<7	<7	<7	<7	<7
Arsenic	*20*	3	<2	<2	<2	<2
Cadmium	*3*	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	*400*	39	8	18	26	10
Cobalt	*50*	1	<1	<1	<1	<1
Copper	*100*	<1	<1	<1	3	<1
Iron	-	22,000	2,200	2,600	4,800	2,400
Lead	*600*	12	6	6	11	10
Manganese	*500*	8	10	18	41	25
Mercury	*1*	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	*60*	2	2	3	4	2
Strontium	-	3	4	2	28	320

	Drill hole	AS9	AS3	AS10	AS1	AS36
Tin	*50*	<1	<1	<1	<1	<1
Uranium	-	<1	<1	<1	<1	<1
Vanadium	*50*	93	9	20	19	15
Zinc	*200*	2	4	1	3	1

Table 4.8: *Continued….*

	Drill hole	AS17	AS7	AS6	AS38	AS18
Element	EIL (mg/kg)	6 m	27 m	6 m	27 m	31 m
Aluminium	-	13,000	1,200	11,000	4,200	4,100
Antimony	-	<7	<7	<7	<7	<7
Arsenic	*20*	<2	<2	<2	<2	<2
Cadmium	*3*	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	*400*	21	8	28	11	11
Cobalt	*50*	1	1	2	3	<1
Copper	*100*	<1	<1	<1	1	1
Iron	-	4,800	6,000	7,700	3,200	3,500
Lead	*600*	7	2	6	6	5
Manganese	*500*	28	27	13	29	37
Mercury	*1*	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	*60*	3	3	4	4	2
Strontium	-	9	10	21	10	4
Tin	*50*	<1	<1	<1	<1	<1
Uranium	-	<1	<1	<1	2	<1
Vanadium	*50*	13	11	50	12	13
Zinc	*200*	2	6	3	8	5

Table 4.8: *Continued…*

	Drill hole	AS18	AS22	AS6	AS11	AS40
Element	EIL (mg/kg)	32 m	26 m	29 m	48 m	33 m
Aluminium	-	15,000	10,000	2,000	7,700	11,000
Antimony	-	<7	<7	<7	<7	<7
Arsenic	*20*	3	<2	3	31	<2
Cadmium	*3*	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	*400*	37	26	12	70	45
Cobalt	*50*	14	16	3	3	2
Copper	*100*	4	2	<1	3	<1
Iron	-	4,100	4,400	14,000	26,000	17,000
Lead	*600*	18	8	2	6	10
Manganese	*500*	11	15	47	51	21
Mercury	*1*	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	*60*	24	13	3	8	4

	Drill hole	AS18	AS22	AS6	AS11	AS40
Strontium	-	12	7	350	13	6
Tin	*50*	<1	<1	<1	<1	<1
Uranium	-	2	1	<1	4	<1
Vanadium	*50*	33	32	4	**53**	**74**
Zinc	*200*	6	11	4	18	7

4.3.5 Metal Bioavailability

The bioavailability of metals in the materials was determined by leaching the samples under both acid and neutral conditions, according to the ASLP (AS 4439.3–1997). The results of the leaching are presented in Table 4.9 and Table 4.10 as a percentage of the total metal in the materials.

For the majority of the metals the concentration was below the detection limit (bdl) and therefore the risk of leaching was considered to be negligible. The concentration of metals in the leachate and solid materials was low and close to the detection limit for most of the metals and as such the percentage values obtained reflect this and are not considered to represent a real risk of leaching.

Table 4.9: Metal bioavailability as a percentage of the total metal under neutral leaching conditions

	AS9	AS22	AS22	AS7	AS40
Element	29 m	23 m	24 m	34 m	25 m
Aluminium	0.57	0.24	0.04	bdl	bdl
Antimony	bdl	bdl	bdl	bdl	bdl
Arsenic	bdl	bdl	bdl	bdl	bdl
Cadmium	bdl	bdl	bdl	bdl	bdl
Chromium	bdl	bdl	bdl	bdl	bdl
Cobalt	bdl	bdl	bdl	bdl	bdl
Copper	bdl	bdl	bdl	bdl	bdl
Iron	bdl	0.20	0.04	0.06	bdl
Lead	bdl	bdl	bdl	bdl	bdl
Manganese	bdl	bdl	bdl	1.43	bdl
Mercury	bdl	bdl	bdl	bdl	bdl
Nickel	bdl	bdl	bdl	bdl	bdl
Strontium	9.23	bdl	bdl	bdl	bdl
Tin	bdl	bdl	bdl	bdl	bdl
Uranium	bdl	0.80	bdl	bdl	bdl
Vanadium	8.57	4.05	1.08	bdl	bdl
Zinc	bdl	bdl	bdl	bdl	bdl

Table 4.9: Continued….

	AS9	AS3	AS10	AS1	AS36
Element	1 m	22 m	9 m	20 m	11 m
Aluminium	bdl	0.05	bdl	bdl	bdl

	AS9	AS3	AS10	AS1	AS36
Antimony	bdl	bdl	bdl	bdl	bdl
Arsenic	bdl	bdl	bdl	bdl	bdl
Cadmium	bdl	bdl	bdl	bdl	bdl
Chromium	bdl	bdl	bdl	bdl	bdl
Cobalt	bdl	bdl	bdl	bdl	bdl
Copper	bdl	bdl	bdl	bdl	bdl
Iron	bdl	0.04	0.09	0.05	bdl
Lead	bdl	bdl	bdl	bdl	bdl
Manganese	bdl	bdl	bdl	5.85	8.80
Mercury	bdl	bdl	bdl	bdl	bdl
Nickel	bdl	bdl	bdl	bdl	bdl
Strontium	bdl	bdl	bdl	15.00	93.75
Tin	bdl	bdl	bdl	bdl	bdl
Uranium	bdl	bdl	bdl	bdl	bdl
Vanadium	bdl	bdl	bdl	bdl	bdl
Zinc	bdl	bdl	bdl	bdl	bdl

Table 4.9: Continued….

	AS17	AS7	AS6	AS38	AS18
Element	6 m	27 m	6 m	27 m	31 m
Aluminium	0.05	bdl	0.02	0.10	bdl
Antimony	bdl	bdl	bdl	bdl	bdl
Arsenic	bdl	bdl	bdl	bdl	bdl
Cadmium	bdl	bdl	bdl	bdl	bdl
Chromium	bdl	bdl	bdl	bdl	bdl
Cobalt	bdl	bdl	bdl	bdl	bdl
Copper	bdl	bdl	bdl	bdl	bdl
Iron	0.02	0.02	bdl	0.03	bdl
Lead	bdl	bdl	bdl	bdl	bdl
Manganese	bdl	bdl	bdl	bdl	bdl
Mercury	bdl	bdl	bdl	bdl	bdl
Nickel	bdl	bdl	bdl	bdl	bdl
Strontium	bdl	12.00	bdl	bdl	bdl
Tin	bdl	bdl	bdl	bdl	bdl
Uranium	bdl	bdl	bdl	bdl	bdl
Vanadium	bdl	bdl	4.40	5.00	bdl
Zinc	bdl	bdl	bdl	bdl	bdl

Table 4.9: Continued….

	AS18	AS22	AS6	AS11	AS40
Element	32 m	26 m	29 m	48 m	33 m

	AS18	AS22	AS6	AS11	AS40
Aluminium	0.07	0.04	0.50	11.69	bdl
Antimony	bdl	bdl	bdl	bdl	bdl
Arsenic	bdl	bdl	bdl	bdl	bdl
Cadmium	bdl	bdl	bdl	bdl	bdl
Chromium	bdl	bdl	bdl	2.86	bdl
Cobalt	bdl	bdl	bdl	53.33	bdl
Copper	bdl	bdl	bdl	bdl	bdl
Iron	0.05	0.03	bdl	12.31	0.01
Lead	bdl	bdl	bdl	bdl	bdl
Manganese	bdl	bdl	bdl	58.82	bdl
Mercury	bdl	bdl	bdl	bdl	bdl
Nickel	bdl	bdl	bdl	50.00	bdl
Strontium	bdl	bdl	0.57	56.92	bdl
Tin	bdl	bdl	bdl	bdl	bdl
Uranium	bdl	bdl	bdl	3.45	bdl
Vanadium	bdl	bdl	bdl	19.25	bdl
Zinc	bdl	bdl	bdl	27.78	bdl

Table 4.10: Metal bioavailability as a percentage of the total metal under acid leaching conditions

	AS9	AS22	AS22	AS7	AS40
Element	29 m	23 m	24 m	34 m	25 m
Aluminium	1.14	0.03	0.03	1.03	0.30
Antimony	bdl	bdl	bdl	bdl	bdl
Arsenic	bdl	bdl	bdl	bdl	bdl
Cadmium	bdl	bdl	bdl	bdl	bdl
Chromium	bdl	bdl	bdl	bdl	bdl
Cobalt	bdl	20.00	14.00	bdl	bdl
Copper	bdl	bdl	bdl	bdl	bdl
Iron	8.19	0.11	0.08	1.75	0.87
Lead	bdl	bdl	bdl	bdl	bdl
Manganese	15.56	7.69	8.00	10.00	5.00
Mercury	bdl	bdl	bdl	bdl	bdl
Nickel	bdl	12.38	9.00	bdl	bdl
Strontium	84.62	29.47	32.38	60.00	70.00
Tin	bdl	bdl	bdl	bdl	bdl
Uranium	bdl	9.33	bdl	bdl	bdl
Vanadium	bdl	bdl	bdl	bdl	bdl
Zinc	52.00	bdl	1.74	bdl	20.00

Table 4.10: Continued…

	AS9	AS3	AS10	AS1	AS36
Element	1 m	22 m	9 m	20 m	11 m
Aluminium	0.07	0.14	0.18	0.16	0.37
Antimony	bdl	bdl	bdl	bdl	bdl
Arsenic	bdl	bdl	bdl	bdl	bdl
Cadmium	bdl	bdl	bdl	bdl	bdl
Chromium	bdl	bdl	bdl	bdl	bdl
Cobalt	bdl	bdl	bdl	bdl	bdl
Copper	bdl	bdl	bdl	bdl	bdl
Iron	0.02	0.29	0.45	1.71	0.82
Lead	bdl	bdl	bdl	bdl	bdl
Manganese	12.50	12.00	5.56	17.07	25.60
Mercury	bdl	bdl	bdl	bdl	bdl
Nickel	bdl	bdl	bdl	bdl	bdl
Strontium	bdl	35.00	bdl	107.14	100.00
Tin	bdl	bdl	bdl	bdl	bdl
Uranium	bdl	bdl	bdl	bdl	bdl
Vanadium	bdl	bdl	bdl	bdl	bdl
Zinc	bdl	bdl	bdl	13.33	bdl

Table 4.10: Continued…

	AS17	AS7	AS6	AS38	AS18
Element	6 m	27 m	6 m	27 m	31 m
Aluminium	0.09	0.67	0.09	0.29	0.39
Antimony	bdl	bdl	bdl	bdl	bdl
Arsenic	bdl	bdl	bdl	bdl	bdl
Cadmium	bdl	bdl	bdl	bdl	bdl
Chromium	bdl	bdl	bdl	bdl	bdl
Cobalt	bdl	bdl	bdl	26.67	bdl
Copper	bdl	bdl	bdl	bdl	bdl
Iron	3.75	1.90	2.34	1.75	1.43
Lead	bdl	bdl	bdl	bdl	bdl
Manganese	12.86	11.85	29.23	15.86	5.41
Mercury	bdl	bdl	bdl	bdl	bdl
Nickel	bdl	bdl	bdl	20.00	bdl
Strontium	57.78	70.00	63.81	72.00	50.00
Tin	bdl	bdl	bdl	bdl	bdl
Uranium	bdl	bdl	bdl	12.00	bdl
Vanadium	bdl	bdl	bdl	bdl	bdl
Zinc	bdl	33.33	bdl	30.00	20.00

Table 4.10: Continued…

	AS18	AS22	AS6	AS11	AS40
Element	32 m	26 m	29 m	48 m	33 m
Aluminium	0.05	0.08	bdl	0.55	0.09
Antimony	bdl	bdl	bdl	bdl	bdl
Arsenic	bdl	bdl	bdl	bdl	bdl
Cadmium	bdl	bdl	bdl	bdl	bdl
Chromium	bdl	bdl	bdl	0.86	bdl
Cobalt	bdl	27.50	bdl	20.00	bdl
Copper	bdl	bdl	bdl	bdl	bdl
Iron	0.04	0.16	bdl	0.67	0.07
Lead	bdl	bdl	bdl	bdl	bdl
Manganese	bdl	9.33	3.83	47.06	5.71
Mercury	bdl	bdl	bdl	bdl	bdl
Nickel	bdl	13.85	bdl	15.00	bdl
Strontium	bdl	45.71	33.14	41.54	30.00
Tin	bdl	bdl	bdl	bdl	bdl
Uranium	bdl	16.00	bdl	3.50	bdl
Vanadium	bdl	bdl	bdl	bdl	bdl
Zinc	bdl	9.09	bdl	11.11	bdl

5 CONCLUSIONS

An ASS Risk Assessment, in accordance with the DEC Guidelines (2013), was conducted for the Cooljarloo West Project Area to determine whether AASS or PASS are likely to be present within the proposed project area and surrounds. This assessment consisted of screen testing and detailed laboratory assessment of sediments collected from the Cooljarloo West Project Area. The main findings from these studies are:

- pH_F results found that around 60% of the samples tested were moderately to weakly acidic, with pH_F values of between 5 and 7; this suggests that the majority of the soils are poorly buffered and have negligible buffering capacity. Of all samples tested only two returned pH_F of <4 which indicates that the presence or extent of Actual Acid Sulfate Soils (AASS) is minor.
- The pH_{FOX} results for the same samples ranged from 0.86 to 9.09 which reflect the high variability of sulfide contents. Around 50% of all the samples returned a pH_{FOX} of <3 and 25% a pH <2 which is indicates the presence of Potential Acid Sulfate Soils (PASS) within the Cooljarloo West Project Area.
- The results of the incubation tests found that the depth trends for pH_{INC} were similar to that for pH_{FOX}, indicating that the sulfides present are moderately reactive; however > 8 weeks is required for the materials to fully oxidise.
- Colour can be used as an indicator for the presence of PASS The majority of all dark grey/black soils tested yielded pH_{FOX} values < 3 indicating appreciable sulfides are likely present.
- All materials tested had negligible to limited buffering capacity and this is due primarily to their predominately sandy nature.
- Chromium reducible sulfur (S_{CR}) was determined on 53 samples and was used to quantify PASS in the deposit. S_{CR} values were as high as 0.75% (equivalent to 467.8 mol H^+/t) with a significant proportion of samples (37%) returning values below the detection limit.
- A relationship was established between pH_{FOX} and S_{CR} in order to determine a pH_{FOX} value that could indicate the presence of S_{CR} content of greater than 0.03%. It was found that a pH_{FOX} value of 3.4 is indicative of significant S_{CR} content in the soils.
- Multi-element composition testing found that only As and V were elevated, with concentrations in some samples exceeding the corresponding EIL. ASLP testing of the same samples found that there was no risk posed of metal leaching from any of the samples tested; hence the potential for metalliferous drainage to occur is low.

Based on the results from this study the distribution of PASS can be restricted to the following regions/materials within the Cooljarloo West Project Area:

- Lacustrine Clay – this material is classified as overburden and has a predominately dark grey to black colour with high slimes.
- Basal 5m portion of the Guildford Formation – this material is classified as overburden and the PASS regions can be delineated both by geological block modelling and in the field by their dark grey to black colour with high slimes.
- Yoganup Formation – a significant number of samples collected from this region contained appreciable sulfide contents. The distribution of PASS in this material appears to be widespread, making it difficult to isolate defined PASS/Non-ASS zones. Therefore, given the prevalence of sulfides within this formation, management of all ore-body (Yoganup Formation) material within the Cooljarloo West Deposit should be undertaken in accordance with PASS material handling procedures. Handling and utilisation of the processing by-products (i.e. tailings sand and slimes) and streams (i.e. processing water), will need to be carefully managed and monitored in order to prevent impact on the surrounding environment.

6 ENVIRONMENTAL RISKS ASSOCIATED WITH ASS DISTURBANCE

The potential environmental risks associated with the disturbance of ASS can generally be grouped into the following two categories:

- Direct disturbance
- Indirect disturbance

These impacts are discussed more fully below.

6.1 DIRECT DISTURBANCE OF ASS

Direct disturbance impacts refer to the actual impacts caused by excavation or mining, stockpiling and processing of sulfidic material and the generation of various by-product streams. During excavation, processing and backfilling there is generally a change in redoximorphic condition of the material and thus any PASS present may undergo oxidation and associated acidification, with a corresponding risk of the generated acidity being released into and impacting on the surrounding environment.

The various process and risk streams associated with the direct disturbance of ASS are provided in Figure 6.1. Although the direct disturbance of ASS may seem that greatest risk, it often, provided sufficient baseline studies are undertaken and its distribution known and delineated, only a minor risk as specific management strategies can be implemented to control and protect against environmental risks.

Any PASS materials within the overburden material excavated to access the ore-body are likely to experience a change in redoximorphic status, and thus may oxidise releasing acidity and metals to the surrounding environment. To minimise potential acidification of this material it is generally considered that disposal below the water table is best practice, as this will limit the potential for oxidation in most cases. It is important to understand that if overburden material has previously undergone oxidation and acidification then placing this material below the water table may result in a flush of acidity and metals from this material, which may impact on the quality of the groundwater system.

At the Cooljarloo West Deposit the majority of overburden material to be mined is considered Non-ASS (Section 5–1), with only the lacustrine clay, located on the western margin of the deposit, and some areas within the basal 5 m of the Guildford Formation, considered PASS. All PASS overburden excavated during mining should be preferentially disposed of beneath the water table, with minimal handling time (i.e. < 1 week) – direct return of this material is therefore favoured to ensure negligible sulphide oxidation occurs during handling (other disposal and storage options are considered in 7.1.1). The location of the PASS overburden (i.e. within areas of the basal portion of the Guildford Formation) will aid the preferential direct return of this material, as there is likely to be sufficient void space available within the open mine pit to dispose of it below the water table.

No specific ASS management strategies are required for the remaining Non-ASS overburden. It is important to remember during handling and utilisation of any PASS overburden, that the area surrounding the Cooljarloo West deposit has negligible capacity to neutralise or buffer against any release acidity, and thus appreciable changes in groundwater pH may result following un-managed sulphide oxidation. Although the presence of Groundwater Dependant Ecosystems (GDEs) at Cooljarloo West appears to be limited, due to the relative depth to groundwater (i.e. typically > 10 m), downstream receptors can be impacted by released acidity and the resultant change in pH of any impacted groundwater coming from the Cooljarloo Deposit.

All ore material will be processed by hydraulic gravity separation, which results in the segregation of the three processing by-product streams: Heavy Mineral Concentrate (HMC), Tailings Sand and Fines (or Slimes). From experience at other mineral sands mine sites on the SCP, the majority of sulphides present in the mined ore typically report to the HMC stockpile, due to its similar particle density to the heavy minerals (i.e. around 4.2 t/m^3), and the fines stream, and ultimately the fines dam, due to the framboidal nature of the sulphides (i.e. particle diameter < 53 µm).

Any PASS material contained within the HMC stockpile will oxidise to produce an AASS. This reaction rate can be rapid if there is continual watering of the stockpiles (for dust suppression) which, when combined with the ‘sandy’ nature of the HMC, allows oxygen diffusion to easily occur throughout the stockpile. It is therefore necessary that the storage time of any PASS HMC material is minimised and stockpiled either on a concrete hardstand or a lime base, both with sufficient drainage structures and safeguards in place, to minimise the release of acid and potentially metal-laden water/seepage into the environment.

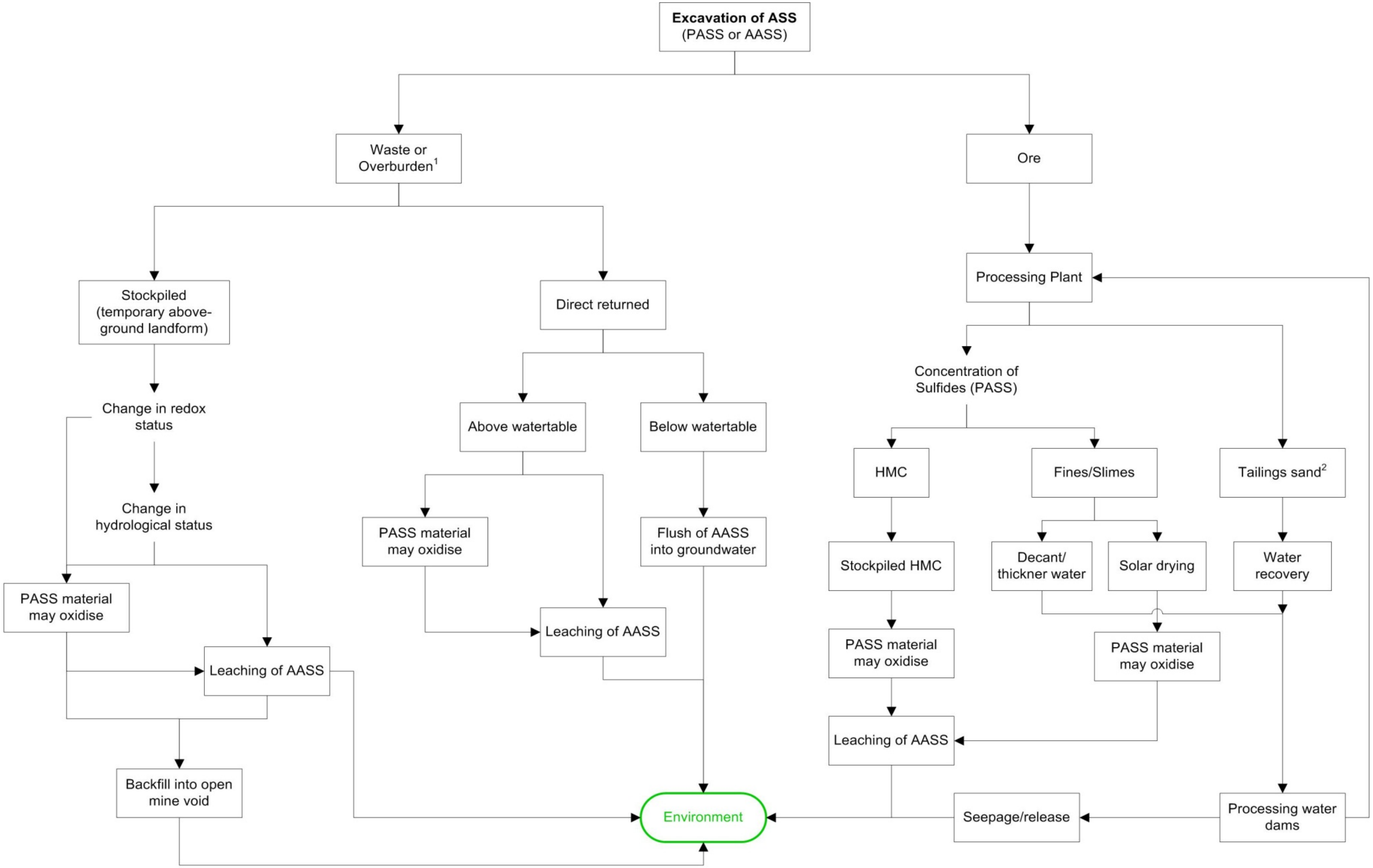
In contrast to the HMC stockpiles, any sulphides reporting to the fines stream and solar drying cells, will typically be ‘locked-up’ by the fine clayey texture of this material, with oxidation forming AASS only occurring on the outer surface of the material. Given the framboidal and highly reactive nature of PASS on the SCP, the decant water emanating from pyritic fines material (i.e. dams) will generally be highly acidic, and will require either neutralisation or dilution with a sufficient volume of neutral water to raise the pH to acceptable levels (i.e. > 4) for either release into the surrounding environment or reuse in the processing plant. During solar drying of the fines material, large shrinkage cracks develop, forming a prominent columnar structure. Oxidation within these fines columns is typically constrained to their surface (i.e. < 2 cm oxidation or weathering rind), with the pyritic material within the columns remaining unoxidised. Provided that the fines material is kept as a homogeneous unit (i.e. not broken-up and dispersed) then the risk of further oxidation and release of acid is considered small as the permeability of the fines material is of the order of $10^{-7}/10^{-8}$ in a saturated condition, with these permeability further decreasing to < 10^{-9} m/s in an unsaturated state; hence any oxidation reaction products are effectively ‘trapped’ within the fines material.

Tailings sand generated during processing of the ore, is generally devoid of pyrite, as it’s particle size is too large (> 53 µm) and it’s density too low (around 1.65 t/m^3) and thus it is separated from any sulfides during the processing. It is only when the processing plant is not functioning properly, whereby appreciable fines enters the tailings stream, that the tailings sand may contain sulfides. It is important to note that because the tailings sand is composed solely of quartz it has negligible buffering and any sulfides present will likely cause a significant change in pH of the material.

A summary of the environmental risks associated with direct disturbance of ASS, provided that sufficient management controls and safeguards are in place, are presented in Table 6.1. It can be seen that although considerable ASS are present at the Cooljarloo West Minesite, the nature and distribution of this material will allow for the implementation of specific management strategies that will significantly reduce the potential environmental risks associated with the direct disturbance of ASS.

Table 6.1: Environmental risks associated with direct disturbance of PASS

Material	Environmental risk level with management controls in place	Reason for risk level
Overburden	Low	PASS is present in the overburden (lacustrine clay and basal 5 m of Guildford Formation); however, it is easily observed in the field with black soil colours, and its distribution can be easily block modelled to allow for survey control during excavation. Given that Cooljarloo West will be a dredge operation it is expected that the majority of disturbed PASS overburden will be placed directly below the water table. Other acceptable disposal options are provided in 7.1.1.
Ore	Low	All ore is processed immediately and thus there is limited time for oxidation to occur.
Processing by-products		
- HMC	Low	All ore to be mined at the Cooljarloo West Deposit will be managed under the assumption that PASS is present. All HMC stockpiles generated from this deposit should therefore be stockpiled on a hardstand or lime base, with drainage monitored and managed appropriately.
- Fines material	Low	All fines material to be generated from the Cooljarloo West Deposit will likely contain appreciable sulfides. Provided that this material will be contained and solar dried as a homogeneous unit (i.e. in solar-drying dams) and covered with sufficient material to limit vegetation interaction (i.e. below rooting zone) and maintain a stable landform then the risks are considered low. Any alternate handling and utilisation will likely result in a high environmental risk.
- Tailings sand	Low	Generally devoid of sulfides and any PASS or AASS present will rapidly leach.
Processing water	Low	Processing water derived from the mining of the Cooljarloo West ore-body can be highly acidic. Processing water will be routinely monitored and lime treated where necessary.



[1] ASS are generally not present in either Topsoil or Subsoil materials
[2] Tailings sand generally devoid of AASS or PASS

TRONOX MANAGEMENT PTY LTD	Figure 6.1: Process and risk streams associated with the direct disturbance of ASS
COOLJARLOO WEST ASS SURVEY	

6.2 INDIRECT DISTURBANCE OF ASS

The indirect disturbance of ASS is generally confined to impacts on off-mine path ASS associated with groundwater drawdown during mining, and the resulting change in hydraulic and redoximorphic status of the material. In cases where poor ASS management has taken place, resulting in considerable oxidation, acidification and release of reaction products (e.g. Fe^{3+} and H_2SO_4), flushing of this material during groundwater recovery or preferential deposition below the water table may cause downstream impacts, even in the absence of any change in groundwater level away from the mine site.

At the Cooljarloo West Deposit dredge mining is proposed. This type of mining generally results in only minor changes (i.e. < 3 m) to surrounding groundwater levels. Given that the PASS distribution at Cooljarloo West is confined to the basal portion of the Guildford Formation (including the Lacustrine Clay) and the underlying Yoganup Formation, it is unlikely that the dredging operation, or minor alteration to groundwater levels, will impact on these materials outside and adjacent to the mining operation, and they will remain in a saturated, reducing condition; hence no impact on off-path PASS material is expected in relation to the dredging operation.

As discussed above in Section 6–1, considerable PASS will be present in the materials mined and the resulting processing by-products. The return of AASS material below the water table has the potential to affect the quality of the groundwater. The Superficial groundwater system throughout the Cooljarloo region generally has negligible buffering capacity and therefore only minor additions of acidity may cause appreciable changes in pH, which may impact on groundwater quality and downstream receptors.

In addition, the Fe^{3+} produced during the pyrite oxidation reaction (i.e. as $Fe(OH)_3$) has the potential to act as an oxidising agent, with the released electron capable of oxidising any FeS_2 (i.e. pyrite) present, even under completely saturated conditions (i.e. under a water table). It is therefore critical that all pyritic mine materials and processing by-products are managed appropriately (i.e. according to that outlined in Section 6–1 and 7–1) to minimise the extent to which PASS oxidation occurs prior to disposal below the water table.

Based on the above discussion, the potential for indirect disturbance of off-mine path ASS is considered low given the nature of the mining operation and provided that all materials are to be managed appropriately.

7 MANAGEMENT STRATEGIES FOR THE HANDLING AND UTILISATION OF ASS

This section outlines the recommended management strategies to prevent to disturbance or oxidation of PASS and the formation of AASS, and to minimise the potential environmental risks identified in Section 6–1.

7.1 PASS OVERBURDEN

All PASS overburden (i.e. portions of the basal 5 m of the Guildford Formation and the Lacustrine Clay on the western margin of the deposit) should be delineated and its distribution block modelled prior to mining of the deposit. Block modelling is to assume that all black soils within the Guildford Formation are PASS, and thus the 'LithCol' code in the geological drilling database is to be used as the modelling parameter. Accurate volumes of all PASS overburden material to be disturbed in each mine block should be determined prior to any mining to allow appropriate management solutions to be identified (See below).

7.1.1 Disposal Options for PASS Overburden

Disposal options for PASS overburden include:

- Disposal below the watertable – provided that the PASS overburden has been recently excavated (i.e. within a two month period as determined from the Incubation Test Results – Section 4.2) the best practice disposal option is to place below the watertable (i.e. tip back into the pit below the watertable). This will ensure that the PASS remains unoxidised. It is important to note that this option is not acceptable if the PASS overburden has remained untreated above the watertable for periods of greater than 2 months, whereby PASS oxidation is likely to have occurred. If oxidised PASS material dumped below the watertable then this will likely result in a flush of the oxidation products (i.e. both acidity and solutes/metals), potentially impacting on the quality of the groundwater.
- Containment within a cover cell – in this option the PASS overburden is contained within a cover of non-PASS clayey (i.e. Guildford Formation) overburden. It is important to note that this is considered a 'Cover Cell' as opposed to an 'Encapsulation Cell' as no direct engineering is involved (i.e. no compaction of the material to achieve 10^{-9} m/s). Work conducted at other mineral sands minesites on the SCP, by SWC, has identified that 1 – 2 m of clayey Guildford Formation material, which is truck dumped and shaped with a dozer, is sufficient to prevent underlying PASS overburden from oxidising. Given the clayey nature of this material the unsaturated hydraulic conductivity minimises water penetration into the PASS material and the general absence of macro and mesopores (i.e. > 30 µm) limits oxygen diffusion through the cover system. Further safeguards may involve placement of a lime base to neutralise any potential acidic seepage, with the thickness of the base to be determined based on the PASS nature of the material (i.e. the lime base needs to be sufficiently thick to neutralise all potential acid that may be generated from the oxidising PASS material). The Incubation Results (Section 4.2) show that there is a 2 month window whereby the PASS overburden needs to be covered to prevent oxidation.
- Lime application – this option involves the application of a sufficient quantity of lime to the PASS overburden to neutralise all potential acidity. A safety factor needs to be defined to adjust the application quantities. Based on the results obtained in this study, a lime requirement of approximately 47 kg/t (or 84 kg/m^3; assuming a bulk density of 1.8 t/m^3) is required to effectively neutralise all potential acidity within the PASS overburden materials.

7.2 ORE MATERIALS

All ore material (representing the mineralised Yoganup Formation) is to be considered PASS and thus no stockpiling of ore (for > 1 week) should occur prior to processing unless treated with lime.

7.3 PROCESSING BY-PRODUCTS

7.3.1 HMC

Given that the HMC is expected to contain appreciable sulfides, and that significant reaction and oxidation is likely to occur due to the conditions of the stockpiling, all HMC stockpiles derived from mining of the Cooljarloo West Deposit should either be located on a hardstand area or placed on a lime base, and monitored appropriately. If a lime base is to be utilised then the required thickness of lime needed to neutralise all acidic seepage should be based on a potential acidity of 870 mol H+/t.

7.3.2 FINES MATERIALS

Fines materials generated during the processing of the Cooljarloo West ore-body is expected to contain appreciable sulfides. As discussed previously, provided that the solar dried slimes material remains as a homogeneous unit (i.e. it is not excavated and dispersed) then the risk of impact on the surrounding environment is considered low. Any solar drying dams containing fines from Cooljarloo West should be covered with sufficient material to limit vegetation interaction (i.e. material stored below the rooting zone), and maintain a stable landform. If solar drying dams containing PASS fines from Cooljarloo West are to be located within the rooting system of the proposed rehabilitation vegetation, then lime treatment may be required; this can be tested via soil testing of the dried fines prior to placement of any overburden or tailings sand cover.

Alternatively, solar dried fines (assuming it is dried as a single homogeneous unit to minimise the surfaces exposed to oxidation) can be disposed-off below the watertable, without lime treatment as the majority of the ASS in this material will likely remain as PASS. If disposal below a water table is considered then the pH of the fines material should be tested prior to deposition to quantify the ASS status; if appreciable oxidation has occurred then lime dosing and neutralisation of acidity may be required to ensure no deleterious impacts on groundwater quality.

7.3.3 TAILINGS SAND

As previously discussed, tailings sand is generally devoid of sulfides and therefore no specific management strategies are required for the handling and utilisation of this material. Confirmatory testing of the pH of the tailings material generated from Cooljarloo West should be undertaken to confirm its non-ASS status.

7.3.4 PROCESSING WATER

Processing water derived from either the fines thickener or solar drying dams and HMC stockpiles, may be, or become, highly acidic due to ASS. Routine testing of water pH and treatment with lime should be undertaken when the water pH drops below 4. The actual lime requirement to achieve this increase in pH will depend on the condition of the water, and thus a site-specific calculation should be established to readily convert the pH of the process water to a required lime dosing rate.

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APPENDIX A
PASS DRILL LOGS AND SCREEN TEST RESULTS

A.1 PASS DRILL LOGS AND SCREEN TEST RESULTS

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36885	0	1	Q	YG	6.89	3.83
36885	1	2	QC	B	7.75	6.36
36885	2	3	QC	B	8.1	6.53
36885	3	4	C	B	7.78	6.4
36885	4	5	C	Gy	7.99	6.63
36885	5	6	QC	Gy	7.44	7.21
36885	6	7	QC	Gy	7.66	6.34
36885	7	8	QC	Gy	7.29	5.62
36885	8	9	C	Gy	7.07	6.07
36885	9	10	C	Gy	6.39	5.72
36885	10	11	QC	Gy	6.76	5.93
36885	11	12	C	Gy	6.47	5.22
36885	12	13	QC	Gy	7.13	6.08
36885	13	14	QC	Gy	6.73	5.33
36885	14	15	QC	Gy	6.44	5.6
36885	15	16	QC	Gy	6.57	5.56
36885	16	17	QC	Gy	7.47	5.22
36885	17	18	C	Gy	6.21	7.4
36885	18	19	Q	Gy	6.91	5.25
36885	19	20	Q	Gy	6.92	2.45
36885	20	21	Q	Gy	6.6	5.78
36885	21	22	Q	Gy	6.78	5.59
36885	22	23	Q	Gy	6.54	2.66
36885	23	24	Q	Gy	6.64	5.8
36885	24	25	QC	Gy	6.13	1.35
36885	25	26	C	Bl	6.49	1.37
36885	26	27	Q	Bl	6.46	2.79
36885	27	28	Q	Gy	7.08	5.62
36885	28	29	Q	Gy	6.42	5.87
36885	29	30	Q	YG	6.51	5.82
36885	30	31	Q	YG	7.19	5.65
36885	31	32	Q	YG	6.22	6.17
36885	32	33	Q	YG	6.74	4.97
36885	33	34	Q	Gy	6.78	2.54
36885	34	35	Q	Gy	6.86	2.97
36885	35	36	Q	Gy	6.71	5.7
36885	36	37	Q	Gy	7.2	4.81
36885	37	38	Q	Gy	6.3	5.54
36885	38	39	Q	Y	6.15	6.24
36885	39	40	Q	Y	6.76	5.97

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36885	40	41	Q	Y	6.97	6
36885	41	42	Q	Y	8.2	6.08
36885	42	43	Q	B	6.53	4.99
36885	43	44	Q	B	6.84	2.44
36885	44	45	Q	B	7.11	5.08
36888	0	1	Q	B	7.8	4.6
36888	1	2	C	O	6.37	4.9
36888	2	3	QC	O	6.72	5.62
36888	3	4	QC	B	5.8	4.67
36888	4	5	QC	Gy	6.22	5.45
36888	5	6	QC	Gy	5.58	5.39
36888	6	7	QC	Gy	6.3	4.71
36888	7	8	QC	Gy	6.59	5.37
36888	8	9	QC	Gy	6.78	5.6
36888	9	10	QC	Gy	6.65	5.11
36888	10	11	QC	Gy	6.47	5.61
36888	11	12	C	Gy	6.46	5.36
36888	12	13	C	Gy	6.9	5.32
36888	13	14	QC	Gy	6.52	5.4
36888	14	15	QC	Gy	7.02	5.7
36888	15	16	QC	Gy	7.56	5.64
36888	16	17	QC	Gy	6.86	3.66
36888	17	18	QC	Gy	6.61	5.26
36888	18	19	Q	Gy	7.8	5.67
36888	19	20	Q	Gy	7.22	5.83
36888	20	21	Q	Gy	7.06	6.06
36888	21	22	Q	Gy	6.51	5.38
36888	22	23	Q	Gy	6.45	5.1
36888	23	24	Q	Gy	6.44	5.45
36888	24	25	Q	Gy	6.67	4.59
36888	25	26	Q	Bl	6.9	2.27
36888	26	27	Q	Bl	7.4	4.49
36888	27	28	Q	Bl	6.34	2.15
36888	28	29	Q	Gy	7.49	5.34
36888	29	30	Q	Gy	7.76	5.64
36888	30	31	Q	Gy	6.41	7.43
36888	31	32	Q	Gy	6.8	5.97
36888	32	33	Q	Gy	7.24	5.69
36888	33	34	Q	Gy	6.4	5.68
36888	34	35	Q	Gy	6.67	5.65
36888	35	36	Q	Gy	6.5	3.53

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36888	36	37	Q	Gy	6.73	5.71
36888	37	38	Q	Gy	6.68	5.51
36888	38	39	Q	Gy	6.42	5.79
36888	39	40	Q	Gy	6.55	5.65
36888	40	41	Q	Gy	7.15	5.1
36888	41	42	Q	B	7.01	5.35
36888	42	43	Q	DkB	7.17	4.7
36888	43	44	Q	DkB	6.93	2.84
36888	44	45	Q	DkB	7.13	4.84
36889	0	1	QC	O	8.6	1.94
36889	1	2	QC	O	8.68	7
36889	2	3	QC	O	6.87	6.43
36889	3	4	QC	B	7.12	6.69
36889	4	5	QC	B	7.18	5.82
36889	5	6	C	B	6.36	5.63
36889	6	7	C	Gy	6.53	5.56
36889	7	8	QC	Gy	7.06	5.8
36889	8	9	C	Gy	6.11	5.42
36889	9	10	C	Gy	7.8	6
36889	10	11	C	Gy	6.22	5.29
36889	11	12	C	Gy	7.01	5.71
36889	12	13	QC	Gy	6.35	5.06
36889	13	14	QC	Gy	6.17	5.27
36889	14	15	QC	Gy	6.44	4.96
36889	15	16	QC	Gy	6.03	4.94
36889	16	17	QC	Gy	6.33	5.45
36889	17	18	Q	Gy	7.07	5.98
36889	18	19	Q	Gy	7.33	5.81
36889	19	20	QC	Gy	6.84	3.83
36889	20	21	QC	Gy	6.09	5.61
36889	21	22	QC	DkGY	6.75	5.76
36889	22	23	C	DkGY	6.78	5.56
36889	23	24	QC	DkGY	6.52	5.75
36889	24	25	C	Bl	6.83	3.69
36889	25	26	C	Bl	6.93	1.96
36889	26	27	Q	Bl	7.4	2.47
36889	27	28	Q	Gy	6.8	2.3
36889	28	29	Q	Gy	6.04	1.34
36889	29	30	Q	Pi	6.22	1.98
36889	30	31	Q	OB	6.42	4.98
36889	31	32	Q	OB	6.85	5.34

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36889	32	33	Q	OB	6.32	4.92
36889	33	34	Q	OB	6.91	5.33
36889	34	35	Q	Gy	6.27	4.81
36889	35	36	Q	Gy	6.44	5.47
36889	36	37	Q	Gy	6.92	4.53
36889	37	38	Q	Gy	6.66	5.29
36889	38	39	Q	Gy	7.06	5.37
36889	39	40	Q	DkB	7.02	5.33
36889	40	41	Q	DkB	7.04	5.11
36889	41	42	Q	DkB	6.48	4.22
36889	42	43	Q	DkB	7.21	2.1
36889	43	44	Q	DkB	6.22	2.31
36889	44	45	Q	DkB	7.13	2.4
36889	45	46	Q	Bl	6.8	1.9
36889	46	47	Q	Bl	6.54	1.74
36889	47	48	QC	Bl	6.52	1.76
36889	48	49	Q	Bl	6.88	1.48
36889	49	50	Q	Bl	7.67	1.78
36889	50	51	Q	Bl	7.24	4.99
36890	0	1	QC	O	6.52	3.77
36890	1	2	QC	O	7.86	7.15
36890	2	3	QC	O	7.39	7.04
36890	3	4	QC	O	6.78	4.53
36890	4	5	QC	O	6.96	6.38
36890	5	6	QC	O	6.89	6.32
36890	6	7	C	O	6.87	6.18
36890	7	8	QC	DkGY	7.02	6.26
36890	8	9	C	GG	6.96	6
36890	9	10	C	GG	7.18	5.97
36890	10	11	C	GG	6.89	5.93
36890	11	12	QC	GG	6.87	5.94
36890	12	13	QC	GG	6.73	5.71
36890	13	14	QC	GG	6.58	5.87
36890	14	15	C	GG	6.5	5.99
36890	15	16	QC	Gy	6.8	5.89
36890	16	17	QC	Gy	6.56	6.4
36890	17	18	C	Gy	6.66	5.69
36890	18	19	C	Gy	6.51	6.1
36890	19	20	C	Gy	6.63	5.61
36890	20	21	QC	Gy	6.48	5.89
36890	21	22	QC	Gy	6.75	5.58

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36890	22	23	Q	Gy	6.52	5.84
36890	23	24	Q	Gy	6.54	5.6
36890	24	25	C	Gy	6.25	4.99
36890	25	26	C	DkGY	6.77	5.32
36890	26	27	QC	DkGY	7.12	5.68
36890	27	28	QC	DkGY	7.03	3.04
36890	28	29	Q	DkGY	6.63	3.12
36890	29	30	Q	DkGY	7.1	3.74
36890	30	31	QC	DkGY	6.63	3.37
36890	31	32	C	DkGY	6.87	2.77
36890	32	33	C	DkGY	8.07	4.32
36890	33	34	C	DkGY	7.96	2.13
36890	34	35	C	DkGY	7.44	3.6
36890	35	36	Q	DkGY	6.24	4.02
36890	36	37	Q	DkGY	6.84	5.55
36890	37	38	Q	DkGY	6.34	4.41
36890	38	39	Q	DkGY	6.77	1.1
36890	39	40	Q	DkGY	6.53	1.58
36890	40	41	C	DkGY	6.51	1.03
36890	41	42	C	DkGY	6.55	1.34
36890	42	43	Q	DkGY	6.12	2.31
36890	43	44	Q	DkGY	6.4	2
36890	44	45	Q	DkGY	6.11	2.01
36890	45	46	Q	DkGY	6.52	2.12
36890	46	47	Q	DkGY	6.91	1.95
36890	47	48	Q	DkGY	6.73	2.2
36890	48	49	Q	DkGY	6.54	2.14
36890	49	50	Q	DkGY	6.54	2
36890	50	51	Q	DkGY	6.62	1.84
36890	51	52	Q	DkGY	6.73	2
36890	52	53	Q	DkGY	6.89	2.16
36890	53	54	Q	DkGY	6.52	1.88
36890	54	55	Q	DkGY	6.93	2.3
36890	55	56	Q	DkGY	6.47	1.11
36890	56	57	Q	DkGY	6.68	1.48
36891	0	1	QC	O	6.56	4.59
36891	1	2	QC	O	6.61	6.12
36891	2	3	QC	O	6.76	3.71
36891	3	4	QC	B	6.93	2.13
36891	4	5	QC	Gy	6.52	5.61
36891	5	6	C	Gy	6.66	5.26

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36891	6	7	QC	YG	7.25	3.74
36891	7	8	QC	YG	7	5.51
36891	8	9	QC	YG	7.44	5.83
36891	9	10	QC	YG	6.86	3.82
36891	10	11	QC	YG	6.85	2.05
36891	11	12	QC	YG	6.97	5.42
36891	12	13	QC	YG	7.06	3.63
36891	13	14	QC	Gy	6.58	5.41
36891	14	15	C	Gy	6.76	5.15
36891	15	16	QC	Gy	6.37	4.81
36891	16	17	C	Gy	6.75	5.33
36891	17	18	QC	Gy	6.83	5.49
36891	18	19	QC	Gy	7.25	4.92
36891	19	20	QC	Gy	7.09	5.1
36891	20	21	C	Gy	6.66	4.55
36891	21	22	QC	Gy	6.68	3.79
36891	22	23	QC	Gy	6.63	5.58
36891	23	24	C	Gy	7.05	5.93
36891	24	25	C	B	6.36	5.82
36891	25	26	C	B	7.05	6.27
36891	26	27	C	B	6.99	6.41
36891	27	28	C	DkB	7.88	4.59
36891	28	29	C	DkB	7.18	2.15
36891	29	30	QC	DkB	6.74	1.7
36891	30	31	QC	Bl	6	1.97
36891	31	32	Q	Bl	6.38	2.34
36891	32	33	Q	Bl	6.74	2.02
36891	33	34	Q	Bl	6.28	1.95
36891	34	35	Q	Bl	6.33	1.84
36891	35	36	Q	Bl	7.06	2.1
36891	36	37	QC	Bl	7.19	2.66
36891	37	38	C	Bl	7.47	2.51
36891	38	39	C	Bl	7.09	2.07
36891	39	40	C	Bl	8.1	2.42
36891	40	41	C	Bl	7.11	2.2
36891	41	42	QC	Bl	7.37	2.01
36891	42	43	QC	Bl	6.81	1.94
36891	43	44	QC	Bl	6.15	1.96
36891	44	45	Q	Bl	6.5	1.69
36891	45	46	Q	Bl	6.1	1.4
36891	46	47	Q	Bl	6.1	1.45

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36891	47	48	Q	Bl	6.9	2.14
36891	48	49	Q	Bl	6.49	1.74
36891	49	50	Q	Bl	6.78	1.46
36891	50	51	Q	Bl	6.44	1.45
36891	51	52	Q	Bl	6.75	1.56
36891	52	53	Q	Bl	7.2	1.18
36891	53	54	QC	Bl	6.3	5.73
36891	54	55	QC	Bl	6.64	1.6
36891	55	56	QC	Bl	6.69	1.53
36891	56	57	QC	Bl	7.05	1.93
36892	0	1	Q	Y	5.73	3.11
36892	1	2	Q	Y	5.78	4.08
36892	2	3	Q	Y	6.74	4.69
36892	3	4	Q	Y	6.85	4.15
36892	4	5	QC	YG	7.25	4.76
36892	5	6	QC	O	7.34	4.28
36892	6	7	QC	O	7.25	6.21
36892	7	8	QC	O	6.38	5.6
36892	8	9	QC	Gy	7.05	5.45
36892	9	10	QC	Gy	7.21	5.19
36892	10	11	QC	Gy	7.77	5.28
36892	11	12	QC	Gy	6.78	7.24
36892	12	13	QC	Gy	7.4	5.38
36892	13	14	QC	Gy	6.57	5.4
36892	14	15	QC	Gy	6.61	5.28
36892	15	16	QC	Gy	6.22	5.21
36892	16	17	QC	Gy	7.13	4.97
36892	17	18	QC	Gy	6.22	5.42
36892	18	19	QC	Gy	7.43	5.82
36892	19	20	QC	Gy	7.56	5.71
36892	20	21	C	Gy	7.6	5.09
36892	21	22	C	Gy	7.14	5.41
36892	22	23	C	Gy	7.04	5.75
36892	23	24	QC	Gy	7.34	5.82
36892	24	25	QC	Gy	6.22	4.88
36892	25	26	C	Gy	6.84	5.49
36892	26	27	C	YG	6.45	3.8
36892	27	28	QC	YG	7.34	4.7
36892	28	29	C	YG	7.06	5.38
36892	29	30	C	YG	6.9	4.71
36892	30	31	QC	Gy	8.13	5.08

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36892	31	32	Q	Gy	6.52	4.12
36892	32	33	C	Gy	7.42	3.15
36892	33	34	QC	Gy	6.58	7.39
36892	34	35	Q	Gy	6.78	4.45
36892	35	36	Q	Gy	6.74	3.77
36892	36	37	Q	DkGY	6.25	3.93
36892	37	38	Q	DkGY	6.31	4.86
36892	38	39	Q	DkGY	7.53	5.87
36892	39	40	QC	Bl	5.8	1.65
36892	40	41	QC	Bl	6.33	1.6
36892	41	42	QC	Bl	7.15	0.86
36892	42	43	Q	Bl	6.58	1.97
36892	43	44	Q	Bl	6.58	1.73
36892	44	45	Q	Bl	5.85	1.81
36892	45	46	Q	Bl	7.28	2.45
36892	46	47	Q	Bl	6.17	1.65
36892	47	48	Q	Bl	6.27	1.9
36892	48	49	Q	Bl	6.81	2.51
36892	49	50	Q	Bl	6.11	1.74
36892	50	51	Q	Bl	7.76	2.25
36892	51	52	Q	Bl	6.15	2.37
36892	52	53	Q	Bl	8.04	2.26
36892	53	54	Q	Bl	6.89	2.11
36892	54	55	Q	Bl	6.31	2.05
36892	55	56	Q	Bl	8.15	2
36892	56	57	Q	Bl	6.52	1.45
36892	57	58	QC	Bl	6.21	1.6
36892	58	59	Q	Bl	7.34	1.48
36892	59	60	Q	Bl	6.53	1.9
36893	0	1	Q	Gy	7.02	4.11
36893	1	2	Q	Gy	6.92	4.42
36893	2	3	QC	YG	6.75	4.02
36893	3	4	QC	B	7.16	7.32
36893	4	5	QC	B	7.1	5.97
36893	5	6	QC	YG	6.17	4.4
36893	6	7	QC	YG	6.01	3.99
36893	7	8	QC	YG	5.87	4.44
36893	8	9	QC	YG	6.03	4.69
36893	9	10	QC	YG	5.85	3.78
36893	10	11	QC	Gy	6.25	4.83
36893	11	12	QC	Gy	6.19	4.87

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36893	12	13	C	Gy	6	3.83
36893	13	14	C	Gy	7.7	5.05
36893	14	15	C	Gy	6.73	4.68
36893	15	16	C	Gy	7.21	4.99
36893	16	17	C	Gy	5.87	5.73
36893	17	18	C	Gy	6.62	5.32
36893	18	19	C	Gy	7.6	4.12
36893	19	20	C	Gy	6.01	5.15
36893	20	21	C	Gy	5.71	6.19
36893	21	22	QC	Gy	6.73	5.33
36893	22	23	QC	Gy	6.8	5.52
36893	23	24	QC	Gy	6.85	5.55
36893	24	25	C	Gy	6.15	5.1
36893	25	26	C	Gy	6.7	4.86
36893	26	27	C	Gy	6.92	5.38
36893	27	28	C	DkGY	7.96	6.54
36893	28	29	C	DkGY	8.27	6.94
36893	29	30	C	DkGY	7.42	5.89
36893	30	31	C	DkGY	8.4	6.91
36893	31	32	C	DkGY	8.68	6.86
36893	32	33	C	DkGY	7.81	6.96
36893	33	34	C	Bl	6.53	1.24
36893	34	35	C	Bl	6.43	1.2
36893	35	36	C	Bl	6.73	1.37
36893	36	37	QC	Bl	6.78	1.88
36893	37	38	Q	Bl	6.47	1.94
36893	38	39	Q	Bl	8.04	1.96
36893	39	40	Q	Gy	7.22	2.51
36893	40	41	Q	Gy	6.59	2.51
36893	41	42	Q	Gy	6.5	2.24
36893	42	43	Q	DkGY	8.26	2.45
36893	43	44	Q	DkGY	5.99	1.98
36893	44	45	Q	DkGY	6.78	1.98
36893	45	46	Q	DkGY	7.07	1.84
36893	46	47	Q	DkGY	7.01	1.76
36893	47	48	Q	DkGY	6.36	2
36893	48	49	Q	DkGY	7.09	2.11
36893	49	50	Q	DkGY	8.07	2.64
36893	50	51	Q	DkGY	8.62	7.2
36894	0	1	Q	Y	6.78	3.78
36894	1	2	Q	Y	6.57	4.66

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36894	2	3	Q	Y	8.12	5.38
36894	3	4	Q	Y	5.68	4.62
36894	4	5	Q	Gy	7.22	5.34
36894	5	6	Q	Gy	7.29	4.96
36894	6	7	QC	B	7.88	6.13
36894	7	8	QC	B	7.14	5.88
36894	8	9	QC	B	7.94	6.39
36894	9	10	QC	B	7.49	6.44
36894	10	11	QC	B	7.29	6.35
36894	11	12	QC	B	6.9	5.49
36894	12	13	QC	Gy	7.1	5.19
36894	13	14	QC	Gy	7.31	5.75
36894	14	15	QC	Gy	7.03	5.74
36894	15	16	QC	Gy	7.25	5.73
36894	16	17	QC	Gy	6.62	5.39
36894	17	18	QC	Gy	7.05	5.56
36894	18	19	QC	Gy	6.65	5.02
36894	19	20	QC	Gy	6.99	7.49
36894	20	21	C	Gy	7.61	5.74
36894	21	22	C	DkB	7.49	5.89
36894	22	23	C	DkB	7.23	6.02
36894	23	24	C	DkB	7.71	2.5
36894	24	25	QC	DkB	7.95	2.66
36894	25	26	C	DkB	7.28	3.3
36894	26	27	C	DkB	8.02	2.82
36894	27	28	C	DkB	9.27	7.51
36894	28	29	C	DkB	8.87	7.77
36894	29	30	C	DkB	9.05	7.37
36894	30	31	C	Bl	8.85	7.75
36894	31	32	QC	Bl	7.47	1.9
36894	32	33	Q	Bl	7.13	4.61
36894	33	34	Q	Bl	7.68	2.85
36894	34	35	Q	Bl	8.03	6.94
36894	35	36	Q	Bl	8.29	7.33
36894	36	37	Q	DkGY	8.31	7.91
36894	37	38	Q	DkGY	8.29	7.43
36894	38	39	Q	DkGY	8.09	6.84
36894	39	40	Q	DkGY	7.98	7.23
36894	40	41	Q	DkGY	7.84	7.51
36894	41	42	Q	DkGY	8.48	6.18
36895	0	1	Q	Gy	6.73	3.14

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36895	1	2	Q	YG	6.46	4.09
36895	2	3	Q	YG	6.2	5.64
36895	3	4	Q	Y	7.04	4.17
36895	4	5	Q	Y	7.38	5.15
36895	5	6	Q	W	4.64	5.24
36895	6	7	Q	OB	6.99	7.32
36895	7	8	QC	OB	6.55	5.14
36895	8	9	QC	OB	6.51	5.13
36895	9	10	QC	GG	6.5	4.76
36895	10	11	QC	GG	6.58	5.58
36895	11	12	QC	GG	6.72	5.75
36895	12	13	QC	GG	6.44	5.55
36895	13	14	QC	GG	6.69	5.41
36895	14	15	QC	GG	7.2	5.1
36895	15	16	QC	GG	5.43	6.23
36895	16	17	QC	GG	6.33	5.54
36895	17	18	QC	GG	7.45	5.69
36895	18	19	QC	GG	6.5	5.6
36895	19	20	C	DkGY	7.35	5.09
36895	20	21	C	DkGY	7.55	5.52
36895	21	22	C	DkGY	6.7	5.64
36895	22	23	C	DkGY	6.74	5.45
36895	23	24	C	DkGY	6.52	5.53
36895	24	25	C	DkB	6.48	5.33
36895	25	26	C	DkB	6.68	5.65
36895	26	27	C	DkB	7	5.69
36895	27	28	QC	DkB	6.82	5.45
36895	28	29	QC	DkB	6.83	5.59
36895	29	30	Q	GG	7.55	5.69
36895	30	31	Q	GG	6.66	5.4
36895	31	32	Q	GG	6.44	5.52
36895	32	33	Q	GG	5.87	5.97
36895	33	34	C	GG	7.38	2.4
36895	34	35	Q	GG	7.29	4.16
36895	35	36	Q	GG	7.39	5.3
36895	36	37	Q	DkGY	7.58	3.3
36895	37	38	Q	DkGY	6.68	2.96
36895	38	39	Q	DkGY	8.24	2.32
36895	39	40	Q	DkGY	7.79	7.24
36895	40	41	Q	DkGY	8.1	6.99
36895	41	42	Q	DkGY	7.93	7.66

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36895	42	43	Q	DkGY	8.78	7.27
36895	43	44	Q	DkGY	8.56	7.64
36895	44	45	Q	DkGY	8.4	7.04
36896	0	1	Q	Gy	7.08	3.83
36896	1	2	QC	B	7.4	5.82
36896	2	3	QC	Gy	6.84	5.68
36896	3	4	QC	Gy	6.2	5.45
36896	4	5	QC	Gy	5.85	5.33
36896	5	6	QC	Gy	5.53	4.53
36896	6	7	QC	Gy	5.41	5.06
36896	7	8	QC	Gy	7.05	5.87
36896	8	9	QC	Gy	6.73	5.87
36896	9	10	QC	Gy	6.95	6.34
36896	10	11	QC	Gy	6.77	5.65
36896	11	12	QC	Gy	7.03	5.35
36896	12	13	QC	Gy	6.34	5.8
36896	13	14	QC	Gy	6.15	5.55
36896	14	15	QC	Gy	6.4	5.64
36896	15	16	QC	Gy	7.4	5.25
36896	16	17	QC	Gy	7.4	5.62
36896	17	18	QC	Gy	6.99	3.26
36896	18	19	C	DkGY	8.15	3.03
36896	19	20	C	DkGY	7.72	3.68
36896	20	21	C	DkGY	7.4	3.12
36896	21	22	C	DkGY	7.39	3.85
36896	22	23	QC	DkGY	8.78	2.8
36896	23	24	C	DkGY	7.49	2.39
36896	24	25	QC	DkGY	7.61	3.13
36896	25	26	QC	DkGY	8.04	5.7
36896	26	27	QC	DkGY	7.37	6.55
36896	27	28	QC	DkGY	8.52	7.92
36896	28	29	QC	Bl	9.16	2.43
36896	29	30	Q	Bl	8.05	2.4
36896	30	31	Q	Bl	7.8	3.25
36896	31	32	Q	Bl	8.46	8.07
36896	32	33	Q	Bl	7.92	7.74
36896	33	34	Q	Bl	8.49	5.98
36896	34	35	Q	Bl	8.74	7.53
36896	35	36	Q	Bl	8.39	8.24
36897	0	1	Q	YG	8.17	3.36
36897	1	2	QC	YG	5.93	4.8

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36897	2	3	QC	YG	5.23	4.56
36897	3	4	QC	YG	5.77	4.18
36897	4	5	QC	Gy	5.74	4.7
36897	5	6	QC	Gy	4.61	4.27
36897	6	7	QC	Gy	6.06	4.37
36897	7	8	QC	Gy	5.33	4.99
36897	8	9	QC	Gy	6.15	5.24
36897	9	10	QC	Gy	6.56	5.47
36897	10	11	QC	Gy	6.66	5.44
36897	11	12	QC	Gy	6.12	5.54
36897	12	13	QC	Gy	6.43	5.47
36897	13	14	QC	Gy	6.98	5.81
36897	14	15	QC	Gy	6.9	6
36897	15	16	QC	Gy	6.93	5.45
36897	16	17	QC	Gy	6.34	5.25
36897	17	18	C	Gy	6.8	5.53
36897	18	19	C	Gy	7.27	5.67
36897	19	20	QC	Gy	7.32	6.34
36897	20	21	C	Gy	6.81	5.77
36897	21	22	Q	Gy	6.88	4.88
36897	22	23	Q	Gy	7.26	4.13
36897	23	24	Q	Gy	7.04	5.34
36897	24	25	Q	Gy	7.82	4.08
36897	25	26	Q	Gy	6.6	4.67
36897	26	27	Q	Gy	6.59	3.74
36897	27	28	Q	Gy	6.48	3.85
36897	28	29	Q	Gy	7.45	3.33
36897	29	30	Q	Gy	7.88	3.97
36897	30	31	Q	Gy	7.65	5.61
36897	31	32	Q	Gy	6.65	4.05
36897	32	33	Q	Gy	7.27	4.47
36897	33	34	Q	DkB	7.07	4.31
36897	34	35	Q	DkB	7.46	3.52
36897	35	36	Q	DkB	7.05	3.41
36897	36	37	Q	DkB	6.78	3.09
36897	37	38	Q	DkB	6.04	2.52
36897	38	39	Q	DkB	7	2
36897	39	40	Q	DkB	6.94	2.11
36897	40	41	QC	DkB	7.43	5.81
36897	41	42	QC	DkB	7.02	1.88
36897	42	43	QC	Bl	7.19	2.21

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36897	43	44	QC	Bl	6.18	1.95
36897	44	45	QC	Bl	6.57	2.27
36897	45	46	-	-	6.67	1.83
36898	0	1	QC	YG	6.18	4.06
36898	1	2	C	B	6.85	4.44
36898	2	3	Q	B	7.11	4.31
36898	3	4	Q	B	5	4.5
36898	4	5	QC	O	5.24	4.47
36898	5	6	C	B	4.64	4.13
36898	6	7	QC	OB	5.84	4.1
36898	7	8	QC	OB	7.51	4.84
36898	8	9	QC	OB	6.84	5.19
36898	9	10	QC	Pi	7.55	3.42
36898	10	11	QC	YG	6.76	5.26
36898	11	12	QC	YG	6.12	5.84
36898	12	13	QC	Gy	8.03	5.53
36898	13	14	QC	Y	7.44	5.96
36898	14	15	Q	Y	7.21	5.23
36898	15	16	QC	YG	6.66	5.75
36898	16	17	QC	YG	7.8	5.89
36898	17	18	QC	Gy	7.02	6.18
36898	18	19	Q	Gy	6.66	5.65
36898	19	20	Q	Gy	6.46	5.82
36898	20	21	Q	Gy	6.9	6.38
36898	21	22	QC	Gy	7.3	6.26
36898	22	23	QC	Gy	7.18	5.75
36898	23	24	QC	Gy	6.34	5.96
36898	24	25	QC	Gy	7.13	6.02
36898	25	26	QC	Gy	7.34	6.06
36898	26	27	QC	Gy	7.7	5.37
36898	27	28	QC	Gy	7.4	6.03
36898	28	29	Q	Gy	7.53	5.93
36898	29	30	Q	Gy	6.75	5.78
36898	30	31	Q	Y	7.17	6.22
36898	31	32	Q	Y	6.88	6.33
36898	32	33	Q	Y	7.97	6.44
36898	33	34	Q	Y	8.21	6.26
36898	34	35	Q	Y	8.3	6.17
36898	35	36	Q	YG	7.21	4.73
36898	36	37	QC	Gy	7.44	2.8
36898	37	38	QC	DkGY	7.61	2.42

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36898	38	39	QC	DkGY	6.58	5.22
36898	39	40	C	DkGY	7.26	2.36
36898	40	41	C	DkGY	7.43	3.14
36898	41	42	C	DkGY	6.48	2.76
36898	42	43	Q	DkGY	7.21	3.06
36898	43	44	Q	DkGY	7.28	2.68
36898	44	45	Q	DkGY	6.22	7.8
36898	45	46	Q	Bl	7.23	2.32
36898	46	47	Q	Bl	6.77	1.87
36898	47	48	QC	Bl	7.28	2.13
36898	48	49	QC	Bl	7.24	2.38
36898	49	50	QC	Bl	7.03	1.96
36899	0	1	Q	Gy	6.62	2.6
36899	1	2	C	B	6.47	4.23
36899	2	3	QC	B	5.82	2.78
36899	3	4	QC	B	4.66	3.47
36899	4	5	QC	B	5.42	2.43
36899	5	6	QC	B	6.03	2.61
36899	6	7	Q	YG	5.31	4.35
36899	7	8	Q	YG	5.42	4.47
36899	8	9	Q	YG	5.22	2.41
36899	9	10	Q	Gy	6.45	2.62
36899	10	11	Q	Gy	6.78	4
36899	11	12	Q	Gy	6.53	2.54
36899	12	13	Q	Gy	7.2	2.51
36899	13	14	Q	Gy	6.06	2.34
36899	14	15	Q	Gy	6.71	2.52
36899	15	16	Q	Gy	6.84	3.11
36899	16	17	Q	Gy	6.21	4.18
36899	17	18	Q	Gy	7.31	2.49
36899	18	19	Q	Gy	7.34	4.22
36899	19	20	Q	Gy	7.3	3.36
36899	20	21	QC	Gy	7.17	2.87
36899	21	22	QC	Gy	6.02	2.83
36899	22	23	QC	Gy	7.3	3.25
36899	23	24	QC	Gy	7.04	3.41
36899	24	25	C	GG	7.13	3.24
36899	25	26	C	GG	7.75	3.39
36899	26	27	Q	Gy	7.54	5.1
36899	27	28	Q	Gy	7.26	5.96
36899	28	29	Q	Gy	6.64	5.8

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36899	29	30	Q	OB	8.22	4.89
36899	30	31	Q	OB	6.83	6.61
36899	31	32	Q	B	7.07	5.45
36899	32	33	Q	B	7.75	4.51
36899	33	34	Q	DkB	7.4	4.97
36899	34	35	Q	DkB	7.64	4.68
36899	35	36	Q	DkB	7.59	4.21
36899	36	37	C	DkB	7.61	3.26
36899	37	38	QC	DkB	6.93	3.18
36899	38	39	Q	DkB	6.6	2.88
36899	39	40	Q	OB	6.86	2.79
36899	40	41	Q	OB	7.45	5.91
36899	41	42	Q	OB	7.01	3.49
36899	42	43	Q	OB	6.75	2.4
36899	43	44	Q	OB	6.9	1.62
36899	44	45	Q	Gy	7.27	1.96
36899	45	46	Q	Bl	7.28	4.42
36899	46	47	QC	Bl	7.38	2.59
36899	47	48	C	Bl	6.9	2.38
36899	48	49	Q	Bl	7	2.08
36899	49	50	Q	Bl	6.9	1.6
36899	50	51	Q	Bl	7.3	1.71
36899	51	52	Q	Bl	6.52	2.28
36899	52	53	Q	Bl	7.07	2.21
36899	53	54	Q	Bl	6.95	1.71
36899	54	55	Q	Bl	6.36	2.02
36899	55	56	Q	Bl	6.91	1.43
36900	0	1	QC	YG	7.47	2.48
36900	1	2	QC	O	6.59	3.82
36900	2	3	QC	B	6.26	3.87
36900	3	4	QC	YG	7.33	4.62
36900	4	5	QC	Gy	6.68	4.37
36900	5	6	QC	YG	6.62	2.8
36900	6	7	QC	Gy	6.93	4.25
36900	7	8	QC	Gy	5.42	4.44
36900	8	9	QC	Gy	7.01	5.5
36900	9	10	QC	Gy	7.38	4.75
36900	10	11	QC	Gy	7.54	5.64
36900	11	12	QC	Gy	7.53	4.45
36900	12	13	QC	Gy	7.34	3.74
36900	13	14	QC	Gy	6.2	3.35

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36900	14	15	QC	Gy	7.63	4.66
36900	15	16	QC	Gy	7.48	3.6
36900	16	17	QC	Gy	7.75	4.31
36900	17	18	QC	Gy	7.72	4.67
36900	18	19	QC	Gy	6.92	5.13
36900	19	20	QC	Gy	7.73	4.69
36900	20	21	QC	Gy	7.15	2.57
36900	21	22	QC	Gy	7.2	5.33
36900	22	23	QC	Gy	7.35	5.66
36900	23	24	QC	Gy	6.67	5.42
36900	24	25	QC	DkGY	7.03	4.16
36900	25	26	QC	DkGY	6.67	3.81
36900	26	27	C	DkGY	6.88	7.2
36900	27	28	QC	DkGY	7.11	5.11
36900	28	29	QC	DkGY	7.13	5.52
36900	29	30	QC	DkGY	6.9	5.87
36900	30	31	Q	Gy	7.2	5.55
36900	31	32	Q	Gy	7.19	4.5
36900	32	33	QC	Gy	6.74	2.54
36900	33	34	Q	Gy	6.63	5.26
36900	34	35	QC	Gy	6.64	5.85
36900	35	36	QC	Gy	6.83	5.63
36900	36	37	QC	Gy	7.27	6.61
36900	37	38	Q	Gy	7.39	6.07
36900	38	39	Q	Gy	7.16	6.16
36900	39	40	Q	YG	7.29	5.6
36900	40	41	QC	YG	7.24	2.52
36900	41	42	Q	B	6.93	4.14
36900	42	43	Q	B	7.25	5.4
36900	43	44	Q	B	7.24	4.01
36900	44	45	Q	B	7.1	5.86
36900	45	46	Q	B	7.28	5.42
36900	46	47	Q	DkB	7.29	2.42
36900	47	48	Q	DkB	7.68	1.83
36900	48	49	QC	Bl	6.69	2
36900	49	50	QC	Bl	6.73	1.95
36900	50	51	QC	Bl	6.98	1.71
36900	51	52	QC	Bl	7.5	3.21
36901	0	1	Q	Gy	6.64	3.42
36901	1	2	Q	Gy	7.35	3.35
36901	2	3	QC	Gy	6.71	3.37

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36901	3	4	QC	Gy	4.95	3.08
36901	4	5	QC	Gy	5	2.86
36901	5	6	QC	Gy	4.93	3.36
36901	6	7	C	Gy	6.9	2.97
36901	7	8	QC	Gy	7.17	2.66
36901	8	9	QC	Gy	7.29	4.76
36901	9	10	QC	Gy	7.72	6.09
36901	10	11	QC	Gy	7.51	6.89
36901	11	12	QC	Gy	7.3	2.73
36901	12	13	QC	Gy	7.65	5.72
36901	13	14	QC	Gy	6.63	5.98
36901	14	15	QC	Gy	7.67	5.6
36901	15	16	QC	Gy	7	6.11
36901	16	17	QC	Gy	6.92	5.66
36901	17	18	QC	Gy	7.54	4.1
36901	18	19	QC	Gy	6.32	5.42
36901	19	20	C	Gy	6.78	4.85
36901	20	21	QC	Gy	7.26	5.2
36901	21	22	QC	Gy	7.36	5.8
36901	22	23	QC	Gy	7.1	3.47
36901	23	24	Q	Gy	7.09	4.48
36901	24	25	Q	Gy	7.49	3.32
36901	25	26	Q	Gy	6.8	3.91
36901	26	27	Q	Gy	7.13	2.91
36901	27	28	Q	Gy	8.12	6.14
36901	28	29	Q	Gy	7.37	5.99
36901	29	30	Q	Gy	7.09	5.1
36901	30	31	Q	Gy	7.46	3.3
36901	31	32	Q	Gy	6.78	3.4
36901	32	33	Q	Gy	7.57	2.97
36901	33	34	Q	Gy	5.81	3.08
36901	34	35	Q	Gy	7.18	3.46
36901	35	36	Q	Gy	7.96	3.82
36901	36	37	Q	Gy	6.69	4.64
36901	37	38	QC	B	7.08	3.8
36901	38	39	QC	B	7.66	3.49
36901	39	40	Q	B	7.35	2.4
36901	40	41	Q	B	6.41	2
36902	0	1	QC	B	5.98	3.68
36902	1	2	QC	O	6.43	4.47
36902	2	3	C	Pi	6.42	4.44

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36902	3	4	Q	B	5.3	3.74
36902	4	5	QC	B	6.51	4.77
36902	5	6	QC	B	5.24	4.51
36902	6	7	QC	B	4.94	4.49
36902	7	8	QC	B	6.2	4.71
36902	8	9	QC	Gy	7.34	5.13
36902	9	10	QC	Gy	7.23	5.42
36902	10	11	QC	Gy	6.35	5.61
36902	11	12	QC	Gy	6.5	3.71
36902	12	13	QC	Gy	6.05	5.13
36902	13	14	QC	Gy	5.84	4.51
36902	14	15	QC	Gy	5.5	4.61
36902	15	16	QC	DkGY	5.89	4.68
36902	16	17	QC	DkGY	5.75	4.85
36902	17	18	QC	DkGY	5	4.66
36902	18	19	QC	DkGY	5.23	4.43
36902	19	20	QC	DkGY	6.1	5.58
36902	20	21	QC	DkGY	6.4	5.17
36902	21	22	Q	Gy	6.85	6.12
36902	22	23	Q	Gy	7.1	6.46
36902	23	24	Q	Gy	6.9	5.32
36902	24	25	Q	Gy	6.41	2.69
36902	25	26	Q	Gy	6.94	5.76
36902	26	27	Q	Gy	7.6	6.28
36902	27	28	Q	DkGY	6.92	5.98
36902	28	29	Q	DkGY	6.99	5.86
36902	29	30	C	DkGY	7.42	2.94
36902	30	31	C	DkGY	7.26	2.68
36902	31	32	C	DkGY	6.96	6.42
36902	32	33	QC	DkGY	6.92	6.49
36902	33	34	QC	DkGY	6.37	6
36902	34	35	QC	DkGY	7.64	6.78
36902	35	36	Q	DkGY	7.05	2.76
36902	36	37	Q	DkGY	7.33	6.03
36902	37	38	Q	DkGY	7.02	5.95
36902	38	39	Q	DkGY	7.34	6.55
36902	39	40	Q	B	7.42	5.57
36902	40	41	Q	DkB	7.45	4.25
36902	41	42	Q	DkB	7.14	6.46
36902	42	43	Q	Bl	7.38	2.83
36902	43	44	Q	Bl	7.33	2.48

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36902	44	45	Q	Bl	6.84	1.7
36902	45	46	Q	Bl	7.42	1.73
36903	0	1	Q	Gy	7.3	2.97
36903	1	2	QC	YG	7.22	3.83
36903	2	3	QC	B	6.88	5.39
36903	3	4	QC	B	6.65	6.03
36903	4	5	QC	B	7.09	5.8
36903	5	6	QC	Gy	7.01	6.47
36903	6	7	C	Gy	7.28	6.43
36903	7	8	QC	Gy	7.53	5.32
36903	8	9	QC	Gy	7.56	6.06
36903	9	10	QC	Gy	7.93	5.89
36903	10	11	QC	Gy	6.85	6.06
36903	11	12	QC	Gy	7.38	5.71
36903	12	13	QC	Gy	7.56	4.95
36903	13	14	QC	Gy	7.85	5.93
36903	14	15	QC	Gy	7.86	6.2
36903	15	16	QC	Gy	7.39	6
36903	16	17	QC	Gy	7.19	5.49
36903	17	18	QC	Gy	7.09	5.71
36903	18	19	QC	Gy	8	5.25
36903	19	20	QC	Gy	6.42	5.52
36903	20	21	QC	YG	6.63	5.98
36903	21	22	QC	YG	6.96	4.98
36903	22	23	QC	YG	6.9	5.48
36903	23	24	QC	YG	6.19	5.5
36903	24	25	QC	YG	6.76	3.76
36903	25	26	C	DkB	6.76	5.3
36903	26	27	C	DkB	6.39	5.36
36903	27	28	QC	DkB	6.59	5.37
36903	28	29	QC	DkB	6.85	5.26
36903	29	30	QC	DkB	6.96	4.32
36903	30	31	QC	DkB	6.52	4.32
36903	31	32	QC	DkB	5.94	5.02
36903	32	33	QC	DkB	6.36	3.67
36903	33	34	QC	Gy	6.38	4.36
36903	34	35	QC	Gy	5.99	3.5
36903	35	36	QC	Gy	5.84	2.1
36903	36	37	QC	Gy	5.66	3.37
36903	37	38	QC	Gy	6.58	3.42
36903	38	39	QC	DkB	6.24	1.8

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36903	39	40	QC	Bl	6.23	2.18
36903	40	41	QC	Bl	6.98	2.36
36903	41	42	QC	Bl	6.09	3.35
36903	42	43	QC	Bl	6.45	2.03
36903	43	44	QC	Bl	5.78	1.62
36904	0	1	Q	Gy	7.14	5.29
36904	1	2	Q	Gy	5.86	2.04
36904	2	3	QC	B	6.26	3.52
36904	3	4	QC	OB	6.92	3.88
36904	4	5	QC	OB	7.82	4.1
36904	5	6	QC	OB	6.35	3.76
36904	6	7	QC	Gy	6.24	3.62
36904	7	8	QC	Gy	4.42	3.1
36904	8	9	QC	Gy	6.7	3.41
36904	9	10	QC	Gy	6.46	5.42
36904	10	11	QC	Gy	7.42	4.05
36904	11	12	QC	Gy	6.91	5.41
36904	12	13	QC	Gy	6.48	4.67
36904	13	14	QC	Gy	6.47	4.03
36904	14	15	QC	Gy	6.56	4.71
36904	15	16	QC	Gy	6.28	5.03
36904	16	17	QC	Gy	7.36	4.06
36904	17	18	QC	Gy	7	4.02
36904	18	19	QC	Gy	7.73	4.46
36904	19	20	QC	Gy	7.05	2.84
36904	20	21	C	Gy	6.56	3.15
36904	21	22	C	Gy	7.01	4.93
36904	22	23	QC	Gy	6.15	4.94
36904	23	24	QC	Gy	6.41	3.09
36904	24	25	QC	Gy	6.17	4.58
36904	25	26	QC	Gy	5.94	3.81
36904	26	27	C	Gy	6.2	4.62
36904	27	28	C	DkGY	7.09	4.71
36904	28	29	QC	DkGY	7.84	3.05
36904	29	30	QC	DkGY	7.31	4.2
36904	30	31	C	DkGY	6.69	3.64
36904	31	32	QC	Gy	6.82	3.18
36904	32	33	QC	Gy	7.4	4.51
36904	33	34	QC	Gy	7.01	4.32
36904	34	35	QC	Gy	6.82	4.5
36904	35	36	QC	Gy	7.24	4.83

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36904	36	37	QC	Gy	7.31	3.38
36904	37	38	QC	Gy	6.61	4.47
36904	38	39	QC	Gy	6.58	3.62
36904	39	40	QC	Gy	6.58	3.71
36904	40	41	QC	Gy	6.83	4.48
36904	41	42	QC	Gy	6.5	5.65
36904	42	43	QC	Gy	6.49	4.52
36904	43	44	QC	Gy	6.18	2.96
36904	44	45	QC	Gy	6.77	2.3
36904	45	46	QC	Gy	6.36	2.52
36904	46	47	QC	Gy	7	2.88
36904	47	48	QC	Gy	7.15	2.34
36905	0	1	Q	Gy	5.86	3.07
36905	1	2	Q	O	7	3.7
36905	2	3	Q	Y	6.56	4.5
36905	3	4	Q	Gy	6.65	4.75
36905	4	5	QC	DkB	7.9	5
36905	5	6	QC	DkB	8.4	6.27
36905	6	7	QC	DkB	6.78	5.94
36905	7	8	QC	Gy	6	5.98
36905	8	9	QC	Gy	5.51	5.14
36905	9	10	QC	Gy	4.9	4.68
36905	10	11	C	B	5.4	4.41
36905	11	12	C	B	4.85	4.34
36905	12	13	QC	B	4.85	4.57
36905	13	14	QC	B	5.77	4.74
36905	14	15	QC	B	4.93	4.32
36905	15	16	C	Gy	6	4.69
36905	16	17	QC	Gy	5.99	4.71
36905	17	18	QC	Gy	7	5.44
36905	18	19	QC	O	6.29	4.77
36905	19	20	C	DkB	6.44	5.28
36905	20	21	QC	DkB	6.95	4.73
36905	21	22	QC	Gy	5.8	3.08
36905	22	23	C	DkB	6.42	5.04
36905	23	24	C	DkB	7.3	5.27
36905	24	25	C	DkB	6.41	3.66
36905	25	26	C	DkB	6.84	4.83
36905	26	27	C	B	6.32	4.89
36905	27	28	QC	B	7.4	3.92
36905	28	29	C	B	7.58	4.87

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36905	29	30	QC	B	7.29	4.79
36905	30	31	QC	B	7.15	4.43
36905	31	32	QC	B	6.96	3.77
36905	32	33	QC	B	7.12	2.88
36905	33	34	QC	B	7.25	3.13
36905	34	35	QC	B	6.67	3.8
36905	35	36	QC	B	7.29	5.46
36905	36	37	C	B	6.97	5.06
36905	37	38	C	B	6.33	2.16
36905	38	39	C	Bl	6.71	2.1
36905	39	40	Q	Bl	7.55	2.74
36905	40	41	Q	DkGY	7.65	6.46
36905	41	42	Q	DkGY	8.39	7.99
36905	42	43	Q	Bl	7.81	7.11
36905	43	44	Q	DkGY	8.15	8.07
36905	44	45	Q	DkGY	8.1	6.46
36906	0	1	Q	Gy	7.98	4.88
36906	1	2	Q	B	6.42	4.47
36906	2	3	QC	B	7.73	5.08
36906	3	4	C	B	5.96	5.2
36906	4	5	C	B	7.43	5.42
36906	5	6	QC	Gy	6.85	5.68
36906	6	7	QC	Gy	6.91	5.08
36906	7	8	QC	Gy	6.61	5.64
36906	8	9	QC	Gy	6.84	5.77
36906	9	10	QC	YG	6.57	6.92
36906	10	11	QC	Gy	7	6.37
36906	11	12	QC	Gy	7.36	6.47
36906	12	13	QC	Gy	7.74	6.55
36906	13	14	QC	YG	8.37	7.76
36906	14	15	QC	Gy	8.18	6.22
36906	15	16	QC	DkGY	8.09	6.89
36906	16	17	QC	DkGY	8.31	8.09
36906	17	18	C	DkGY	7.95	7.27
36906	18	19	C	DkGY	7.92	7.06
36906	19	20	QC	DkGY	7.59	6.34
36906	20	21	QC	DkGY	8.33	7.62
36906	21	22	QC	DkGY	8.21	7.57
36906	22	23	C	DkGY	7.76	6.65
36906	23	24	C	DkGY	7.41	6.71
36906	24	25	C	DkGY	7.69	7.2

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36906	25	26	C	DkGY	7.73	6.33
36906	26	27	QC	DkGY	6.69	6.41
36906	27	28	C	DkGY	7.14	7.17
36906	28	29	C	DkGY	8.15	7.18
36906	29	30	C	DkGY	7.63	6.71
36906	30	31	C	DkGY	7.83	7.22
36906	31	32	C	DkGY	7.73	6.6
36907	0	1	Q	Gy	7.35	3.39
36907	1	2	Q	Gy	6.52	3.8
36907	2	3	Q	Gy	6.9	3.39
36907	3	4	Q	Gy	6.74	3.68
36907	4	5	Q	Gy	7.55	3.8
36907	5	6	Q	Gy	2.86	3.33
36907	6	7	Q	DkGY	4.99	2.54
36907	7	8	Q	DkGY	5.47	2.45
36907	8	9	Q	DkGY	6.22	3.16
36907	9	10	Q	DkGY	6.36	3.57
36907	10	11	Q	DkGY	6.97	3.4
36907	11	12	QC	DkGY	6.21	4.71
36907	12	13	QC	DkGY	7.41	4.26
36907	13	14	Q	DkGY	7.67	4.26
36907	14	15	Q	DkGY	7.16	4.27
36907	15	16	Q	DkGY	7.24	3.6
36907	16	17	Q	DkGY	7.93	3.61
36907	17	18	Q	DkGY	8.25	3.07
36907	18	19	QC	DkGY	7.44	5.04
36907	19	20	QC	DkGY	6.98	5.69
36907	20	21	QC	DkGY	6.61	5.55
36907	21	22	C	DkGY	6.91	5.96
36907	22	23	C	DkGY	7.17	5.86
36907	23	24	QC	DkGY	7.03	4.12
36907	24	25	Q	Gy	7.1	3.7
36907	25	26	Q	Gy	6	3.24
36907	26	27	Q	Gy	7.15	3.08
36907	27	28	Q	Gy	6.98	2.52
36907	28	29	Q	Gy	7.14	2.86
36907	29	30	Q	Gy	8.02	2.95
36907	30	31	Q	Gy	7.75	2.98
36907	31	32	Q	Gy	7.09	3.04
36907	32	33	Q	Gy	7.34	3.33
36907	33	34	Q	DkGY	7.38	5.5

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36907	34	35	Q	DkGY	6.46	3.72
36907	35	36	Q	DkGY	6.82	4.35
36907	36	37	C	Bl	6.98	1.23
36907	37	38	QC	Bl	6.64	1.03
36907	38	39	QC	Bl	6.56	1.04
36907	39	40	C	Bl	6.68	1.24
36907	40	41	Q	Bl	7.66	2.26
36907	41	42	Q	Bl	7.6	6.59
36908	0	1	Q	B	7.79	3.55
36908	1	2	Q	B	7.67	4.71
36908	2	3	QC	Gy	4.51	3.59
36908	3	4	C	Gy	6.83	3.19
36908	4	5	QC	Gy	7.91	3.38
36908	5	6	C	Gy	7.99	6.92
36908	6	7	C	Gy	7.85	6.17
36908	7	8	Q	B	7.59	6.11
36908	8	9	Q	Gy	7.39	4.24
36908	9	10	QC	B	7.62	6.08
36908	10	11	QC	B	7.52	3.74
36908	11	12	QC	B	7.49	6.31
36908	12	13	QC	B	8.39	4.49
36908	13	14	QC	Gy	8.08	6.22
36908	14	15	C	Gy	7.28	7.16
36908	15	16	QC	YG	7.54	6.26
36908	16	17	QC	YG	8.27	7.13
36908	17	18	QC	YG	8.69	7.44
36908	18	19	QC	B	8.47	7.04
36908	19	20	QC	Gy	8.14	5.2
36908	20	21	QC	Gy	8.02	6.47
36908	21	22	QC	Gy	7.93	6.38
36908	22	23	QC	Gy	8.34	6.49
36908	23	24	C	Gy	8.28	7.14
36908	24	25	QC	Gy	7.51	5.84
36908	25	26	QC	Gy	8.18	4.81
36908	26	27	QC	Gy	7.62	4.37
36908	27	28	QC	Gy	8.08	5.98
36908	28	29	QC	Gy	8.14	6.95
36908	29	30	QC	B	8.66	7.53
36908	30	31	QC	B	7.52	4.11
36908	31	32	Q	DkB	6.96	2.3
36908	32	33	Q	Bl	6.73	1.33

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36908	33	34	QC	DkB	7.64	1.77
36908	34	35	QC	DkB	7.52	2.56
36908	35	36	Q	DkB	8.25	7.46
36909	0	1	Q	B	6.35	1.42
36909	1	2	Q	B	6.88	2.47
36909	2	3	Q	Gy	6.79	4
36909	4	5	QC	B	7.15	6.61
36909	5	6	QC	B	7.33	6.47
36909	6	7	QC	B	6.5	6.16
36909	7	8	QC	B	7.22	6.24
36909	8	9	Q	Gy	6.79	6.69
36909	9	10	Q	Gy	6.94	5.37
36909	10	11	Q	Gy	7.77	6.29
36909	11	12	Q	Gy	6.46	5.39
36909	12	13	Q	Gy	6.44	5.26
36909	13	14	Q	Gy	6.62	5.74
36909	14	15	Q	Gy	6.88	5.8
36909	15	16	Q	Gy	6.64	5.64
36909	16	17	Q	Gy	6.24	5.52
36909	17	18	C	Gy	6	5.58
36909	18	19	C	DkGY	6.75	5.76
36909	19	20	C	DkGY	7.34	6.14
36909	20	21	C	B	7.45	5.93
36909	21	22	C	B	7	5.79
36909	22	23	C	Gy	6.6	5.5
36909	23	24	C	DkGY	6.61	5.78
36909	24	25	QC	DkGY	7.3	6.28
36909	25	26	Q	DkGY	7.77	6.33
36909	26	27	Q	DkGY	7.09	5.64
36909	27	28	QC	DkGY	7.42	6.5
36909	28	29	QC	DkGY	8.82	4.68
36909	29	30	C	DkGY	8.59	6.87
36909	30	31	C	DkGY	9.13	8.77
36909	31	32	C	DkGY	8.99	8.29
36909	32	33	QC	DkGY	8.72	8.31
36909	33	34	C	DkGY	9.09	7.44
36909	34	35	C	DkGY	8.83	7.77
36909	35	36	C	DkGY	8.89	6.81
36909	36	37	C	Gy	8.99	7.84
36909	37	38	C	DkGY	8.72	7.72
36909	38	39	C	Bl	8.53	7.77

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36909	39	40	C	Bl	8.93	8.52
36909	40	41	C	Bl	8.92	8.5
36909	41	42	C	Bl	8.79	8.23
36910	0	1	Q	Gy	9.07	8.25
36910	1	2	Q	Y	7.26	4.26
36910	2	3	Q	Y	6.99	4.93
36910	3	4	Q	Y	8.1	7.06
36910	4	5	Q	Y	7.19	5.4
36910	5	6	Q	Y	7.53	6.11
36910	6	7	Q	Y	7.06	5.66
36910	7	8	QC	B	6.38	5.32
36910	8	9	QC	B	7.61	5.93
36910	9	10	QC	B	7.3	6.26
36910	10	11	QC	B	6.96	5.99
36910	11	12	QC	B	7.37	6.16
36910	11	12	C	YG	7.36	6.24
36910	12	13	QC	Gy	6.7	5.75
36910	13	14	C	O	7.46	5.86
36910	14	15	QC	YG	5.88	6.25
36910	15	16	QC	Gy	6.77	5.88
36910	16	17	QC	Gy	6.62	5.44
36910	17	18	C	Gy	7.11	4.47
36910	18	19	C	B	7.43	6.65
36910	19	20	C	B	7.63	6.22
36910	20	21	C	B	7.3	5.86
36910	21	22	C	B	7.05	6.05
36910	22	23	QC	B	7.3	5.91
36910	23	24	C	B	6.75	5.31
36910	24	25	C	O	6.69	5.74
36910	25	26	C	O	6.9	6.08
36910	26	27	QC	O	6.38	6.41
36910	27	28	QC	O	7.01	1.71
36910	28	29	Q	O	7.7	6.44
36910	29	30	Q	OB	7.59	7.07
36910	30	31	Q	OB	8.39	7.98
36910	31	32	Q	OB	8.64	7.86
36910	32	33	Q	OB	8.54	8.07
36910	33	34	Q	OB	8.45	9.09
36910	34	35	Q	OB	7.28	3.63
36910	35	36	Q	OB	7.74	4.65
36911	0	1	Q	YG	6.66	4.9

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36911	1	2	Q	YG	4.5	4.32
36911	2	3	Q	YG	5.81	4.34
36911	3	4	QC	B	5.2	3.98
36911	4	5	QC	Gy	5.34	4.25
36911	5	6	QC	OB	6.2	5.14
36911	6	7	Q	Gy	5.61	5.45
36911	7	8	QC	B	5.95	4.9
36911	8	9	QC	Gy	7.21	5.16
36911	9	10	Q	Gy	7.06	5.9
36911	10	11	Q	Gy	6.76	5.51
36911	11	12	Q	B	7.55	6.02
36911	12	13	QC	B	7.92	5.43
36911	13	14	QC	Gy	7.36	5.3
36911	14	15	Q	Gy	6.8	5.5
36911	15	16	QC	Gy	7.76	6.07
36911	16	17	C	B	7.5	5.78
36911	17	18	C	B	6.83	5.6
36911	18	19	QC	B	6.94	5.67
36911	19	20	QC	B	6.76	5.66
36911	20	21	QC	Gy	7.28	5.49
36911	21	22	QC	Gy	7.12	4.82
36911	22	23	QC	Gy	6.67	3.73
36911	23	24	QC	Gy	7.38	3.71
36911	24	25	Q	Gy	6.96	3.88
36911	25	26	Q	Gy	7.11	3.94
36911	26	27	Q	Gy	7.09	3.59
36911	27	28	Q	Gy	6.34	3.08
36911	28	29	Q	Gy	6.41	3.07
36911	29	30	Q	Gy	6.44	2.98
36911	30	31	Q	Gy	7.33	3.7
36911	31	32	Q	Gy	6.96	3.87
36911	32	33	Q	Gy	6.67	3.71
36911	33	34	Q	Gy	6.77	4.5
36911	34	35	Q	Gy	7.14	4.18
36911	35	36	Q	Gy	6.75	2.89
36911	36	37	Q	Gy	7.91	3.41
36911	37	38	Q	Gy	6.15	2.98
36911	38	39	Q	Gy	6.71	2.1
36911	39	40	Q	B	6.39	1.7
36911	40	41	Q	B	6.72	1.55
36911	41	42	Q	DkB	6.65	1.84

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36911	42	43	Q	DkGY	6.9	1.64
36911	43	44	Q	DkGY	6.62	1.47
36911	44	45	Q	DkGY	6.8	1.4
36912	0	1	Q	Gy	6.53	3.98
36912	1	2	Q	Y	7.31	4.53
36912	2	3	Q	Y	7	5.34
36912	3	4	QC	Gy	7.17	4.56
36912	4	5	QC	Y	7.38	5.99
36912	5	6	QC	Y	7.22	5.87
36912	6	7	QC	YG	7.63	5.76
36912	7	8	QC	YG	6.69	5.94
36912	8	9	QC	YG	6.97	5.68
36912	9	10	QC	YG	6.68	5.38
36912	10	11	QC	Gy	6.64	5.31
36912	11	12	QC	Gy	6.89	5.56
36912	12	13	QC	Gy	7.09	3.93
36912	13	14	QC	Gy	7.21	4.95
36912	14	15	C	Gy	7.73	5.64
36912	15	16	C	Gy	6.8	5.73
36912	16	17	QC	Gy		5.76
36912	17	18	C	Gy	6.77	5.92
36912	18	19	QC	Gy	7.3	5.99
36912	19	20	QC	Gy	7.11	5.86
36912	20	21	QC	Gy	7.09	5.93
36912	21	22	C	DkGY	6.71	5.25
36912	22	23	QC	DkGY	6.5	3.1
36912	23	24	QC	DkGY	7.1	5.62
36912	24	25	QC	DkGY	7.21	3.95
36912	25	26	C	DkGY	6.57	6.12
36912	26	27	C	DkGY	7.23	5.14
36912	27	28	C	DkGY	7.56	6.08
36912	28	29	C	DkGY	7.87	6.76
36912	29	30	C	DkGY	8.66	7.48
36912	30	31	C	DkGY	8.93	7.26
36912	31	32	C	DkGY	8.33	7.99
36912	32	33	C	DkGY	8.44	7.3
36912	33	34	QC	Bl	8.42	6.43
36912	34	35	QC	Bl	7.87	6.05
36912	35	36	C	Bl	8.89	7.8
36912	36	37	C	Bl	8.52	7.84
36912	37	38	C	Bl	9.1	6.59

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36912	38	39	C	Bl	7.78	2.7
36912	39	40	C	Bl	7.86	6.45
36912	40	41	Q	Bl	6.16	1.56
36912	41	42	Q	Bl	6.63	1.64
36913	0	1	Q	Gy	6.38	3.47
36913	1	2	QC	Gy	6.99	4.34
36913	2	3	C	Pi	5.25	4.05
36913	3	4	QC	B	5.01	2.91
36913	4	5	QC	B	4.84	3.14
36913	5	6	QC	YG	5.47	3.76
36913	6	7	QC	YG	5.7	4.82
36913	7	8	QC	YG	4.54	3.73
36913	8	9	C	YG	5.77	3.53
36913	9	10	QC	B	6.88	2.76
36913	10	11	C	B	5.45	3.96
36913	11	12	C	Gy	5.77	4.77
36913	12	13	QC	Gy	6.85	3.31
36913	13	14	QC	Gy	7	2.72
36913	14	15	Q	Gy	8.37	2.62
36913	15	16	Q	Gy	6.75	3.17
36913	16	17	Q	Gy	6.5	4.34
36913	17	18	Q	Gy	7.05	4.97
36913	18	19	Q	Gy	7.58	2.72
36913	19	20	Q	Gy	8.05	2.74
36913	20	21	Q	Gy	7	2.67
36913	21	22	Q	Gy	6.44	4.88
36913	22	23	Q	Gy	6.74	4.51
36913	23	24	Q	Gy	6.95	5.15
36913	24	25	Q	Gy	6.85	3.7
36913	25	26	Q	Gy	7.9	3.23
36913	26	27	Q	Gy	6.66	4.38
36913	27	28	Q	Gy	6.74	5.15
36913	28	29	Q	Gy	6.36	4.79
36913	29	30	Q	DkB	6.31	4.92
36913	30	31	Q	Gy	7.33	4.71
36913	31	32	Q	DkB	7.4	3.91
36913	32	33	Q	DkB	6.74	3.1
36913	33	34	Q	DkB	6.85	2.73
36913	34	35	Q	DkB	6.6	2.68
36913	35	36	Q	DkB	7.6	3.28
36913	36	37	Q	DkB	6.73	3.1

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36913	37	38	Q	DkB	6.8	2.62
36913	38	39	Q	DkB	6.21	2.3
36913	39	40	Q	DkB	6.46	1.95
36913	40	41	Q	DkB	6.4	1.84
36913	41	42	Q	DkB	6.3	1.41
36913	42	43	Q	DkB	6.22	1.64
36913	43	44	Q	DkB	6.35	1.62
36913	44	45	Q	DkB	6.34	2.02
36913	45	46	Q	Bl	6.62	1.27
36913	46	47	QC	Bl	6.8	1.14
36913	47	48	C	Bl	6.02	1.5
36913	48	49	C	Bl	6.19	0.95
36913	49	50	C	Bl	5.98	1.32
36913	50	51	C	Bl	6.7	1.34
36913	51	52	QC	Bl	5.92	1.71
36913	52	53	Q	DkB	7.29	1.9
36913	53	54	Q	B	7.4	2.08
36913	54	55	Q	B	7.04	2.98
36913	55	56	Q	B	5.67	2.46
36913	56	57	Q	B	7.13	2.01
36914	0	1	Q	Gy	6.49	3.66
36914	1	2	Q	B	7.18	4.46
36914	2	3	Q	B	6.5	5.09
36914	3	4	Q	B	6.95	5.38
36914	4	5	Q	B	6.29	5.89
36914	5	6	Q	B	7.53	6.08
36914	6	7	Q	YG	8.24	6.4
36914	7	8	Q	B	7.48	6.4
36914	8	9	QC	DkB	7.01	6.38
36914	9	10	Q	DkGY	7.63	6.29
36914	10	11	C	DkB	8.26	6.86
36914	11	12	C	DkB	8.09	6.63
36914	12	13	QC	DkB	7.68	6.68
36914	13	14	Q	DkB	7.71	6.52
36914	14	15	Q	DkB	7.29	6.64
36914	15	16	Q	DkGY	7.22	6.49
36914	16	17	Q	DkGY	7	6.7
36914	17	18	QC	DkGY	7.41	6.07
36914	18	19	Q	Gy	8.53	6.39
36914	19	20	Q	Gy	8.36	7.1
36914	20	21	Q	Gy	8.18	6.58

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36914	21	22	Q	Gy	7.54	6.42
36914	22	23	Q	Gy	5.6	4.54
36914	23	24	Q	Gy	8.14	2.85
36914	24	25	Q	YG	9.23	7.47
36914	25	26	Q	YG	9.34	7.48
36914	26	27	Q	YG	7.79	6.15
36914	27	28	Q	B	7.03	7.61
36914	28	29	Q	B	7.99	7.54
36914	29	30	Q	B	8.09	8.39
36914	30	31	Q	B	8.16	8.04
36915	0	1	Q	Gy	6.65	2.94
36915	1	2	Q	Y	7.19	5.14
36915	2	3	Q	Y	6.12	5.6
36915	3	4	Q	Y	7.33	5.69
36915	4	5	Q	Y	7.1	5.4
36915	5	6	QC	B	7.04	5.71
36915	6	7	C	B	7.36	6.13
36915	7	8	QC	B	7.8	6.54
36915	8	9	QC	Gy	7.75	5.85
36915	9	10	C	B	6.94	5.67
36915	10	11	C	B	6.51	7.45
36915	11	12	C	B	6.8	5.44
36915	12	13	C	B	6.64	5.22
36915	13	14	QC	DkB	7.41	6.09
36915	14	15	QC	DkB	6.86	3.96
36915	15	16	C	DkB	6.65	5.24
36915	16	17	C	DkB	6.6	5.46
36915	17	18	C	DkB	7.3	5.87
36915	18	19	QC	DkGY	7.2	6.05
36915	19	20	QC	DkGY	7.06	5.49
36915	20	21	QC	DkGY	7.75	5.46
36915	21	22	C	DkGY	6.59	5.53
36915	22	23	C	DkGY	8.09	6.69
36915	23	24	C	DkGY	6.61	5.07
36915	24	25	C	DkGY	7.92	5.76
36915	25	26	QC	DkGY	8.08	7.3
36915	26	27	QC	DkGY	8.1	4.19
36915	27	28	Q	DkGY	7.66	2.15
36915	28	29	Q	DkGY	7.74	2.41
36915	29	30	Q	DkGY	7.23	2.05
36915	30	31	Q	DkGY	8.05	1.57

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36915	31	32	C	Bl	8.53	1.8
36915	32	33	C	Bl	8.14	1.3
36915	33	34	C	Bl	8.45	1.28
36915	34	35	Q	Bl	6.62	1.43
36915	35	36	Q	Bl	6.63	1.81
36915	36	37	Q	Bl	6.52	2.01
36915	37	38	Q	Bl	6.78	2.21
36915	38	39	Q	Bl	7.97	2.17
36915	39	40	Q	Bl	7.78	6.46
36915	40	41	Q	Bl	8.39	6.89
36915	41	42	Q	Bl	8.76	6.87
36916	0	1	Q	Gy	6.22	4.36
36916	1	2	Q	Gy	5.67	4
36916	2	3	QC	YG	5.54	2.92
36916	3	4	QC	Gy	6.91	6.03
36916	4	5	QC	Gy	7.71	6.53
36916	5	6	QC	YG	7.01	6.41
36916	6	7	QC	YG	6.54	5.75
36916	7	8	QC	Gy	6.33	5.25
36916	8	9	QC	Gy	6.5	5.57
36916	9	10	QC	Gy	6.8	5.33
36916	10	11	QC	Gy	6.55	5.04
36916	11	12	QC	Gy	6.86	5.11
36916	12	13	QC	Gy	6.7	5.04
36916	13	14	QC	Gy	6.52	5.86
36916	14	15	QC	Gy	6.57	5.34
36916	15	16	QC	Gy	6.94	4.13
36916	16	17	QC	Gy	6.74	4.44
36916	17	18	QC	Gy	6.59	4.39
36916	18	19	QC	Gy	6.61	2.98
36916	19	20	Q	Gy	6.54	2.5
36916	20	21	Q	Gy	7.03	3.28
36916	21	22	Q	Gy	6.61	2.99
36916	22	23	Q	Gy	6.31	3.17
36916	23	24	Q	Gy	5.85	3.14
36916	24	25	Q	Gy	6.49	4.14
36916	25	26	Q	Gy	5.76	3.35
36916	26	27	Q	Gy	6.88	2.87
36916	27	28	Q	Gy	6.02	3.36
36916	28	29	Q	Gy	6.11	2.32
36916	29	30	Q	B	6.52	4.28

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36916	30	31	Q	B	6.02	2.9
36916	31	32	Q	DkB	6.96	3.09
36916	32	33	Q	DkB	6.91	3.36
36916	33	34	Q	DkB	6.5	2.97
36916	34	35	Q	DkB	6.21	1.91
36916	35	36	Q	DkB	6.54	1.84
36916	36	37	Q	DkB	6.06	1.94
36916	37	38	Q	DkB	6.71	2.02
36916	38	39	Q	DkB	6.2	1.43
36916	39	40	Q	Bl	6.1	1.64
36916	40	41	QC	Bl	6.2	1.86
36916	41	42	C	Bl	6.08	0.92
36916	42	43	QC	Bl	6.1	1.68
36916	43	44	QC	Bl	6.02	1.2
36916	44	45	QC	Bl	6.22	1.76
36917	0	1	Q	DkGY	5.58	2.79
36917	1	2	Q	Gy	5.74	3.66
36917	2	3	Q	Gy	6.32	4.64
36917	3	4	Q	Gy	5.38	5.45
36917	4	5	QC	Gy	6.43	4.67
36917	5	6	QC	Gy	5.92	5.08
36917	6	7	QC	Gy	6.24	5.14
36917	7	8	QC	B	6.1	5.49
36917	8	9	C	B	5.86	4.19
36917	9	10	C	B	5.43	4.63
36917	10	11	C	O	5.37	4.89
36917	11	12	C	O	5.78	5.24
36917	12	13	QC	Gy	6.16	5.94
36917	13	14	QC	Gy	6.14	5.69
36917	14	15	QC	Gy	6.21	5.59
36917	15	16	QC	Gy	6.34	5.24
36917	16	17	Q	Gy	6.26	5.01
36917	17	18	Q	Gy	6.82	5.66
36917	18	19	Q	Gy	6.25	5.1
36917	19	20	Q	Gy	6.48	4.59
36917	20	21	Q	Gy	6.27	4.66
36917	21	22	Q	Gy	6.39	4.45
36917	22	23	Q	Gy	6.35	3.44
36917	23	24	Q	Gy	6.69	3.33
36917	24	25	Q	Gy	6.38	3.08
36917	25	26	Q	Gy	6.32	2.87

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36917	26	27	Q	Gy	6.8	3.42
36917	27	28	Q	B	6.26	2.96
36917	28	29	Q	B	6.69	2.76
36917	29	30	Q	B	6.27	3.43
36917	30	31	Q	B	6.25	3.56
36917	31	32	Q	B	6.25	3
36917	32	33	Q	B	5.95	3.22
36917	33	34	Q	B	6.06	3.56
36917	34	35	Q	B	6.2	2.55
36917	35	36	Q	DkB	5.97	2.12
36917	36	37	Q	DkB	6.08	1.91
36917	37	38	Q	DkB	6.1	1.89
36917	38	39	Q	DkB	6.02	1.7
36917	39	40	Q	DkB	6.18	1.71
36917	40	41	Q	DkB	6.09	1.77
36917	41	42	Q	DkB	6.07	1.91
36918	0	1	Q	DkGY	5.58	2.7
36918	1	2	Q	Gy	5.92	2.51
36918	2	3	Q	Gy	5.94	2.88
36918	3	4	QC	Gy	6.24	3.09
36918	4	5	QC	Gy	6.36	3.44
36918	5	6	QC	Gy	6.48	3.91
36918	6	7	QC	B	5.74	3.3
36918	7	8	QC	B	4.51	2.99
36918	8	9	QC	B	3.89	3.59
36918	9	10	QC	B	4.28	3.91
36918	10	11	QC	B	4.49	3.5
36918	11	12	QC	Gy	6.63	3.21
36918	12	13	QC	Gy	6.64	3.26
36918	13	14	QC	Gy	6.53	2.53
36918	14	15	Q	Gy	6.62	3.48
36918	15	16	Q	Gy	6.1	3.07
36918	16	17	Q	Gy	6.89	2.62
36918	17	18	Q	Gy	6.3	2.96
36918	18	19	Q	Gy	6.16	2.9
36918	19	20	Q	Gy	6.35	2.48
36918	20	21	Q	Gy	5.78	2.87
36918	21	22	Q	Gy	6.23	2.63
36918	22	23	Q	Gy	6.16	2.64
36918	23	24	Q	Gy	5.95	2.29
36918	24	25	Q	Gy	6.2	3.19

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36918	25	26	Q	Gy	6.03	2.23
36918	26	27	Q	Gy	5.79	2.99
36918	27	28	Q	Gy	6.21	3
36918	28	29	Q	Gy	6.15	2.17
36918	29	30	Q	B	6.39	3.46
36918	30	31	Q	B	6.54	4.09
36918	31	32	Q	B	6.27	4.16
36918	32	33	Q	B	6.67	3.57
36918	33	34	Q	B	5.97	1.93
36918	34	35	QC	DkGY	6.25	2.22
36918	35	36	QC	DkGY	5.79	1.63
36918	36	37	QC	DkGY	5.71	2.03
36918	37	38	QC	DkGY	5.53	1.51
36918	38	39	QC	DkGY	5.52	1.44
36918	39	40	QC	Bl	6.06	2.18
36918	40	41	QC	B	5.93	2.2
36918	41	42	QC	B	6.29	2.06
36919	0	1	Q	Gy	5.3	4.53
36919	1	2	Q	Gy	5.43	2.66
36919	2	3	QC	Gy	6.86	6.37
36919	3	4	C	B	6.8	4.16
36919	4	5	C	B	6.21	3.94
36919	5	6	C	B	4.88	4.09
36919	6	7	QC	YG	6.93	5.93
36919	7	8	QC	YG	8.21	7.49
36919	8	9	QC	Gy	7.41	6.06
36919	9	10	C	Gy	7.43	6.85
36919	10	11	QC	Gy	6.82	3.37
36919	11	12	QC	Gy	6.68	4.72
36919	12	13	QC	Gy	6.85	3.83
36919	13	14	QC	Gy	6.99	6.62
36919	14	15	C	Gy	7	6.31
36919	15	16	QC	Gy	6.5	4.65
36919	16	17	QC	Gy	6.25	5.45
36919	17	18	C	Gy	7.24	5.42
36919	18	19	QC	Gy	5.86	4.88
36919	19	20	QC	Gy	6.97	4.92
36919	20	21	QC	DkGY	6.57	3.54
36919	21	22	QC	Gy	5.11	3.34
36919	22	23	Q	Gy	6.29	2.98
36919	23	24	Q	Gy	6.2	2.98

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36919	24	25	Q	DkGY	4.97	2.39
36919	25	26	Q	DkGY	7.39	2.1
36919	26	27	C	DkGY	7	1.89
36919	27	28	C	Bl	5.72	1.25
36919	28	29	QC	Bl	6.02	1.62
36920	0	1	Q	Y	6.18	2.39
36920	1	2	C	B	6.4	4.17
36920	2	3	QC	B	6.67	5.81
36920	3	4	QC	O	6.81	5.69
36920	4	5	QC	Gy	6.55	4.74
36920	5	6	QC	Gy	6.11	4.53
36920	6	7	QC	Gy	5.88	3.61
36920	7	8	Q	Gy	6.02	3.48
36920	8	9	Q	Gy	4.75	4.24
36920	9	10	Q	Gy	4.93	3.62
36920	10	11	Q	Gy	4.33	3.72
36920	11	12	Q	Gy	6.18	3.68
36920	12	13	Q	Gy	5.86	3.63
36920	13	14	Q	Gy	6.47	4.76
36920	14	15	Q	Gy	6.95	4.45
36920	15	16	Q	Gy	6.82	3.36
36920	16	17	Q	Gy	6.65	2.63
36920	17	18	Q	Gy	6.56	2.96
36920	18	19	Q	Gy	6.81	3.86
36920	19	20	Q	Gy	6.38	4.28
36920	20	21	Q	Gy	6.6	4.18
36920	21	22	Q	Gy	6.61	4.46
36920	22	23	Q	Gy	6.24	3.69
36920	23	24	Q	Gy	6.2	3.91
36920	24	25	Q	Gy	6.3	3.96
36920	25	26	Q	Gy	6.12	4.36
36920	26	27	Q	B	6.35	4.34
36920	27	28	Q	B	6.14	3
36920	28	29	Q	B	6.14	3.44
36920	29	30	Q	B	6.4	3.51
36920	30	31	Q	B	6.57	3.41
36920	31	32	Q	B	6.55	3.65
36920	32	33	Q	B	6.45	3.63
36920	33	34	Q	B	6.46	3.18
36920	34	35	Q	B	6.05	2.57
36920	35	36	Q	DkB	6.01	2.25

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36920	36	37	Q	DkB	6.13	1.72
36920	37	38	Q	DkB	6.28	1.68
36920	38	39	QC	DkB	6.17	1.76
36920	39	40	QC	Bl	5.76	1.44
36920	40	41	C	Bl	6.27	1.49
36920	41	42	QC	Bl	6.33	1.43
36921	0	1	Q	Gy	6.75	2.64
36921	1	2	Q	W	5.83	3.87
36921	2	3	Q	YG	6.41	4.51
36921	3	4	QC	Gy	5.57	4.46
36921	4	5	QC	Gy	6.42	5.91
36921	5	6	QC	Gy	6.77	5.66
36921	6	7	QC	Gy	6.49	5.78
36921	7	8	QC	Gy	6.1	5.72
36921	8	9	QC	Gy	5.53	3.67
36921	9	10	QC	Gy	8.22	5.98
36921	10	11	QC	Gy	6.23	5.88
36921	11	12	QC	Gy	6.58	5.63
36921	12	13	QC	Gy	6.21	4.57
36921	13	14	QC	Gy	6.43	5.61
36921	14	15	QC	Gy	6.42	5.5
36921	15	16	QC	Gy	6.18	6.01
36921	16	17	QC	Gy	6.44	5.94
36921	17	18	QC	Gy	7.27	5.94
36921	18	19	QC	Gy	7.4	7.06
36921	19	20	QC	Gy	6.82	6.01
36921	20	21	QC	Gy	6.46	5.7
36921	21	22	QC	Gy	6.9	6.24
36921	22	23	QC	Gy	5.75	4.31
36921	23	24	Q	Gy	7.01	3.16
36921	24	25	Q	Gy	6.48	3.29
36921	25	26	Q	Gy	6.93	2.85
36921	26	27	Q	Gy	6.68	3.53
36921	27	28	Q	B	6.35	3.91
36921	28	29	Q	B	6.46	3.41
36921	29	30	Q	B	6.18	3.58
36921	30	31	Q	B	6.26	2.4
36921	31	32	Q	Bl	6.52	1.69
36921	32	33	QC	Bl	6.08	1.61
36921	33	34	QC	Bl	6.08	1.5
36921	34	35	QC	Bl	5.88	1.63

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36921	35	36	Q	Bl	6.06	1.72
36922	0	1	Q	Gy	5.9	3.13
36922	1	2	QC	B	5.49	3.76
36922	2	3	C	O	5.08	3.91
36922	3	4	QC	YG	6.18	5.25
36922	4	5	QC	YG	6.65	5.92
36922	5	6	QC	B	6.31	5.76
36922	6	7	C	B	6.42	5.8
36922	7	8	C	B	6.7	6.1
36922	8	9	C	B	6.29	5.09
36922	9	10	QC	B	6.03	4.04
36922	10	11	QC	Gy	5.01	5.55
36922	11	12	QC	Gy	6.23	6.01
36922	12	13	QC	Gy	6.84	5.76
36922	13	14	QC	Gy	6.77	5.09
36922	14	15	QC	Gy	6.18	4.73
36922	15	16	QC	Gy	6.7	6.13
36922	16	17	C	Gy	6.36	5.94
36922	17	18	C	B	6.04	4.86
36922	18	19	QC	B	6.06	5.29
36922	19	20	C	DkB	6.53	5.56
36922	20	21	C	DkB	6.57	6.35
36922	21	22	C	DkB	6.62	6.26
36922	22	23	QC	DkB	6.98	6.58
36922	23	24	QC	DkB	7.28	6.09
36922	24	25	C	DkB	8.31	8.07
36922	25	26	QC	DkB	8.43	7.71
36922	26	27	QC	DkB	7.11	5.66
36922	27	28	C	DkB	7.99	6.05
36922	28	29	C	DkB	7.44	6.49
36922	29	30	C	DkB	7.26	6.94
36922	30	31	C	DkB	6.66	7.01
36922	31	32	C	DkB	6.51	2.44
36922	32	33	C	Bl	6.93	1.47
36922	33	34	Q	Bl	6.44	1.8
36922	34	35	QC	Bl	6.44	1.76
36922	35	36	QC	Bl	6.93	1.71
36923	0	1	Q	Gy	5.96	3.07
36923	1	2	Q	B	6.48	3.56
36923	2	3	QC	B	7.22	5.16
36923	3	4	QC	B	5.9	4.12

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36923	4	5	QC	B	4.6	2.98
36923	5	6	QC	Gy	6.22	3.22
36923	6	7	QC	Gy	6.81	3.56
36923	7	8	QC	Gy	7.07	5.76
36923	8	9	QC	Gy	6.96	3.9
36923	9	10	QC	Gy	6.99	5.01
36923	10	11	QC	Gy	6.49	4.78
36923	11	12	QC	Gy	5.79	4.84
36923	12	13	QC	Gy	5.97	5.19
36923	13	14	QC	Gy	6.11	4.88
36923	14	15	C	Gy	7.19	2.92
36923	15	16	C	Gy	5.95	3.91
36923	16	17	C	Gy	5.93	5.43
36923	17	18	QC	Gy	6.58	4.39
36923	18	19	QC	Gy	6.62	5.14
36923	19	20	C	Gy	6.56	4.83
36923	20	21	C	Gy	6.28	5.01
36923	21	22	Q	Gy	6.21	4.34
36923	22	23	Q	Gy	6.5	5.68
36923	23	24	QC	Gy	6.12	5.45
36923	24	25	QC	Gy	6.75	5.47
36923	25	26	QC	Gy	6.27	3.21
36923	26	27	Q	Gy	6.12	4.77
36923	27	28	Q	Gy	6.72	5.28
36923	28	29	Q	Gy	6.27	3.89
36923	29	30	Q	Gy	6.03	5.03
36923	30	31	Q	Gy	6.35	5
36923	31	32	Q	Gy	5.84	6.02
36923	32	33	Q	Gy	6.58	5.73
36923	33	34	Q	Gy	6.38	5.13
36923	34	35	Q	Gy	5.95	6.09
36923	35	36	Q	Gy	5.93	5.75
36923	36	37	Q	Gy	6.4	5.75
36923	37	38	Q	Gy	5.47	5.63
36923	38	39	Q	Gy	6.58	4.98
36923	39	40	Q	Gy	5.88	5.83
36923	40	41	Q	DkB	6.11	4
36923	41	42	Q	DkB	5.81	5.39
36923	42	43	Q	DkB	6.42	5.2
36923	43	44	Q	DkB	6.06	5.36
36923	44	45	Q	DkB	6.24	2.32

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36924	0	1	QC	DkGY	6.35	3.48
36924	1	2	QC	Y	8.87	8.06
36924	2	3	QC	YG	9.46	7.51
36924	3	4	QC	B	8.33	7.61
36924	4	5	QC	B	8.25	7.03
36924	5	6	QC	B	8.71	7.33
36924	6	7	QC	Gy	8.37	7.11
36924	7	8	QC	Gy	8.39	7.19
36924	8	9	QC	Gy	8.3	7.28
36924	9	10	QC	Gy	8	7.08
36924	10	11	QC	Gy	8.2	6.96
36924	11	12	QC	Gy	8.33	7.12
36924	12	13	QC	Gy	8.01	7.01
36924	13	14	QC	Gy	7.79	6.89
36924	14	15	QC	DkGY	7.21	6.55
36924	15	16	QC	DkGY	6.91	5.15
36924	16	17	QC	Gy	6.53	5.99
36924	17	18	Q	Gy	6.49	5.99
36924	18	19	Q	Gy	6.36	3.71
36924	19	20	Q	Gy	6.29	5.86
36924	20	21	QC	Gy	6.11	6.38
36924	21	22	QC	Gy	6.87	3.07
36924	22	23	QC	Gy	6.26	6.43
36924	23	24	QC	Gy	6.04	6.31
36924	24	25	QC	Gy	6.24	6.31
36924	25	26	QC	Gy	6.25	6.21
36924	26	27	Q	Gy	6.28	5.87
36924	27	28	Q	Gy	8.06	7.02
36924	28	29	Q	Gy	8.31	7.21
36925	0	1	Q	Gy	7.45	4.07
36925	1	2	Q	Y	7.17	5.32
36925	2	3	QC	Y	6.78	5.89
36925	3	4	QC	OB	6.88	6.39
36925	4	5	QC	OB	7.09	6.63
36925	5	6	QC	Gy	7.19	6.63
36925	6	7	QC	OB	7.08	6.73
36925	7	8	C	OB	7.21	6.67
36925	8	9	QC	Gy	6.85	6.54
36925	9	10	QC	YG	7.69	6.62
36925	10	11	QC	YG	6.64	6.71
36925	11	12	QC	YG	6.05	5.7

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36925	12	13	QC	YG	7.39	6.65
36925	13	14	QC	YG	6.99	6.11
36925	14	15	QC	YG	6.62	6.64
36925	15	16	QC	Pi	7.34	6.57
36925	16	17	QC	Pi	6.32	6.26
36925	17	18	QC	Pi	6.18	5.5
36925	18	19	QC	Pi	7.63	6.73
36925	19	20	QC	Pi	5.93	5.88
36925	20	21	Q	Gy	6.08	6.16
36925	21	22	QC	Gy	6.31	5.89
36925	22	23	QC	Gy	5.96	5.66
36925	23	24	C	Gy	6.03	6.01
36925	24	25	C	Gy	6.2	6.1
36925	25	26	QC	Gy	6.62	5.86
36925	26	27	QC	Gy	6.07	5.82
36925	27	28	QC	Gy	6.76	6.37
36925	28	29	Q	Gy	6.07	5.79
36925	29	30	Q	Gy	6.09	6.24
36925	30	31	Q	Gy	5.97	5.78
36925	31	32	Q	Gy	5.97	5.76
36925	32	33	Q	Gy	5.73	6.47
36925	33	34	Q	Gy	5.85	6.05
36925	34	35	Q	Gy	6.29	6.02
36925	35	36	Q	Gy	5.95	4.41
36925	36	37	Q	Gy	6.29	4.23
36925	37	38	Q	Gy	6.14	4.08
36925	38	39	Q	Gy	6.03	4.62
36925	39	40	Q	DkGY	6.05	4.54
36926	0	1	Q	Y	6.43	3.93
36926	1	2	Q	Y	6.5	5.34
36926	2	3	Q	Y	6.18	5.25
36926	3	4	Q	O	5.9	5.1
36926	4	5	Q	O	6.35	5.68
36926	5	6	QC	B	6.23	5.63
36926	6	7	Q	YG	6.23	6.02
36926	7	8	QC	YG	6.27	5.87
36926	8	9	QC	YG	6.07	5.99
36926	9	10	QC	YG	6.3	6.25
36926	10	11	QC	YG	6.03	6.67
36926	11	12	QC	YG	5.77	6.07
36926	12	13	C	Y	6.12	6.64

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36926	13	14	Q	YG	5.81	6.56
36926	14	15	Q	Gy	5.7	6.63
36926	15	16	Q	Gy	6.2	5.85
36926	16	17	Q	W	6.1	5.46
36926	17	18	QC	Gy	6.31	6.64
36926	18	19	QC	Gy	6.06	5.76
36926	19	20	Q	YG	6.09	5.74
36926	20	21	Q	Gy	6.46	5.86
36926	21	22	QC	Gy	6.23	6.68
36926	22	23	QC	Gy	6.28	6.03
36926	23	24	Q	Gy	6.54	6.45
36926	24	25	Q	Gy	6.73	5.21
36927	0	1	Q	Y	6.28	4.03
36927	1	2	Q	Y	5.88	4.47
36927	2	3	Q	Y	6.19	5.42
36927	3	4	Q	YG	6.19	5.66
36927	4	5	Q	W	5.72	5.9
36927	5	6	QC	OB	6.37	5.83
36927	6	7	QC	B	6.09	6.01
36927	7	8	QC	Gy	6.58	5.63
36927	8	9	QC	Gy	6.15	5.38
36927	9	10	QC	Gy	5.86	5.58
36927	10	11	QC	Gy	6.24	5.63
36927	11	12	QC	Gy	6.02	5.54
36927	12	13	QC	Gy	6.32	5.79
36927	13	14	C	Gy	6.45	5.07
36927	14	15	QC	Gy	6.21	5.71
36927	15	16	QC	Gy	5.99	5.94
36927	16	17	QC	Gy	6.26	5.47
36927	17	18	QC	Gy	6.21	5.8
36927	18	19	QC	Gy	6.23	6.04
36927	19	20	QC	Gy	6.33	6.62
36927	20	21	QC	Gy	6.54	4.68
36927	21	22	Q	Gy	6.55	5.62
36927	22	23	Q	Gy	5.9	6.04
36927	23	24	QC	Gy	5.76	5.12
36927	24	25	QC	Gy	6.65	6.04
36927	25	26	QC	Gy	6.1	6.07
36927	26	27	QC	Gy	6.46	6.1
36927	27	28	Q	Gy	6.39	6.06
36927	28	29	Q	Gy	6.77	6.08

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36927	29	30	Q	Gy	6.88	5.64
36927	30	31	Q	Gy	6.77	6.08
36927	31	32	Q	Gy	6.83	6
36927	32	33	Q	Gy	6.87	5.69
36927	33	34	Q	Gy	6.81	5.34
36927	34	35	Q	Gy	6.8	4.78
36927	35	36	Q	Gy	6.84	5.31
36928	0	1	Q	Gy	5.98	3
36928	1	2	QC	B	6.14	5.83
36928	2	3	QC	Y	6.68	5.7
36928	3	4	QC	O	5.98	5.51
36928	4	5	QC	OB	6.8	5.64
36928	5	6	QC	OB	6.13	6.01
36928	6	7	QC	Y	6.32	5.91
36928	7	8	QC	YG	6.05	6.19
36928	8	9	QC	YG	6.25	6.65
36928	9	10	QC	Pi	6.51	5.97
36928	10	11	QC	YG	6.49	5.91
36928	11	12	QC	YG	6.28	6.47
36928	12	13	QC	YG	6.33	6.07
36928	13	14	QC	YG	6.47	5.81
36928	14	15	C	YG	6.31	6.08
36928	15	16	C	YG	6.64	6.04
36928	16	17	C	YG	6.45	6.22
36928	17	18	C	B	6.59	6.06
36928	18	19	QC	Gy	6.42	6
36928	19	20	QC	Gy	6.16	5.6
36928	20	21	Q	Y	6.01	6.26
36928	21	22	Q	YG	5.15	6.54
36928	22	23	Q	Gy	5.84	6.28
36928	23	24	QC	Gy	6.2	5.04
36928	24	25	QC	Gy	5.95	5.47
36928	25	26	Q	Y	5.81	6.61
36928	26	27	Q	Y	5.77	6.31
36928	27	28	Q	Y	5.92	6.29
36928	28	29	Q	Y	6.08	6.16
36928	29	30	Q	Y	6.15	6.14
36928	30	31	Q	Y	6.26	6.29
36928	31	32	Q	Y	6.46	6.37
36928	32	33	Q	Y	6.04	6.25
36928	33	34	Q	Y	6.54	6.22

DH ID	Depth from	Depth to	Lithology Code	Colour	pH	pHFOX
36928	34	35	Q	Y	6.44	6.2
36928	35	36	Q	Y	6.37	6.67

APPENDIX B
TEST CERTIFICATIONS

B.1 SAMPLE ID CODES

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-860	36001	ASS_14	36885	0	1
13-0339-835	36002	ASS_14	36885	1	2
13-0339-856	36003	ASS_14	36885	2	3
13-0339-861	36004	ASS_14	36885	3	4
13-0339-565	36005	ASS_14	36885	4	5
13-0339-991	36006	ASS_14	36885	5	6
13-0339-447	36007	ASS_14	36885	6	7
13-0339-989	36008	ASS_14	36885	7	8
13-0339-807	36009	ASS_14	36885	8	9
13-0339-992	36010	ASS_14	36885	9	10
13-0339-716	36011	ASS_14	36885	10	11
13-0339-407	36012	ASS_14	36885	11	12
13-0339-845	36013	ASS_14	36885	12	13
13-0339-727	36014	ASS_14	36885	13	14
13-0339-771	36015	ASS_14	36885	14	15
13-0339-870	36016	ASS_14	36885	15	16
13-0339-516	36017	ASS_14	36885	16	17
13-0339-988	36018	ASS_14	36885	17	18
13-0339-577	36019	ASS_14	36885	18	19
13-0339-540	36020	ASS_14	36885	19	20
13-0339-831	36021	ASS_14	36885	20	21
13-0339-817	36022	ASS_14	36885	21	22
13-0339-816	36023	ASS_14	36885	22	23
13-0339-820	36024	ASS_14	36885	23	24
13-0339-806	36025	ASS_14	36885	24	25
13-0339-566	36026	ASS_14	36885	25	26
13-0339-842	36027	ASS_14	36885	26	27
13-0339-481	36028	ASS_14	36885	27	28
13-0339-775	36029	ASS_14	36885	28	29
13-0339-841	36030	ASS_14	36885	29	30
13-0339-866	36031	ASS_14	36885	30	31
13-0339-408	36032	ASS_14	36885	31	32
13-0339-559	36033	ASS_14	36885	32	33
13-0339-741	36034	ASS_14	36885	33	34
13-0339-530	36035	ASS_14	36885	34	35
13-0339-867	36036	ASS_14	36885	35	36
13-0339-560	36037	ASS_14	36885	36	37
13-0339-446	36038	ASS_14	36885	37	38
13-0339-406	36039	ASS_14	36885	38	39
13-0339-703	36040	ASS_14	36885	39	40

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-485	36041	ASS_14	36885	40	41
13-0339-487	36042	ASS_14	36885	41	42
13-0339-702	36043	ASS_14	36885	42	43
13-0339-529	36044	ASS_14	36885	43	44
13-0339-488	36045	ASS_14	36885	44	45
13-0339-763	36046	AS16	36888	0	1
13-0339-897	36047	AS16	36888	1	2
13-0339-474	36048	AS16	36888	2	3
13-0339-764	36049	AS16	36888	3	4
13-0339-489	36050	AS16	36888	4	5
13-0339-455	36051	AS16	36888	5	6
13-0339-876	36052	AS16	36888	6	7
13-0339-718	36053	AS16	36888	7	8
13-0339-747	36054	AS16	36888	8	9
13-0339-977	36055	AS16	36888	9	10
13-0339-937	36056	AS16	36888	10	11
13-0339-895	36057	AS16	36888	11	12
13-0339-767	36058	AS16	36888	12	13
13-0339-759	36059	AS16	36888	13	14
13-0339-600	36060	AS16	36888	14	15
13-0339-580	36061	AS16	36888	15	16
13-0339-587	36062	AS16	36888	16	17
13-0339-855	36063	AS16	36888	17	18
13-0339-449	36064	AS16	36888	18	19
13-0339-596	36065	AS16	36888	19	20
13-0339-483	36066	AS16	36888	20	21
13-0339-768	36067	AS16	36888	21	22
13-0339-475	36068	AS16	36888	22	23
13-0339-853	36069	AS16	36888	23	24
13-0339-473	36070	AS16	36888	24	25
13-0339-975	36071	AS16	36888	25	26
13-0339-865	36072	AS16	36888	26	27
13-0339-595	36073	AS16	36888	27	28
13-0339-715	36074	AS16	36888	28	29
13-0339-712	36075	AS16	36888	29	30
13-0339-999	36076	AS16	36888	30	31
13-0339-499	36077	AS16	36888	31	32
13-0339-858	36078	AS16	36888	32	33
13-0339-877	36079	AS16	36888	33	34
13-0339-892	36080	AS16	36888	34	35
13-0339-825	36081	AS16	36888	35	36

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-886	36082	AS16	36888	36	37
13-0339-744	36083	AS16	36888	37	38
13-0339-840	36084	AS16	36888	38	39
13-0339-849	36085	AS16	36888	39	40
13-0339-912	36086	AS16	36888	40	41
13-0339-598	36087	AS16	36888	41	42
13-0339-582	36088	AS16	36888	42	43
13-0339-743	36089	AS16	36888	43	44
13-0339-777	36090	AS16	36888	44	45
13-0339-548	36091	AS13	36889	0	1
13-0339-974	36092	AS13	36889	1	2
13-0339-805	36093	AS13	36889	2	3
13-0339-414	36094	AS13	36889	3	4
13-0339-726	36095	AS13	36889	4	5
13-0339-571	36096	AS13	36889	5	6
13-0339-837	36097	AS13	36889	6	7
13-0339-509	36098	AS13	36889	7	8
13-0339-808	36099	AS13	36889	8	9
13-0339-433	36100	AS13	36889	9	10
13-0339-874	36101	AS13	36889	10	11
13-0339-594	36102	AS13	36889	11	12
13-0339-810	36103	AS13	36889	12	13
13-0339-415	36104	AS13	36889	13	14
13-0339-1000	36105	AS13	36889	14	15
13-0339-859	36106	AS13	36889	15	16
13-0339-737	36107	AS13	36889	16	17
13-0339-833	36108	AS13	36889	17	18
13-0339-591	36109	AS13	36889	18	19
13-0339-894	36110	AS13	36889	19	20
13-0339-885	36111	AS13	36889	20	21
13-0339-746	36112	AS13	36889	21	22
13-0339-705	36113	AS13	36889	22	23
13-0339-760	36114	AS13	36889	23	24
13-0339-535	36115	AS13	36889	24	25
13-0339-742	36116	AS13	36889	25	26
13-0339-586	36117	AS13	36889	26	27
13-0339-776	36118	AS13	36889	27	28
13-0339-976	36119	AS13	36889	28	29
13-0339-772	36120	AS13	36889	29	30
13-0339-461	36121	AS13	36889	30	31
13-0339-873	36122	AS13	36889	31	32

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-463	36123	AS13	36889	32	33
13-0339-755	36124	AS13	36889	33	34
13-0339-758	36125	AS13	36889	34	35
13-0339-811	36126	AS13	36889	35	36
13-0339-542	36127	AS13	36889	36	37
13-0339-493	36128	AS13	36889	37	38
13-0339-739	36129	AS13	36889	38	39
13-0339-593	36130	AS13	36889	39	40
13-0339-583	36131	AS13	36889	40	41
13-0339-834	36132	AS13	36889	41	42
13-0339-723	36133	AS13	36889	42	43
13-0339-411	36134	AS13	36889	43	44
13-0339-492	36135	AS13	36889	44	45
13-0339-871	36136	AS13	36889	45	46
13-0339-597	36137	AS13	36889	46	47
13-0339-471	36138	AS13	36889	47	48
13-0339-725	36139	AS13	36889	48	49
13-0339-824	36140	AS13	36889	49	50
13-0339-578	36141	AS13	36889	50	51
13-0339-439	36142	AS12	36890	0	1
13-0339-440	36143	AS12	36890	1	2
13-0339-437	36144	AS12	36890	2	3
13-0339-538	36145	AS12	36890	3	4
13-0339-484	36146	AS12	36890	4	5
13-0339-464	36147	AS12	36890	5	6
13-0339-476	36148	AS12	36890	6	7
13-0339-480	36149	AS12	36890	7	8
13-0339-477	36150	AS12	36890	8	9
13-0339-436	36151	AS12	36890	9	10
13-0339-500	36152	AS12	36890	10	11
13-0339-589	36153	AS12	36890	11	12
13-0339-479	36154	AS12	36890	12	13
13-0339-555	36155	AS12	36890	13	14
13-0339-732	36156	AS12	36890	14	15
13-0339-478	36157	AS12	36890	15	16
13-0339-409	36158	AS12	36890	16	17
13-0339-736	36159	AS12	36890	17	18
13-0339-420	36160	AS12	36890	18	19
13-0339-410	36161	AS12	36890	19	20
13-0339-711	36162	AS12	36890	20	21
13-0339-869	36163	AS12	36890	21	22

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-812	36164	AS12	36890	22	23
13-0339-599	36165	AS12	36890	23	24
13-0339-888	36166	AS12	36890	24	25
13-0339-495	36167	AS12	36890	25	26
13-0339-844	36168	AS12	36890	26	27
13-0339-875	36169	AS12	36890	27	28
13-0339-832	36170	AS12	36890	28	29
13-0339-458	36171	AS12	36890	29	30
13-0339-429	36172	AS12	36890	30	31
13-0339-878	36173	AS12	36890	31	32
13-0339-490	36174	AS12	36890	32	33
13-0339-430	36175	AS12	36890	33	34
13-0339-819	36176	AS12	36890	34	35
13-0339-850	36177	AS12	36890	35	36
13-0339-728	36178	AS12	36890	36	37
13-0339-809	36179	AS12	36890	37	38
13-0339-847	36180	AS12	36890	38	39
13-0339-719	36181	AS12	36890	39	40
13-0339-872	36182	AS12	36890	40	41
13-0339-717	36183	AS12	36890	41	42
13-0339-424	36184	AS12	36890	42	43
13-0339-720	36185	AS12	36890	43	44
13-0339-443	36186	AS12	36890	44	45
13-0339-422	36187	AS12	36890	45	46
13-0339-868	36188	AS12	36890	46	47
13-0339-823	36189	AS12	36890	47	48
13-0339-950	36190	AS12	36890	48	49
13-0339-854	36191	AS12	36890	49	50
13-0339-822	36192	AS12	36890	50	51
13-0339-898	36193	AS12	36890	51	52
13-0339-900	36194	AS12	36890	52	53
13-0339-899	36195	AS12	36890	53	54
13-0339-896	36196	AS12	36890	54	55
13-0339-814	36197	AS12	36890	55	56
13-0339-863	36198	AS12	36890	56	57
13-0339-838	36201	AS19	36891	0	1
13-0339-729	36202	AS19	36891	1	2
13-0339-754	36203	AS19	36891	2	3
13-0339-558	36204	AS19	36891	3	4
13-0339-704	36205	AS19	36891	4	5
13-0339-554	36206	AS19	36891	5	6

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-494	36207	AS19	36891	6	7
13-0339-543	36208	AS19	36891	7	8
13-0339-510	36209	AS19	36891	8	9
13-0339-890	36210	AS19	36891	9	10
13-0339-550	36211	AS19	36891	10	11
13-0339-887	36212	AS19	36891	11	12
13-0339-821	36213	AS19	36891	12	13
13-0339-891	36214	AS19	36891	13	14
13-0339-846	36215	AS19	36891	14	15
13-0339-889	36216	AS19	36891	15	16
13-0339-524	36217	AS19	36891	16	17
13-0339-701	36218	AS19	36891	17	18
13-0339-454	36219	AS19	36891	18	19
13-0339-592	36220	AS19	36891	19	20
13-0339-843	36221	AS19	36891	20	21
13-0339-576	36222	AS19	36891	21	22
13-0339-862	36223	AS19	36891	22	23
13-0339-534	36224	AS19	36891	23	24
13-0339-893	36226	AS19	36891	24	25
13-0339-482	36227	AS19	36891	25	26
13-0339-707	36228	AS19	36891	26	27
13-0339-519	36229	AS19	36891	27	28
13-0339-456	36230	AS19	36891	28	29
13-0339-848	36231	AS19	36891	29	30
13-0339-418	36232	AS19	36891	30	31
13-0339-417	36233	AS19	36891	31	32
13-0339-505	36234	AS19	36891	32	33
13-0339-769	36235	AS19	36891	33	34
13-0339-836	36236	AS19	36891	34	35
13-0339-470	36237	AS19	36891	35	36
13-0339-813	36238	AS19	36891	36	37
13-0339-457	36239	AS19	36891	37	38
13-0339-818	36240	AS19	36891	38	39
13-0339-721	36241	AS19	36891	39	40
13-0339-573	36242	AS19	36891	40	41
13-0339-467	36243	AS19	36891	41	42
13-0339-884	36244	AS19	36891	42	43
13-0339-569	36245	AS19	36891	43	44
13-0339-575	36246	AS19	36891	44	45
13-0339-724	36247	AS19	36891	45	46
13-0339-857	36248	AS19	36891	46	47

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-462	36249	AS19	36891	47	48
13-0339-770	36250	AS19	36891	48	49
13-0339-585	36251	AS19	36891	49	50
13-0339-722	36252	AS19	36891	50	51
13-0339-525	36253	AS19	36891	51	52
13-0339-568	36254	AS19	36891	52	53
13-0339-444	36255	AS19	36891	53	54
13-0339-751	36255	AS19	36891	54	55
13-0339-766	36256	AS19	36891	55	56
13-0339-469	36257	AS19	36891	56	57
13-0339-1103	36258	AS18	36892	0	1
13-0339-1144	36259	AS18	36892	1	2
13-0339-1126	36260	AS18	36892	2	3
13-0339-1026	36261	AS18	36892	3	4
13-0339-798	36262	AS18	36892	4	5
13-0339-1055	36263	AS18	36892	5	6
13-0339-1201	36264	AS18	36892	6	7
13-0339-803	36265	AS18	36892	7	8
13-0339-511	36266	AS18	36892	8	9
13-0339-829	36267	AS18	36892	9	10
13-0339-1231	36268	AS18	36892	10	11
13-0339-985	36270	AS18	36892	11	12
13-0339-947	36271	AS18	36892	12	13
13-0339-996	36272	AS18	36892	13	14
13-0339-925	36273	AS18	36892	14	15
13-0339-804	36274	AS18	36892	15	16
13-0339-1127	36275	AS18	36892	16	17
13-0339-1230	36276	AS18	36892	17	18
13-0339-1293	36277	AS18	36892	18	19
13-0339-1107	36278	AS18	36892	19	20
13-0339-1256	36279	AS18	36892	20	21
13-0339-1027	36280	AS18	36892	21	22
13-0339-708	36281	AS18	36892	22	23
13-0339-496	36282	AS18	36892	23	24
13-0339-404	36283	AS18	36892	24	25
13-0339-757	36284	AS18	36892	25	26
13-0339-978	36285	AS18	36892	26	27
13-0339-946	36286	AS18	36892	27	28
13-0339-1030	36287	AS18	36892	28	29
13-0339-733	36288	AS18	36892	29	30
13-0339-1264	36289	AS18	36892	30	31

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-730	36290	AS18	36892	31	32
13-0339-921	36291	AS18	36892	32	33
13-0339-983	36292	AS18	36892	33	34
13-0339-752	36293	AS18	36892	34	35
13-0339-979	36294	AS18	36892	35	36
13-0339-923	36295	AS18	36892	36	37
13-0339-980	36296	AS18	36892	37	38
13-0339-1001	36296	AS18	36892	38	39
13-0339-1284	36297	AS18	36892	39	40
13-0339-1172	36298	AS18	36892	40	41
13-0339-1292	36299	AS18	36892	41	42
13-0339-788	36300	AS18	36892	42	43
13-0339-579	36301	AS18	36892	43	44
13-0339-802	36302	AS18	36892	44	45
13-0339-1223	36303	AS18	36892	45	46
13-0339-756	36304	AS18	36892	46	47
13-0339-827	36305	AS18	36892	47	48
13-0339-1132	36306	AS18	36892	48	49
13-0339-852	36307	AS18	36892	49	50
13-0339-1137	36308	AS18	36892	50	51
13-0339-1104	36309	AS18	36892	51	52
13-0339-1184	36310	AS18	36892	52	53
13-0339-1128	36311	AS18	36892	53	54
13-0339-405	36312	AS18	36892	54	55
13-0339-514	36313	AS18	36892	55	56
13-0339-795	36314	AS18	36892	56	57
13-0339-1183	36315	AS18	36892	57	58
13-0339-793	36316	AS18	36892	58	59
13-0339-778	36317	AS18	36892	59	60
13-0339-1145	36318	AS23	36893	0	1
13-0339-1277	36319	AS23	36893	1	2
13-0339-779	36320	AS23	36893	2	3
13-0339-993	36321	AS23	36893	3	4
13-0339-1115	36322	AS23	36893	4	5
13-0339-1199	36323	AS23	36893	5	6
13-0339-781	36324	AS23	36893	6	7
13-0339-1171	36325	AS23	36893	7	8
13-0339-785	36326	AS23	36893	8	9
13-0339-419	36327	AS23	36893	9	10
13-0339-552	36328	AS23	36893	10	11
13-0339-544	36329	AS23	36893	11	12

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-567	36330	AS23	36893	12	13
13-0339-520	36331	AS23	36893	13	14
13-0339-948	36332	AS23	36893	14	15
13-0339-765	36333	AS23	36893	15	16
13-0339-416	36334	AS23	36893	16	17
13-0339-714	36335	AS23	36893	17	18
13-0339-1200	36336	AS23	36893	18	19
13-0339-1216	36337	AS23	36893	19	20
13-0339-1242	36338	AS23	36893	20	21
13-0339-750	36339	AS23	36893	21	22
13-0339-749	36340	AS23	36893	22	23
13-0339-584	36341	AS23	36893	23	24
13-0339-971	36342	AS23	36893	24	25
13-0339-551	36343	AS23	36893	25	26
13-0339-731	36344	AS23	36893	26	27
13-0339-1266	36345	AS23	36893	27	28
13-0339-794	36346	AS23	36893	28	29
13-0339-753	36348	AS23	36893	29	30
13-0339-713	36349	AS23	36893	30	31
13-0339-709	36350	AS23	36893	31	32
13-0339-773	36351	AS23	36893	32	33
13-0339-780	36352	AS23	36893	33	34
13-0339-762	36353	AS23	36893	34	35
13-0339-740	36354	AS23	36893	35	36
13-0339-786	36355	AS23	36893	36	37
13-0339-1279	36356	AS23	36893	37	38
13-0339-1196	36357	AS23	36893	38	39
13-0339-1283	36358	AS23	36893	39	40
13-0339-748	36359	AS23	36893	40	41
13-0339-972	36360	AS23	36893	41	42
13-0339-1005	36361	AS23	36893	42	43
13-0339-973	36362	AS23	36893	43	44
13-0339-774	36363	AS23	36893	44	45
13-0339-949	36364	AS23	36893	45	46
13-0339-922	36365	AS23	36893	46	47
13-0339-984	36366	AS23	36893	47	48
13-0339-789	36367	AS23	36893	48	49
13-0339-826	36368	AS23	36893	49	50
13-0339-735	36369	AS23	36893	50	51
13-0339-998	36370	AS22	36894	0	1
13-0339-1156	36371	AS22	36894	1	2

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1188	36372	AS22	36894	2	3
13-0339-801	36373	AS22	36894	3	4
13-0339-784	36374	AS22	36894	4	5
13-0339-706	36375	AS22	36894	5	6
13-0339-508	36376	AS22	36894	6	7
13-0339-1029	36377	AS22	36894	7	8
13-0339-1190	36378	AS22	36894	8	9
13-0339-502	36379	AS22	36894	9	10
13-0339-460	36380	AS22	36894	10	11
13-0339-459	36381	AS22	36894	11	12
13-0339-1288	36382	AS22	36894	12	13
13-0339-532	36383	AS22	36894	13	14
13-0339-533	36384	AS22	36894	14	15
13-0339-503	36385	AS22	36894	15	16
13-0339-1208	36386	AS22	36894	16	17
13-0339-1241	36387	AS22	36894	17	18
13-0339-994	36388	AS22	36894	18	19
13-0339-997	36389	AS22	36894	19	20
13-0339-738	36390	AS22	36894	20	21
13-0339-1113	36391	AS22	36894	21	22
13-0339-472	36392	AS22	36894	22	23
13-0339-1106	36393	AS22	36894	23	24
13-0339-1160	36394	AS22	36894	24	25
13-0339-1206	36395	AS22	36894	25	26
13-0339-924	36396	AS22	36894	26	27
13-0339-501	36397	AS22	36894	27	28
13-0339-412	36398	AS22	36894	28	29
13-0339-486	36399	AS22	36894	29	30
13-0339-1108	36400	AS22	36894	30	31
13-0339-1161	36401	AS22	36894	31	32
13-0339-371	36402	AS22	36894	32	33
13-0339-325	36403	AS22	36894	33	34
13-0339-1227	36404	AS22	36894	34	35
13-0339-1182	36405	AS22	36894	35	36
13-0339-512	36406	AS22	36894	36	37
13-0339-799	36407	AS22	36894	37	38
13-0339-1135	36408	AS22	36894	38	39
13-0339-1168	36409	AS22	36894	39	40
13-0339-761	36410	AS22	36894	40	41
13-0339-790	36411	AS22	36894	41	42
13-0339-468	36412	AS21	36895	0	1

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1131	36413	AS21	36895	1	2
13-0339-1255	36414	AS21	36895	2	3
13-0339-513	36415	AS21	36895	3	4
13-0339-1013	36416	AS21	36895	4	5
13-0339-1202	36417	AS21	36895	5	6
13-0339-995	36418	AS21	36895	6	7
13-0339-491	36419	AS21	36895	7	8
13-0339-1252	36420	AS21	36895	8	9
13-0339-1181	36421	AS21	36895	9	10
13-0339-413	36422	AS21	36895	10	11
13-0339-1170	36423	AS21	36895	11	12
13-0339-421	36424	AS21	36895	12	13
13-0339-1164	36425	AS21	36895	13	14
13-0339-1165	36426	AS21	36895	14	15
13-0339-1240	36427	AS21	36895	15	16
13-0339-553	36428	AS21	36895	16	17
13-0339-438	36429	AS21	36895	17	18
13-0339-434	36430	AS21	36895	18	19
13-0339-507	36431	AS21	36895	19	20
13-0339-1189	36432	AS21	36895	20	21
13-0339-425	36433	AS21	36895	21	22
13-0339-1122	36434	AS21	36895	22	23
13-0339-448	36435	AS21	36895	23	24
13-0339-432	36436	AS21	36895	24	25
13-0339-423	36437	AS21	36895	25	26
13-0339-710	36438	AS21	36895	26	27
13-0339-797	36439	AS21	36895	27	28
13-0339-734	36440	AS21	36895	28	29
13-0339-531	36441	AS21	36895	29	30
13-0339-1176	36442	AS21	36895	30	31
13-0339-1259	36443	AS21	36895	31	32
13-0339-401	36444	AS21	36895	32	33
13-0339-782	36445	AS21	36895	33	34
13-0339-783	36446	AS21	36895	34	35
13-0339-800	36447	AS21	36895	35	36
13-0339-796	36448	AS21	36895	36	37
13-0339-787	36449	AS21	36895	37	38
13-0339-1178	36450	AS21	36895	38	39
13-0339-506	36451	AS21	36895	39	40
13-0339-791	36452	AS21	36895	40	41
13-0339-1280	36453	AS21	36895	41	42

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-792	36454	AS21	36895	42	43
13-0339-431	36455	AS21	36895	43	44
13-0339-1177	36456	AS21	36895	44	45
13-0339-099	36457	AS39	36896	0	1
13-0339-556	36458	AS39	36896	1	2
13-0339-121	36459	AS39	36896	2	3
13-0339-149	36460	AS39	36896	3	4
13-0339-1207	36461	AS39	36896	4	5
13-0339-147	36462	AS39	36896	5	6
13-0339-451	36463	AS39	36896	6	7
13-0339-119	36464	AS39	36896	7	8
13-0339-004	36465	AS39	36896	8	9
13-0339-003	36466	AS39	36896	9	10
13-0339-215	36467	AS39	36896	10	11
13-0339-465	36468	AS39	36896	11	12
13-0339-204	36469	AS39	36896	12	13
13-0339-304	36470	AS39	36896	13	14
13-0339-242	36471	AS39	36896	14	15
13-0339-1077	36472	AS39	36896	15	16
13-0339-326	36473	AS39	36896	16	17
13-0339-038	36474	AS39	36896	17	18
13-0339-163	36475	AS39	36896	18	19
13-0339-1114	36476	AS39	36896	19	20
13-0339-302	36477	AS39	36896	20	21
13-0339-301	36478	AS39	36896	21	22
13-0339-237	36479	AS39	36896	22	23
13-0339-355	36480	AS39	36896	23	24
13-0339-205	36481	AS39	36896	24	25
13-0339-221	36482	AS39	36896	25	26
13-0339-141	36483	AS39	36896	26	27
13-0339-034	36484	AS39	36896	27	28
13-0339-356	36485	AS39	36896	28	29
13-0339-442	36486	AS39	36896	29	30
13-0339-161	36487	AS39	36896	30	31
13-0339-029	36488	AS39	36896	31	32
13-0339-173	36489	AS39	36896	32	33
13-0339-280	36490	AS39	36896	33	34
13-0339-222	36491	AS39	36896	34	35
13-0339-165	36492	AS39	36896	35	36
13-0339-445	36493	AS25	36897	0	1
13-0339-1138	36494	AS25	36897	1	2

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-441	36495	AS25	36897	2	3
13-0339-145	36496	AS25	36897	3	4
13-0339-158	36497	AS25	36897	4	5
13-0339-1204	36498	AS25	36897	5	6
13-0339-171	36499	AS25	36897	6	7
13-0339-372	36500	AS25	36897	7	8
13-0339-148	36501	AS25	36897	8	9
13-0339-028	36502	AS25	36897	9	10
13-0339-045	36503	AS25	36897	10	11
13-0339-426	36504	AS25	36897	11	12
13-0339-450	36505	AS25	36897	12	13
13-0339-100	36506	AS25	36897	13	14
13-0339-160	36507	AS25	36897	14	15
13-0339-140	36508	AS25	36897	15	16
13-0339-362	36509	AS25	36897	16	17
13-0339-1076	36510	AS25	36897	17	18
13-0339-330	36511	AS25	36897	18	19
13-0339-108	36512	AS25	36897	19	20
13-0339-150	36513	AS25	36897	20	21
13-0339-466	36514	AS25	36897	21	22
13-0339-088	36515	AS25	36897	22	23
13-0339-125	36516	AS25	36897	23	24
13-0339-309	36517	AS25	36897	24	25
13-0339-251	36518	AS25	36897	25	26
13-0339-327	36519	AS25	36897	26	27
13-0339-143	36520	AS25	36897	27	28
13-0339-023	36521	AS25	36897	28	29
13-0339-321	36522	AS25	36897	29	30
13-0339-164	36523	AS25	36897	30	31
13-0339-159	36524	AS25	36897	31	32
13-0339-328	36525	AS25	36897	32	33
13-0339-155	36526	AS25	36897	33	34
13-0339-178	36527	AS25	36897	34	35
13-0339-191	36528	AS25	36897	35	36
13-0339-172	36529	AS25	36897	36	37
13-0339-337	36530	AS25	36897	37	38
13-0339-182	36531	AS25	36897	38	39
13-0339-190	36532	AS25	36897	39	40
13-0339-085	36533	AS25	36897	40	41
13-0339-400	36533	AS25	36897	41	42
13-0339-077	36534	AS25	36897	42	43

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1002	36535	AS25	36897	43	44
13-0339-354	36536	AS25	36897	44	45
13-0339-288	36537	AS25	36897	45	46
13-0339-403	36538	AS26	36898	0	1
13-0339-074	36539	AS26	36898	1	2
13-0339-168	36540	AS26	36898	2	3
13-0339-435	36541	AS26	36898	3	4
13-0339-036	36542	AS26	36898	4	5
13-0339-263	36543	AS26	36898	5	6
13-0339-037	36544	AS26	36898	6	7
13-0339-504	36545	AS26	36898	7	8
13-0339-277	36547	AS26	36898	8	9
13-0339-156	36548	AS26	36898	9	10
13-0339-1139	36549	AS26	36898	10	11
13-0339-225	36550	AS26	36898	11	12
13-0339-170	36551	AS26	36898	12	13
13-0339-026	36552	AS26	36898	13	14
13-0339-373	36554	AS26	36898	14	15
13-0339-139	36555	AS26	36898	15	16
13-0339-162	36556	AS26	36898	16	17
13-0339-152	36557	AS26	36898	17	18
13-0339-349	36558	AS26	36898	18	19
13-0339-210	36559	AS26	36898	19	20
13-0339-341	36560	AS26	36898	20	21
13-0339-112	36561	AS26	36898	21	22
13-0339-079	36562	AS26	36898	22	23
13-0339-194	36563	AS26	36898	23	24
13-0339-130	36564	AS26	36898	24	25
13-0339-114	36565	AS26	36898	25	26
13-0339-315	36566	AS26	36898	26	27
13-0339-180	36567	AS26	36898	27	28
13-0339-186	36568	AS26	36898	28	29
13-0339-281	36569	AS26	36898	29	30
13-0339-154	36570	AS26	36898	30	31
13-0339-1203	36571	AS26	36898	31	32
13-0339-175	36572	AS26	36898	32	33
13-0339-174	36573	AS26	36898	33	34
13-0339-166	36574	AS26	36898	34	35
13-0339-189	36575	AS26	36898	35	36
13-0339-101	36576	AS26	36898	36	37
13-0339-061	36577	AS26	36898	37	38

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-236	36578	AS26	36898	38	39
13-0339-334	36579	AS26	36898	39	40
13-0339-116	36580	AS26	36898	40	41
13-0339-379	36581	AS26	36898	41	42
13-0339-084	36582	AS26	36898	42	43
13-0339-357	36583	AS26	36898	43	44
13-0339-376	36584	AS26	36898	44	45
13-0339-188	36585	AS26	36898	45	46
13-0339-276	36586	AS26	36898	46	47
13-0339-060	36587	AS26	36898	47	48
13-0339-146	36588	AS26	36898	48	49
13-0339-065	36589	AS26	36898	49	50
13-0339-279	36590	AS20	36899	0	1
13-0339-134	36591	AS20	36899	1	2
13-0339-096	36593	AS20	36899	2	3
13-0339-278	36594	AS20	36899	3	4
13-0339-264	36595	AS20	36899	4	5
13-0339-245	36596	AS20	36899	5	6
13-0339-244	36597	AS20	36899	6	7
13-0339-282	36598	AS20	36899	7	8
13-0339-261	36599	AS20	36899	8	9
13-0339-262	36600	AS20	36899	9	10
13-0339-207	36601	AS20	36899	10	11
13-0339-243	36602	AS20	36899	11	12
13-0339-072	36603	AS20	36899	12	13
13-0339-275	36604	AS20	36899	13	14
13-0339-211	36605	AS20	36899	14	15
13-0339-076	36606	AS20	36899	15	16
13-0339-248	36607	AS20	36899	16	17
13-0339-052	36608	AS20	36899	17	18
13-0339-027	36609	AS20	36899	18	19
13-0339-044	36610	AS20	36899	19	20
13-0339-136	36611	AS20	36899	20	21
13-0339-259	36612	AS20	36899	21	22
13-0339-012	36613	AS20	36899	22	23
13-0339-009	36614	AS20	36899	23	24
13-0339-198	36615	AS20	36899	24	25
13-0339-033	36616	AS20	36899	25	26
13-0339-117	36617	AS20	36899	26	27
13-0339-109	36618	AS20	36899	27	28
13-0339-097	36619	AS20	36899	28	29

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-377	36620	AS20	36899	29	30
13-0339-1228	36621	AS20	36899	30	31
13-0339-271	36622	AS20	36899	31	32
13-0339-378	36623	AS20	36899	32	33
13-0339-080	36624	AS20	36899	33	34
13-0339-070	36625	AS20	36899	34	35
13-0339-066	36626	AS20	36899	35	36
13-0339-082	36627	AS20	36899	36	37
13-0339-258	36628	AS20	36899	37	38
13-0339-391	36629	AS20	36899	38	39
13-0339-385	36630	AS20	36899	39	40
13-0339-006	36631	AS20	36899	40	41
13-0339-005	36632	AS20	36899	41	42
13-0339-297	36633	AS20	36899	42	43
13-0339-557	36634	AS20	36899	43	44
13-0339-392	36635	AS20	36899	44	45
13-0339-296	36636	AS20	36899	45	46
13-0339-001	36637	AS20	36899	46	47
13-0339-399	36638	AS20	36899	47	48
13-0339-266	36639	AS20	36899	48	49
13-0339-384	36640	AS20	36899	49	50
13-0339-181	36641	AS20	36899	50	51
13-0339-287	36642	AS20	36899	51	52
13-0339-260	36643	AS20	36899	52	53
13-0339-398	36644	AS20	36899	53	54
13-0339-383	36645	AS20	36899	54	55
13-0339-382	36646	AS20	36899	55	56
13-0339-361	36647	AS33	36900	0	1
13-0339-227	36648	AS33	36900	1	2
13-0339-216	36649	AS33	36900	2	3
13-0339-303	36650	AS33	36900	3	4
13-0339-255	36651	AS33	36900	4	5
13-0339-267	36652	AS33	36900	5	6
13-0339-338	36653	AS33	36900	6	7
13-0339-212	36654	AS33	36900	7	8
13-0339-219	36655	AS33	36900	8	9
13-0339-093	36656	AS33	36900	9	10
13-0339-086	36657	AS33	36900	10	11
13-0339-087	36658	AS33	36900	11	12
13-0339-040	36659	AS33	36900	12	13
13-0339-365	36660	AS33	36900	13	14

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-025	36661	AS33	36900	14	15
13-0339-013	36662	AS33	36900	15	16
13-0339-011	36663	AS33	36900	16	17
13-0339-068	36664	AS33	36900	17	18
13-0339-1058	36665	AS33	36900	18	19
13-0339-572	36666	AS33	36900	19	20
13-0339-1038	36667	AS33	36900	20	21
13-0339-612	36668	AS33	36900	21	22
13-0339-1167	36669	AS33	36900	22	23
13-0339-1141	36670	AS33	36900	23	24
13-0339-616	36671	AS33	36900	24	25
13-0339-830	36672	AS33	36900	25	26
13-0339-987	36673	AS33	36900	26	27
13-0339-663	36674	AS33	36900	27	28
13-0339-646	36675	AS33	36900	28	29
13-0339-1151	36676	AS33	36900	29	30
13-0339-360	36677	AS33	36900	30	31
13-0339-396	36678	AS33	36900	31	32
13-0339-389	36679	AS33	36900	32	33
13-0339-387	36680	AS33	36900	33	34
13-0339-299	36681	AS33	36900	34	35
13-0339-269	36682	AS33	36900	35	36
13-0339-019	36683	AS33	36900	36	37
13-0339-069	36684	AS33	36900	37	38
13-0339-048	36685	AS33	36900	38	39
13-0339-318	36686	AS33	36900	39	40
13-0339-340	36687	AS33	36900	40	41
13-0339-339	36688	AS33	36900	41	42
13-0339-305	36689	AS33	36900	42	43
13-0339-021	36690	AS33	36900	43	44
13-0339-316	36691	AS33	36900	44	45
13-0339-017	36692	AS33	36900	45	46
13-0339-329	36693	AS33	36900	46	47
13-0339-184	36694	AS33	36900	47	48
13-0339-546	36695	AS33	36900	48	49
13-0339-1133	36696	AS33	36900	49	50
13-0339-942	36697	AS33	36900	50	51
13-0339-071	36698	AS33	36900	51	52
13-0339-233	36699	AS34	36901	0	1
13-0339-1239	36700	AS34	36901	1	2
13-0339-298	36701	AS34	36901	2	3

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-220	36702	AS34	36901	3	4
13-0339-268	36703	AS34	36901	4	5
13-0339-343	36704	AS34	36901	5	6
13-0339-050	36705	AS34	36901	6	7
13-0339-151	36706	AS34	36901	7	8
13-0339-347	36707	AS34	36901	8	9
13-0339-113	36708	AS34	36901	9	10
13-0339-124	36709	AS34	36901	10	11
13-0339-346	36710	AS34	36901	11	12
13-0339-043	36711	AS34	36901	12	13
13-0339-374	36712	AS34	36901	13	14
13-0339-241	36713	AS34	36901	14	15
13-0339-286	36714	AS34	36901	15	16
13-0339-195	36715	AS34	36901	16	17
13-0339-073	36716	AS34	36901	17	18
13-0339-335	36717	AS34	36901	18	19
13-0339-290	36718	AS34	36901	19	20
13-0339-078	36720	AS34	36901	20	21
13-0339-010	36721	AS34	36901	21	22
13-0339-367	36722	AS34	36901	22	23
13-0339-350	36723	AS34	36901	23	24
13-0339-187	36724	AS34	36901	24	25
13-0339-314	36725	AS34	36901	25	26
13-0339-197	36726	AS34	36901	26	27
13-0339-167	36727	AS34	36901	27	28
13-0339-081	36728	AS34	36901	28	29
13-0339-153	36729	AS34	36901	29	30
13-0339-177	36730	AS34	36901	30	31
13-0339-331	36731	AS34	36901	31	32
13-0339-323	36732	AS34	36901	32	33
13-0339-1214	36733	AS34	36901	33	34
13-0339-200	36734	AS34	36901	34	35
13-0339-183	36735	AS34	36901	35	36
13-0339-289	36736	AS34	36901	36	37
13-0339-386	36737	AS34	36901	37	38
13-0339-311	36738	AS34	36901	38	39
13-0339-179	36739	AS34	36901	39	40
13-0339-353	36740	AS34	36901	40	41
13-0339-240	36751	AS28	36902	0	1
13-0339-062	36752	AS28	36902	1	2
13-0339-138	36753	AS28	36902	2	3

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-257	36754	AS28	36902	3	4
13-0339-056	36755	AS28	36902	4	5
13-0339-193	36756	AS28	36902	5	6
13-0339-428	36757	AS28	36902	6	7
13-0339-091	36758	AS28	36902	7	8
13-0339-018	36759	AS28	36902	8	9
13-0339-453	36760	AS28	36902	9	10
13-0339-123	36761	AS28	36902	10	11
13-0339-122	36762	AS28	36902	11	12
13-0339-142	36764	AS28	36902	12	13
13-0339-498	36765	AS28	36902	13	14
13-0339-250	36766	AS28	36902	14	15
13-0339-075	36767	AS28	36902	15	16
13-0339-133	36768	AS28	36902	16	17
13-0339-452	36769	AS28	36902	17	18
13-0339-238	36770	AS28	36902	18	19
13-0339-366	36771	AS28	36902	19	20
13-0339-324	36772	AS28	36902	20	21
13-0339-095	36773	AS28	36902	21	22
13-0339-115	36774	AS28	36902	22	23
13-0339-015	36775	AS28	36902	23	24
13-0339-397	36776	AS28	36902	24	25
13-0339-545	36777	AS28	36902	25	26
13-0339-176	36778	AS28	36902	26	27
13-0339-196	36779	AS28	36902	27	28
13-0339-199	36780	AS28	36902	28	29
13-0339-107	36781	AS28	36902	29	30
13-0339-014	36782	AS28	36902	30	31
13-0339-144	36783	AS28	36902	31	32
13-0339-051	36784	AS28	36902	32	33
13-0339-285	36785	AS28	36902	33	34
13-0339-032	36786	AS28	36902	34	35
13-0339-395	36787	AS28	36902	35	36
13-0339-590	36787	AS28	36902	36	37
13-0339-381	36788	AS28	36902	37	38
13-0339-118	36789	AS28	36902	38	39
13-0339-192	36790	AS28	36902	39	40
13-0339-185	36791	AS28	36902	40	41
13-0339-016	36792	AS28	36902	41	42
13-0339-067	36793	AS28	36902	42	43
13-0339-022	36794	AS28	36902	43	44

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-390	36795	AS28	36902	44	45
13-0339-380	36796	AS28	36902	45	46
13-0339-126	36797	AS29	36903	0	1
13-0339-132	36798	AS29	36903	1	2
13-0339-135	36799	AS29	36903	2	3
13-0339-055	36800	AS29	36903	3	4
13-0339-137	36801	AS29	36903	4	5
13-0339-127	36802	AS29	36903	5	6
13-0339-106	36803	AS29	36903	6	7
13-0339-317	36804	AS29	36903	7	8
13-0339-131	36805	AS29	36903	8	9
13-0339-128	36806	AS29	36903	9	10
13-0339-402	36807	AS29	36903	10	11
13-0339-098	36808	AS29	36903	11	12
13-0339-105	36809	AS29	36903	12	13
13-0339-020	36810	AS29	36903	13	14
13-0339-007	36811	AS29	36903	14	15
13-0339-129	36812	AS29	36903	15	16
13-0339-104	36813	AS29	36903	16	17
13-0339-157	36814	AS29	36903	17	18
13-0339-035	36815	AS29	36903	18	19
13-0339-427	36816	AS29	36903	19	20
13-0339-111	36817	AS29	36903	20	21
13-0339-120	36818	AS29	36903	21	22
13-0339-008	36819	AS29	36903	22	23
13-0339-092	36820	AS29	36903	23	24
13-0339-039	36821	AS29	36903	24	25
13-0339-024	36822	AS29	36903	25	26
13-0339-247	36823	AS29	36903	26	27
13-0339-292	36825	AS29	36903	27	28
13-0339-046	36826	AS29	36903	28	29
13-0339-064	36827	AS29	36903	29	30
13-0339-497	36828	AS29	36903	30	31
13-0339-246	36829	AS29	36903	31	32
13-0339-063	36830	AS29	36903	32	33
13-0339-217	36831	AS29	36903	33	34
13-0339-284	36832	AS29	36903	34	35
13-0339-230	36833	AS29	36903	35	36
13-0339-231	36834	AS29	36903	36	37
13-0339-229	36835	AS29	36903	37	38
13-0339-300	36836	AS29	36903	38	39

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-274	36837	AS29	36903	39	40
13-0339-102	36838	AS29	36903	40	41
13-0339-252	36839	AS29	36903	41	42
13-0339-256	36840	AS29	36903	42	43
13-0339-265	36841	AS29	36903	43	44
13-0339-041	36842	AS27	36904	0	1
13-0339-359	36842	AS27	36904	1	2
13-0339-203	36843	AS27	36904	2	3
13-0339-213	36844	AS27	36904	3	4
13-0339-358	36845	AS27	36904	4	5
13-0339-214	36846	AS27	36904	5	6
13-0339-254	36847	AS27	36904	6	7
13-0339-053	36848	AS27	36904	7	8
13-0339-364	36849	AS27	36904	8	9
13-0339-291	36850	AS27	36904	9	10
13-0339-342	36851	AS27	36904	10	11
13-0339-209	36852	AS27	36904	11	12
13-0339-270	36853	AS27	36904	12	13
13-0339-320	36854	AS27	36904	13	14
13-0339-054	36855	AS27	36904	14	15
13-0339-322	36856	AS27	36904	15	16
13-0339-090	36857	AS27	36904	16	17
13-0339-348	36858	AS27	36904	17	18
13-0339-223	36859	AS27	36904	18	19
13-0339-103	36860	AS27	36904	19	20
13-0339-273	36861	AS27	36904	20	21
13-0339-042	36862	AS27	36904	21	22
13-0339-208	36863	AS27	36904	22	23
13-0339-272	36864	AS27	36904	23	24
13-0339-310	36865	AS27	36904	24	25
13-0339-206	36866	AS27	36904	25	26
13-0339-218	36867	AS27	36904	26	27
13-0339-049	36868	AS27	36904	27	28
13-0339-660	36869	AS27	36904	28	29
13-0339-089	36870	AS27	36904	29	30
13-0339-621	36871	AS27	36904	30	31
13-0339-059	36872	AS27	36904	31	32
13-0339-110	36873	AS27	36904	32	33
13-0339-047	36874	AS27	36904	33	34
13-0339-057	36875	AS27	36904	34	35
13-0339-058	36876	AS27	36904	35	36

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-083	36877	AS27	36904	36	37
13-0339-306	36879	AS27	36904	37	38
13-0339-393	36880	AS27	36904	38	39
13-0339-394	36881	AS27	36904	39	40
13-0339-283	36882	AS27	36904	40	41
13-0339-226	36883	AS27	36904	41	42
13-0339-295	36884	AS27	36904	42	43
13-0339-293	36885	AS27	36904	43	44
13-0339-294	36886	AS27	36904	44	45
13-0339-333	36887	AS27	36904	45	46
13-0339-388	36888	AS27	36904	46	47
13-0339-002	36889	AS27	36904	47	48
13-0339-224	36890	AS30	36905	0	1
13-0339-031	36891	AS30	36905	1	2
13-0339-094	36892	AS30	36905	2	3
13-0339-232	36893	AS30	36905	3	4
13-0339-239	36894	AS30	36905	4	5
13-0339-030	36895	AS30	36905	5	6
13-0339-253	36896	AS30	36905	6	7
13-0339-202	36897	AS30	36905	7	8
13-0339-352	36898	AS30	36905	8	9
13-0339-249	36899	AS30	36905	9	10
13-0339-351	36900	AS30	36905	10	11
13-0339-201	36901	AS30	36905	11	12
13-0339-234	36902	AS30	36905	12	13
13-0339-235	36903	AS30	36905	13	14
13-0339-228	36904	AS30	36905	14	15
13-0339-1099	36905	AS30	36905	15	16
13-0339-1159	36906	AS30	36905	16	17
13-0339-614	36907	AS30	36905	17	18
13-0339-879	36908	AS30	36905	18	19
13-0339-839	36909	AS30	36905	19	20
13-0339-956	36910	AS30	36905	20	21
13-0339-1209	36911	AS30	36905	21	22
13-0339-1285	36912	AS30	36905	22	23
13-0339-1100	36913	AS30	36905	23	24
13-0339-1129	36914	AS30	36905	24	25
13-0339-1175	36915	AS30	36905	25	26
13-0339-1095	36916	AS30	36905	26	27
13-0339-604	36917	AS30	36905	27	28
13-0339-642	36918	AS30	36905	28	29

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-522	36919	AS30	36905	29	30
13-0339-336	36920	AS30	36905	30	31
13-0339-363	36921	AS30	36905	31	32
13-0339-344	36922	AS30	36905	32	33
13-0339-332	36923	AS30	36905	33	34
13-0339-368	36924	AS30	36905	34	35
13-0339-369	36925	AS30	36905	35	36
13-0339-308	36926	AS30	36905	36	37
13-0339-370	36927	AS30	36905	37	38
13-0339-312	36928	AS30	36905	38	39
13-0339-313	36929	AS30	36905	39	40
13-0339-307	36930	AS30	36905	40	41
13-0339-345	36931	AS30	36905	41	42
13-0339-319	36932	AS30	36905	42	43
13-0339-169	36933	AS30	36905	43	44
13-0339-375	36934	AS30	36905	44	45
13-0339-1060	36935	AS5	36906	0	1
13-0339-630	36936	AS5	36906	1	2
13-0339-672	36937	AS5	36906	2	3
13-0339-651	36938	AS5	36906	3	4
13-0339-1012	36939	AS5	36906	4	5
13-0339-1059	36940	AS5	36906	5	6
13-0339-611	36941	AS5	36906	6	7
13-0339-963	36942	AS5	36906	7	8
13-0339-1062	36943	AS5	36906	8	9
13-0339-1232	36944	AS5	36906	9	10
13-0339-1124	36945	AS5	36906	10	11
13-0339-664	36946	AS5	36906	11	12
13-0339-1191	36948	AS5	36906	12	13
13-0339-1071	36949	AS5	36906	13	14
13-0339-936	36950	AS5	36906	14	15
13-0339-931	36951	AS5	36906	15	16
13-0339-1033	36952	AS5	36906	16	17
13-0339-1121	36953	AS5	36906	17	18
13-0339-938	36954	AS5	36906	18	19
13-0339-905	36956	AS5	36906	19	20
13-0339-1123	36956	AS5	36906	20	21
13-0339-1006	36957	AS5	36906	21	22
13-0339-636	36958	AS5	36906	22	23
13-0339-1222	36959	AS5	36906	23	24
13-0339-1140	36960	AS5	36906	24	25

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1015	36961	AS5	36906	25	26
13-0339-1267	36962	AS5	36906	26	27
13-0339-1278	36963	AS5	36906	27	28
13-0339-1040	36964	AS5	36906	28	29
13-0339-626	36965	AS5	36906	29	30
13-0339-1245	36966	AS5	36906	30	31
13-0339-1237	36967	AS5	36906	31	32
13-0339-666	36968	AS40	36907	0	1
13-0339-1149	36969	AS40	36907	1	2
13-0339-1066	36970	AS40	36907	2	3
13-0339-1093	36971	AS40	36907	3	4
13-0339-1063	36972	AS40	36907	4	5
13-0339-1238	36973	AS40	36907	5	6
13-0339-1150	36974	AS40	36907	6	7
13-0339-1274	36975	AS40	36907	7	8
13-0339-1260	36976	AS40	36907	8	9
13-0339-1261	36977	AS40	36907	9	10
13-0339-1068	36978	AS40	36907	10	11
13-0339-1286	36979	AS40	36907	11	12
13-0339-940	36980	AS40	36907	12	13
13-0339-1125	36981	AS40	36907	13	14
13-0339-930	36982	AS40	36907	14	15
13-0339-966	36983	AS40	36907	15	16
13-0339-910	36984	AS40	36907	16	17
13-0339-1155	36985	AS40	36907	17	18
13-0339-1205	36986	AS40	36907	18	19
13-0339-965	36987	AS40	36907	19	20
13-0339-1154	36988	AS40	36907	20	21
13-0339-939	36989	AS40	36907	21	22
13-0339-1085	36990	AS40	36907	22	23
13-0339-906	36991	AS40	36907	23	24
13-0339-964	36992	AS40	36907	24	25
13-0339-1244	36993	AS40	36907	25	26
13-0339-697	36994	AS40	36907	26	27
13-0339-962	36995	AS40	36907	27	28
13-0339-680	36996	AS40	36907	28	29
13-0339-687	36997	AS40	36907	29	30
13-0339-1249	36998	AS40	36907	30	31
13-0339-913	36999	AS40	36907	31	32
13-0339-1148	37000	AS40	36907	32	33
13-0339-955	37001	AS40	36907	33	34

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1257	37002	AS40	36907	34	35
13-0339-1174	37003	AS40	36907	35	36
13-0339-1163	37004	AS40	36907	36	37
13-0339-549	37005	AS40	36907	37	38
13-0339-960	37006	AS40	36907	38	39
13-0339-1053	37007	AS40	36907	39	40
13-0339-1213	37008	AS40	36907	40	41
13-0339-1290	37009	AS40	36907	41	42
13-0339-1061	37010	AS8	36908	0	1
13-0339-1110	37011	AS8	36908	1	2
13-0339-1271	37012	AS8	36908	2	3
13-0339-679	37013	AS8	36908	3	4
13-0339-686	37014	AS8	36908	4	5
13-0339-1086	37015	AS8	36908	5	6
13-0339-1010	37016	AS8	36908	6	7
13-0339-1273	37017	AS8	36908	7	8
13-0339-1269	37018	AS8	36908	8	9
13-0339-1220	37019	AS8	36908	9	10
13-0339-677	37020	AS8	36908	10	11
13-0339-1248	37021	AS8	36908	11	12
13-0339-624	37022	AS8	36908	12	13
13-0339-692	37023	AS8	36908	13	14
13-0339-1235	37024	AS8	36908	14	15
13-0339-1024	37025	AS8	36908	15	16
13-0339-1032	37026	AS8	36908	16	17
13-0339-1088	37027	AS8	36908	17	18
13-0339-618	37028	AS8	36908	18	19
13-0339-570	37029	AS8	36908	19	20
13-0339-622	37030	AS8	36908	20	21
13-0339-1187	37031	AS8	36908	21	22
13-0339-1186	37032	AS8	36908	22	23
13-0339-1105	37033	AS8	36908	23	24
13-0339-1087	37034	AS8	36908	24	25
13-0339-521	37035	AS8	36908	25	26
13-0339-635	37036	AS8	36908	26	27
13-0339-1185	37037	AS8	36908	27	28
13-0339-659	37038	AS8	36908	28	29
13-0339-1090	37039	AS8	36908	29	30
13-0339-1089	37040	AS8	36908	30	31
13-0339-1097	37041	AS8	36908	31	32
13-0339-610	37042	AS8	36908	32	33

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1229	37044	AS8	36908	33	34
13-0339-602	37045	AS8	36908	34	35
13-0339-601	37046	AS8	36908	35	36
13-0339-958	37048	AS4	36909	0	1
13-0339-882	37049	AS4	36909	1	2
13-0339-1162	37050	AS4	36909	2	3
13-0339-1251	37501	AS4	36909	4	5
13-0339-929	37502	AS4	36909	5	6
13-0339-1054	37503	AS4	36909	6	7
13-0339-1281	37504	AS4	36909	7	8
13-0339-1276	37505	AS4	36909	8	9
13-0339-561	37506	AS4	36909	9	10
13-0339-1198	37507	AS4	36909	10	11
13-0339-650	37508	AS4	36909	11	12
13-0339-951	37509	AS4	36909	12	13
13-0339-564	37510	AS4	36909	13	14
13-0339-1233	37511	AS4	36909	14	15
13-0339-954	37512	AS4	36909	15	16
13-0339-851	37513	AS4	36909	16	17
13-0339-1226	37514	AS4	36909	17	18
13-0339-1120	37515	AS4	36909	18	19
13-0339-1011	37516	AS4	36909	19	20
13-0339-1042	37517	AS4	36909	20	21
13-0339-515	37518	AS4	36909	21	22
13-0339-1047	37519	AS4	36909	22	23
13-0339-649	37520	AS4	36909	23	24
13-0339-1017	37521	AS4	36909	24	25
13-0339-1215	37522	AS4	36909	25	26
13-0339-1025	37523	AS4	36909	26	27
13-0339-1045	37524	AS4	36909	27	28
13-0339-1096	37525	AS4	36909	28	29
13-0339-526	37526	AS4	36909	29	30
13-0339-1003	37527	AS4	36909	30	31
13-0339-1217	37528	AS4	36909	31	32
13-0339-684	37529	AS4	36909	32	33
13-0339-670	37530	AS4	36909	33	34
13-0339-658	37531	AS4	36909	34	35
13-0339-685	37532	AS4	36909	35	36
13-0339-1262	37533	AS4	36909	36	37
13-0339-695	37534	AS4	36909	37	38
13-0339-688	37535	AS4	36909	38	39

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1195	37536	AS4	36909	39	40
13-0339-625	37537	AS4	36909	40	41
13-0339-1004	37538	AS4	36909	41	42
13-0339-1153	37539	AS4	36910	0	1
13-0339-1081	37540	AS7	36910	1	2
13-0339-655	37541	AS7	36910	2	3
13-0339-1180	37542	AS7	36910	3	4
13-0339-1021	37543	AS7	36910	4	5
13-0339-668	37544	AS7	36910	5	6
13-0339-619	37545	AS7	36910	6	7
13-0339-1143	37546	AS7	36910	7	8
13-0339-661	37547	AS7	36910	8	9
13-0339-607	37548	AS7	36910	9	10
13-0339-643	37549	AS7	36910	10	11
13-0339-1111	37051	AS7	36910	11	12
13-0339-1080	37550	AS7	36910	11	12
13-0339-656	37052	AS7	36910	12	13
13-0339-1112	37053	AS7	36910	13	14
13-0339-1265	37054	AS7	36910	14	15
13-0339-632	37055	AS7	36910	15	16
13-0339-1044	37056	AS7	36910	16	17
13-0339-1074	37057	AS7	36910	17	18
13-0339-644	37058	AS7	36910	18	19
13-0339-1067	37059	AS7	36910	19	20
13-0339-641	37060	AS7	36910	20	21
13-0339-652	37061	AS7	36910	21	22
13-0339-916	37062	AS7	36910	22	23
13-0339-1022	37063	AS7	36910	23	24
13-0339-881	37064	AS7	36910	24	25
13-0339-1166	37065	AS7	36910	25	26
13-0339-1051	37066	AS7	36910	26	27
13-0339-539	37067	AS7	36910	27	28
13-0339-911	37068	AS7	36910	28	29
13-0339-1291	37069	AS7	36910	29	30
13-0339-1253	37070	AS7	36910	30	31
13-0339-1069	37071	AS7	36910	31	32
13-0339-623	37072	AS7	36910	32	33
13-0339-1210	37073	AS7	36910	33	34
13-0339-1236	37074	AS7	36910	34	35
13-0339-1211	37075	AS7	36910	35	36
13-0339-1270	37076	AS9	36911	0	1

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1263	37077	AS9	36911	1	2
13-0339-1258	37078	AS9	36911	2	3
13-0339-990	37079	AS9	36911	3	4
13-0339-1052	37080	AS9	36911	4	5
13-0339-588	37081	AS9	36911	5	6
13-0339-1287	37082	AS9	36911	6	7
13-0339-700	37083	AS9	36911	7	8
13-0339-689	37084	AS9	36911	8	9
13-0339-673	37085	AS9	36911	9	10
13-0339-638	37086	AS9	36911	10	11
13-0339-620	37087	AS9	36911	11	12
13-0339-690	37088	AS9	36911	12	13
13-0339-693	37089	AS9	36911	13	14
13-0339-645	37090	AS9	36911	14	15
13-0339-1109	37092	AS9	36911	15	16
13-0339-1098	37093	AS9	36911	16	17
13-0339-563	37094	AS9	36911	17	18
13-0339-1028	37095	AS9	36911	18	19
13-0339-1289	37096	AS9	36911	19	20
13-0339-1136	37097	AS9	36911	20	21
13-0339-606	37098	AS9	36911	21	22
13-0339-1072	37099	AS9	36911	22	23
13-0339-674	37100	AS9	36911	23	24
13-0339-609	37101	AS9	36911	24	25
13-0339-669	37102	AS9	36911	25	26
13-0339-694	37103	AS9	36911	26	27
13-0339-1102	37104	AS9	36911	27	28
13-0339-1041	37105	AS9	36911	28	29
13-0339-1043	37106	AS9	36911	29	30
13-0339-1008	37107	AS9	36911	30	31
13-0339-657	37108	AS9	36911	31	32
13-0339-1018	37109	AS9	36911	32	33
13-0339-1094	37110	AS9	36911	33	34
13-0339-608	37111	AS9	36911	34	35
13-0339-633	37112	AS9	36911	35	36
13-0339-1254	37113	AS9	36911	36	37
13-0339-1020	37114	AS9	36911	37	38
13-0339-1091	37115	AS9	36911	38	39
13-0339-648	37116	AS9	36911	39	40
13-0339-581	37117	AS9	36911	40	41
13-0339-1197	37118	AS9	36911	41	42

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-541	37119	AS9	36911	42	43
13-0339-631	37120	AS9	36911	43	44
13-0339-1023	37121	AS9	36911	44	45
13-0339-926	37122	AS3	36912	0	1
13-0339-1192	37123	AS3	36912	1	2
13-0339-647	37124	AS3	36912	2	3
13-0339-1116	37125	AS3	36912	3	4
13-0339-1142	37126	AS3	36912	4	5
13-0339-1130	37127	AS3	36912	5	6
13-0339-1073	37128	AS3	36912	6	7
13-0339-1119	37129	AS3	36912	7	8
13-0339-1118	37130	AS3	36912	8	9
13-0339-1275	37131	AS3	36912	9	10
13-0339-1179	37132	AS3	36912	10	11
13-0339-1194	37133	AS3	36912	11	12
13-0339-1146	37134	AS3	36912	12	13
13-0339-1319	37135	AS3	36912	13	14
13-0339-1320	37136	AS3	36912	14	15
13-0339-1321	37137	AS3	36912	15	16
13-0339-1322	37138	AS3	36912	16	17
13-0339-1301	37139	AS3	36912	17	18
13-0339-1300	37140	AS3	36912	18	19
13-0339-1299	37141	AS3	36912	19	20
13-0339-1305	37142	AS3	36912	20	21
13-0339-1303	37143	AS3	36912	21	22
13-0339-1304	37144	AS3	36912	22	23
13-0339-1302	37145	AS3	36912	23	24
13-0339-1306	37146	AS3	36912	24	25
13-0339-1307	37147	AS3	36912	25	26
13-0339-1308	37148	AS3	36912	26	27
13-0339-1297	37149	AS3	36912	27	28
13-0339-1295	37150	AS3	36912	28	29
13-0339-1316	37151	AS3	36912	29	30
13-0339-1314	37152	AS3	36912	30	31
13-0339-1296	37153	AS3	36912	31	32
13-0339-1294	37154	AS3	36912	32	33
13-0339-1318	37155	AS3	36912	33	34
13-0339-1317	37156	AS3	36912	34	35
13-0339-1310	37157	AS3	36912	35	36
13-0339-1298	37158	AS3	36912	36	37
13-0339-1312	37159	AS3	36912	37	38

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1315	37160	AS3	36912	38	39
13-0339-1309	37161	AS3	36912	39	40
13-0339-1313	37162	AS3	36912	40	41
13-0339-1311	37163	AS3	36912	41	42
13-0339-653	37164	AS11	36913	0	1
13-0339-682	37165	AS11	36913	1	2
13-0339-1082	37166	AS11	36913	2	3
13-0339-1282	37167	AS11	36913	3	4
13-0339-883	37168	AS11	36913	4	5
13-0339-628	37169	AS11	36913	5	6
13-0339-1092	37170	AS11	36913	6	7
13-0339-1212	37171	AS11	36913	7	8
13-0339-1046	37172	AS11	36913	8	9
13-0339-617	37173	AS11	36913	9	10
13-0339-982	37174	AS11	36913	10	11
13-0339-969	37175	AS11	36913	11	12
13-0339-1048	37176	AS11	36913	12	13
13-0339-904	37177	AS11	36913	13	14
13-0339-943	37178	AS11	36913	14	15
13-0339-928	37179	AS11	36913	15	16
13-0339-1147	37180	AS11	36913	16	17
13-0339-1050	37181	AS11	36913	17	18
13-0339-1075	37182	AS11	36913	18	19
13-0339-1247	37183	AS11	36913	19	20
13-0339-523	37184	AS11	36913	20	21
13-0339-967	37185	AS11	36913	21	22
13-0339-968	37186	AS11	36913	22	23
13-0339-1056	37187	AS11	36913	23	24
13-0339-536	37188	AS11	36913	24	25
13-0339-917	37189	AS11	36913	25	26
13-0339-918	37190	AS11	36913	26	27
13-0339-537	37191	AS11	36913	27	28
13-0339-961	37192	AS11	36913	28	29
13-0339-828	37193	AS11	36913	29	30
13-0339-662	37194	AS11	36913	30	31
13-0339-683	37195	AS11	36913	31	32
13-0339-1070	37196	AS11	36913	32	33
13-0339-920	37197	AS11	36913	33	34
13-0339-959	37198	AS11	36913	34	35
13-0339-1034	37199	AS11	36913	35	36
13-0339-699	37200	AS11	36913	36	37

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-957	37201	AS11	36913	37	38
13-0339-1158	37202	AS11	36913	38	39
13-0339-605	37203	AS11	36913	39	40
13-0339-1035	37204	AS11	36913	40	41
13-0339-1169	37205	AS11	36913	41	42
13-0339-903	37206	AS11	36913	42	43
13-0339-927	37207	AS11	36913	43	44
13-0339-1014	37208	AS11	36913	44	45
13-0339-952	37209	AS11	36913	45	46
13-0339-1157	37210	AS11	36913	46	47
13-0339-517	37211	AS11	36913	47	48
13-0339-935	37212	AS11	36913	48	49
13-0339-986	37213	AS11	36913	49	50
13-0339-629	37214	AS11	36913	50	51
13-0339-1037	37215	AS11	36913	51	52
13-0339-1065	37216	AS11	36913	52	53
13-0339-639	37217	AS11	36913	53	54
13-0339-665	37218	AS11	36913	54	55
13-0339-1218	37219	AS11	36913	55	56
13-0339-933	37220	AS11	36913	56	57
13-0339-901	37221	AS6	36914	0	1
13-0339-1083	37222	AS6	36914	1	2
13-0339-1272	37223	AS6	36914	2	3
13-0339-634	37224	AS6	36914	3	4
13-0339-1246	37225	AS6	36914	4	5
13-0339-902	37226	AS6	36914	5	6
13-0339-676	37227	AS6	36914	6	7
13-0339-574	37228	AS6	36914	7	8
13-0339-1064	37229	AS6	36914	8	9
13-0339-678	37230	AS6	36914	9	10
13-0339-1219	37231	AS6	36914	10	11
13-0339-1007	37232	AS6	36914	11	12
13-0339-1225	37233	AS6	36914	12	13
13-0339-671	37234	AS6	36914	13	14
13-0339-1101	37235	AS6	36914	14	15
13-0339-667	37236	AS6	36914	15	16
13-0339-1250	37237	AS6	36914	16	17
13-0339-637	37238	AS6	36914	17	18
13-0339-945	37239	AS6	36914	18	19
13-0339-1057	37240	AS6	36914	19	20
13-0339-613	37241	AS6	36914	20	21

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-932	37242	AS6	36914	21	22
13-0339-1679	37242	AS6	36914	22	23
13-0339-518	37243	AS6	36914	23	24
13-0339-547	37244	AS6	36914	24	25
13-0339-941	37245	AS6	36914	25	26
13-0339-909	37246	AS6	36914	26	27
13-0339-919	37247	AS6	36914	27	28
13-0339-915	37248	AS6	36914	28	29
13-0339-934	37249	AS6	36914	29	30
13-0339-1031	37250	AS6	36914	30	31
13-0339-1243	37251	AS38	36915	0	1
13-0339-1036	37252	AS38	36915	1	2
13-0339-1234	37253	AS38	36915	2	3
13-0339-698	37254	AS38	36915	3	4
13-0339-562	37255	AS38	36915	4	5
13-0339-654	37256	AS38	36915	5	6
13-0339-675	37257	AS38	36915	6	7
13-0339-603	37258	AS38	36915	7	8
13-0339-696	37259	AS38	36915	8	9
13-0339-681	37261	AS38	36915	9	10
13-0339-981	37262	AS38	36915	10	11
13-0339-527	37263	AS38	36915	11	12
13-0339-745	37264	AS38	36915	12	13
13-0339-1019	37265	AS38	36915	13	14
13-0339-880	37266	AS38	36915	14	15
13-0339-907	37267	AS38	36915	15	16
13-0339-1079	37268	AS38	36915	16	17
13-0339-1078	37269	AS38	36915	17	18
13-0339-1117	37270	AS38	36915	18	19
13-0339-1193	37271	AS38	36915	19	20
13-0339-528	37272	AS38	36915	20	21
13-0339-1152	37273	AS38	36915	21	22
13-0339-1221	37274	AS38	36915	22	23
13-0339-1039	37275	AS38	36915	23	24
13-0339-914	37276	AS38	36915	24	25
13-0339-1084	37277	AS38	36915	25	26
13-0339-864	37278	AS38	36915	26	27
13-0339-691	37279	AS38	36915	27	28
13-0339-1134	37280	AS38	36915	28	29
13-0339-1049	37281	AS38	36915	29	30
13-0339-627	37282	AS38	36915	30	31

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1268	37283	AS38	36915	31	32
13-0339-615	37284	AS38	36915	32	33
13-0339-953	37285	AS38	36915	33	34
13-0339-1173	37286	AS38	36915	34	35
13-0339-1224	37287	AS38	36915	35	36
13-0339-1016	37288	AS38	36915	36	37
13-0339-815	37289	AS38	36915	37	38
13-0339-944	37290	AS38	36915	38	39
13-0339-1009	37291	AS38	36915	39	40
13-0339-640	37292	AS38	36915	40	41
13-0339-908	37293	AS38	36915	41	42
13-0339-1584	37294	AS37	36916	0	1
13-0339-1348	37295	AS37	36916	1	2
13-0339-1347	37296	AS37	36916	2	3
13-0339-1373	37297	AS37	36916	3	4
13-0339-1582	37298	AS37	36916	4	5
13-0339-1530	37299	AS37	36916	5	6
13-0339-1420	37300	AS37	36916	6	7
13-0339-1557	37301	AS37	36916	7	8
13-0339-1611	37302	AS37	36916	8	9
13-0339-1510	37303	AS37	36916	9	10
13-0339-1374	37304	AS37	36916	10	11
13-0339-1502	37305	AS37	36916	11	12
13-0339-1352	37306	AS37	36916	12	13
13-0339-1363	37307	AS37	36916	13	14
13-0339-1378	37308	AS37	36916	14	15
13-0339-1615	37309	AS37	36916	15	16
13-0339-1612	37310	AS37	36916	16	17
13-0339-1351	37311	AS37	36916	17	18
13-0339-1346	37312	AS37	36916	18	19
13-0339-1381	37313	AS37	36916	19	20
13-0339-1511	37314	AS37	36916	20	21
13-0339-1370	37315	AS37	36916	21	22
13-0339-1419	37316	AS37	36916	22	23
13-0339-1345	37317	AS37	36916	23	24
13-0339-1375	37318	AS37	36916	24	25
13-0339-1532	37319	AS37	36916	25	26
13-0339-1501	37320	AS37	36916	26	27
13-0339-1350	37321	AS37	36916	27	28
13-0339-1418	37322	AS37	36916	28	29
13-0339-1327	37323	AS37	36916	29	30

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1407	37324	AS37	36916	30	31
13-0339-1513	37325	AS37	36916	31	32
13-0339-1507	37326	AS37	36916	32	33
13-0339-1377	37327	AS37	36916	33	34
13-0339-1516	37328	AS37	36916	34	35
13-0339-1515	37329	AS37	36916	35	36
13-0339-1354	37330	AS37	36916	36	37
13-0339-1324	37331	AS37	36916	37	38
13-0339-1330	37332	AS37	36916	38	39
13-0339-1323	37333	AS37	36916	39	40
13-0339-1349	37334	AS37	36916	40	41
13-0339-1398	37335	AS37	36916	41	42
13-0339-1404	37336	AS37	36916	42	43
13-0339-1403	37337	AS37	36916	43	44
13-0339-1514	37338	AS37	36916	44	45
13-0339-1443	37339	AS2	36917	0	1
13-0339-1556	37340	AS2	36917	1	2
13-0339-1590	37341	AS2	36917	2	3
13-0339-1371	37342	AS2	36917	3	4
13-0339-1389	37343	AS2	36917	4	5
13-0339-1357	37344	AS2	36917	5	6
13-0339-1368	37345	AS2	36917	6	7
13-0339-1421	37346	AS2	36917	7	8
13-0339-1333	37348	AS2	36917	8	9
13-0339-1382	37349	AS2	36917	9	10
13-0339-1340	37350	AS2	36917	10	11
13-0339-1334	37351	AS2	36917	11	12
13-0339-1332	37352	AS2	36917	12	13
13-0339-1365	37353	AS2	36917	13	14
13-0339-1499	37354	AS2	36917	14	15
13-0339-1362	37355	AS2	36917	15	16
13-0339-1500	37356	AS2	36917	16	17
13-0339-1509	37357	AS2	36917	17	18
13-0339-1422	37358	AS2	36917	18	19
13-0339-1356	37359	AS2	36917	19	20
13-0339-1372	37360	AS2	36917	20	21
13-0339-1379	37361	AS2	36917	21	22
13-0339-1498	37362	AS2	36917	22	23
13-0339-1329	37363	AS2	36917	23	24
13-0339-1328	37364	AS2	36917	24	25
13-0339-1415	37365	AS2	36917	25	26

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1325	37366	AS2	36917	26	27
13-0339-1376	37367	AS2	36917	27	28
13-0339-1508	37368	AS2	36917	28	29
13-0339-1391	37369	AS2	36917	29	30
13-0339-1355	37370	AS2	36917	30	31
13-0339-1383	37371	AS2	36917	31	32
13-0339-1392	37372	AS2	36917	32	33
13-0339-1405	37373	AS2	36917	33	34
13-0339-1331	37374	AS2	36917	34	35
13-0339-1380	37375	AS2	36917	35	36
13-0339-1387	37376	AS2	36917	36	37
13-0339-1326	37377	AS2	36917	37	38
13-0339-1388	37378	AS2	36917	38	39
13-0339-1408	37379	AS2	36917	39	40
13-0339-1406	37380	AS2	36917	40	41
13-0339-1512	37381	AS2	36917	41	42
13-0339-1394	37382	AS10	36918	0	1
13-0339-1335	37383	AS10	36918	1	2
13-0339-1364	37384	AS10	36918	2	3
13-0339-1399	37385	AS10	36918	3	4
13-0339-1393	37386	AS10	36918	4	5
13-0339-1366	37387	AS10	36918	5	6
13-0339-1344	37388	AS10	36918	6	7
13-0339-1343	37389	AS10	36918	7	8
13-0339-1384	37390	AS10	36918	8	9
13-0339-1369	37391	AS10	36918	9	10
13-0339-1390	37392	AS10	36918	10	11
13-0339-1613	37393	AS10	36918	11	12
13-0339-1397	37394	AS10	36918	12	13
13-0339-1482	37395	AS10	36918	13	14
13-0339-1367	37396	AS10	36918	14	15
13-0339-1386	37397	AS10	36918	15	16
13-0339-1337	37398	AS10	36918	16	17
13-0339-1359	37399	AS10	36918	17	18
13-0339-1336	37400	AS10	36918	18	19
13-0339-1341	37401	AS10	36918	19	20
13-0339-1614	37402	AS10	36918	20	21
13-0339-1339	37403	AS10	36918	21	22
13-0339-1360	37404	AS10	36918	22	23
13-0339-1416	37405	AS10	36918	23	24
13-0339-1361	37406	AS10	36918	24	25

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1412	37407	AS10	36918	25	26
13-0339-1401	37408	AS10	36918	26	27
13-0339-1338	37409	AS10	36918	27	28
13-0339-1414	37410	AS10	36918	28	29
13-0339-1411	37411	AS10	36918	29	30
13-0339-1342	37412	AS10	36918	30	31
13-0339-1409	37413	AS10	36918	31	32
13-0339-1358	37414	AS10	36918	32	33
13-0339-1385	37415	AS10	36918	33	34
13-0339-1413	37423	AS10	36918	34	35
13-0339-1396	37416	AS10	36918	35	36
13-0339-1400	37417	AS10	36918	36	37
13-0339-1410	37418	AS10	36918	37	38
13-0339-1417	37419	AS10	36918	38	39
13-0339-1395	37420	AS10	36918	39	40
13-0339-1353	37421	AS10	36918	40	41
13-0339-1402	37422	AS10	36918	41	42
13-0339-1575	37425	AS1	36919	0	1
13-0339-1481	37426	AS1	36919	1	2
13-0339-1637	37427	AS1	36919	2	3
13-0339-1480	37428	AS1	36919	3	4
13-0339-1479	37429	AS1	36919	4	5
13-0339-1599	37430	AS1	36919	5	6
13-0339-1710	37431	AS1	36919	6	7
13-0339-1716	37432	AS1	36919	7	8
13-0339-1452	37433	AS1	36919	8	9
13-0339-1426	37434	AS1	36919	9	10
13-0339-1427	37435	AS1	36919	10	11
13-0339-1478	37436	AS1	36919	11	12
13-0339-1450	37437	AS1	36919	12	13
13-0339-1700	37438	AS1	36919	13	14
13-0339-1598	37439	AS1	36919	14	15
13-0339-1425	37440	AS1	36919	15	16
13-0339-1620	37441	AS1	36919	16	17
13-0339-1570	37442	AS1	36919	17	18
13-0339-1591	37443	AS1	36919	18	19
13-0339-1565	37444	AS1	36919	19	20
13-0339-1535	37445	AS1	36919	20	21
13-0339-1448	37446	AS1	36919	21	22
13-0339-1423	37447	AS1	36919	22	23
13-0339-1547	37448	AS1	36919	23	24

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1572	37449	AS1	36919	24	25
13-0339-1464	37450	AS1	36919	25	26
13-0339-1424	37451	AS1	36919	26	27
13-0339-1540	37452	AS1	36919	27	28
13-0339-1449	37453	AS1	36919	28	29
13-0339-1488	37454	AS35	36920	0	1
13-0339-1595	37455	AS35	36920	1	2
13-0339-1542	37456	AS35	36920	2	3
13-0339-1718	37457	AS35	36920	3	4
13-0339-1537	37458	AS35	36920	4	5
13-0339-1605	37459	AS35	36920	5	6
13-0339-1447	37460	AS35	36920	6	7
13-0339-1472	37461	AS35	36920	7	8
13-0339-1601	37462	AS35	36920	8	9
13-0339-1705	37463	AS35	36920	9	10
13-0339-1604	37464	AS35	36920	10	11
13-0339-1603	37465	AS35	36920	11	12
13-0339-1528	37466	AS35	36920	12	13
13-0339-1581	37467	AS35	36920	13	14
13-0339-1519	37468	AS35	36920	14	15
13-0339-1541	37469	AS35	36920	15	16
13-0339-1492	37470	AS35	36920	16	17
13-0339-1491	37471	AS35	36920	17	18
13-0339-1529	37472	AS35	36920	18	19
13-0339-1463	37473	AS35	36920	19	20
13-0339-1589	37474	AS35	36920	20	21
13-0339-1703	37475	AS35	36920	21	22
13-0339-1518	37476	AS35	36920	22	23
13-0339-1606	37477	AS35	36920	23	24
13-0339-1709	37478	AS35	36920	24	25
13-0339-1602	37479	AS35	36920	25	26
13-0339-1580	37480	AS35	36920	26	27
13-0339-1554	37481	AS35	36920	27	28
13-0339-1548	37482	AS35	36920	28	29
13-0339-1525	37483	AS35	36920	29	30
13-0339-1722	37484	AS35	36920	30	31
13-0339-1578	37485	AS35	36920	31	32
13-0339-1723	37486	AS35	36920	32	33
13-0339-1462	37487	AS35	36920	33	34
13-0339-1621	37488	AS35	36920	34	35
13-0339-1704	37489	AS35	36920	35	36

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1553	37490	AS35	36920	36	37
13-0339-1715	37491	AS35	36920	37	38
13-0339-1495	37492	AS35	36920	38	39
13-0339-1550	37493	AS35	36920	39	40
13-0339-1483	37494	AS35	36920	40	41
13-0339-1607	37495	AS35	36920	41	42
13-0339-1608	37496	AS36	36921	0	1
13-0339-1617	37497	AS36	36921	1	2
13-0339-1560	37498	AS36	36921	2	3
13-0339-1567	37499	AS36	36921	3	4
13-0339-1566	37500	AS36	36921	4	5
13-0339-1618	37551	AS36	36921	5	6
13-0339-1558	37552	AS36	36921	6	7
13-0339-1561	37553	AS36	36921	7	8
13-0339-1559	37554	AS36	36921	8	9
13-0339-1563	37555	AS36	36921	9	10
13-0339-1600	37556	AS36	36921	10	11
13-0339-1568	37557	AS36	36921	11	12
13-0339-1538	37558	AS36	36921	12	13
13-0339-1616	37559	AS36	36921	13	14
13-0339-1549	37560	AS36	36921	14	15
13-0339-1544	37561	AS36	36921	15	16
13-0339-1588	37562	AS36	36921	16	17
13-0339-1455	37563	AS36	36921	17	18
13-0339-1487	37564	AS36	36921	18	19
13-0339-1433	37565	AS36	36921	19	20
13-0339-1431	37566	AS36	36921	20	21
13-0339-1577	37567	AS36	36921	21	22
13-0339-1551	37568	AS36	36921	22	23
13-0339-1593	37569	AS36	36921	23	24
13-0339-1587	37570	AS36	36921	24	25
13-0339-1458	37571	AS36	36921	25	26
13-0339-1434	37572	AS36	36921	26	27
13-0339-1473	37573	AS36	36921	27	28
13-0339-1562	37574	AS36	36921	28	29
13-0339-1536	37575	AS36	36921	29	30
13-0339-1474	37576	AS36	36921	30	31
13-0339-1456	37577	AS36	36921	31	32
13-0339-1439	37578	AS36	36921	32	33
13-0339-1594	37579	AS36	36921	33	34
13-0339-1586	37580	AS36	36921	34	35

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1619	37581	AS36	36921	35	36
13-0339-1609	37582	AS24	36922	0	1
13-0339-1708	37583	AS24	36922	1	2
13-0339-1622	37584	AS24	36922	2	3
13-0339-1531	37585	AS24	36922	3	4
13-0339-1429	37586	AS24	36922	4	5
13-0339-1539	37587	AS24	36922	5	6
13-0339-1432	37588	AS24	36922	6	7
13-0339-1467	37589	AS24	36922	7	8
13-0339-1475	37590	AS24	36922	8	9
13-0339-1623	37591	AS24	36922	9	10
13-0339-1555	37592	AS24	36922	10	11
13-0339-1436	37593	AS24	36922	11	12
13-0339-1460	37594	AS24	36922	12	13
13-0339-1437	37595	AS24	36922	13	14
13-0339-1477	37596	AS24	36922	14	15
13-0339-1430	37597	AS24	36922	15	16
13-0339-1459	37598	AS24	36922	16	17
13-0339-1486	37599	AS24	36922	17	18
13-0339-1476	37600	AS24	36922	18	19
13-0339-1610	37601	AS24	36922	19	20
13-0339-1624	37602	AS24	36922	20	21
13-0339-1490	37603	AS24	36922	21	22
13-0339-1453	37604	AS24	36922	22	23
13-0339-1457	37605	AS24	36922	23	24
13-0339-1461	37606	AS24	36922	24	25
13-0339-1428	37607	AS24	36922	25	26
13-0339-1451	37608	AS24	36922	26	27
13-0339-1484	37609	AS24	36922	27	28
13-0339-1454	37610	AS24	36922	28	29
13-0339-1435	37611	AS24	36922	29	30
13-0339-1564	37612	AS24	36922	30	31
13-0339-1569	37613	AS24	36922	31	32
13-0339-1442	37614	AS24	36922	32	33
13-0339-1440	37615	AS24	36922	33	34
13-0339-1485	37616	AS24	36922	34	35
13-0339-1489	37617	AS24	36922	35	36
13-0339-1585	37618	AS15	36923	0	1
13-0339-1526	37619	AS15	36923	1	2
13-0339-1576	37620	AS15	36923	2	3
13-0339-1597	37621	AS15	36923	3	4

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1706	37622	AS15	36923	4	5
13-0339-1571	37623	AS15	36923	5	6
13-0339-1545	37624	AS15	36923	6	7
13-0339-1596	37625	AS15	36923	7	8
13-0339-1625	37626	AS15	36923	8	9
13-0339-1503	37627	AS15	36923	9	10
13-0339-1504	37628	AS15	36923	10	11
13-0339-1441	37629	AS15	36923	11	12
13-0339-1579	37630	AS15	36923	12	13
13-0339-1527	37631	AS15	36923	13	14
13-0339-1552	37632	AS15	36923	14	15
13-0339-1445	37633	AS15	36923	15	16
13-0339-1583	37634	AS15	36923	16	17
13-0339-1517	37635	AS15	36923	17	18
13-0339-1469	37636	AS15	36923	18	19
13-0339-1505	37637	AS15	36923	19	20
13-0339-1438	37638	AS15	36923	20	21
13-0339-1496	37639	AS15	36923	21	22
13-0339-1446	37640	AS15	36923	22	23
13-0339-1497	37641	AS15	36923	23	24
13-0339-1444	37642	AS15	36923	24	25
13-0339-1466	37643	AS15	36923	25	26
13-0339-1592	37644	AS15	36923	26	27
13-0339-1521	37645	AS15	36923	27	28
13-0339-1494	37646	AS15	36923	28	29
13-0339-1468	37647	AS15	36923	29	30
13-0339-1520	37648	AS15	36923	30	31
13-0339-1523	37649	AS15	36923	31	32
13-0339-1465	37650	AS15	36923	32	33
13-0339-1522	37651	AS15	36923	33	34
13-0339-1707	37652	AS15	36923	34	35
13-0339-1533	37653	AS15	36923	35	36
13-0339-1720	37654	AS15	36923	36	37
13-0339-1471	37655	AS15	36923	37	38
13-0339-1506	37656	AS15	36923	38	39
13-0339-1524	37657	AS15	36923	39	40
13-0339-1470	37658	AS15	36923	40	41
13-0339-1534	37659	AS15	36923	41	42
13-0339-1543	37660	AS15	36923	42	43
13-0339-1546	37661	AS15	36923	43	44
13-0339-1493	37662	AS15	36923	44	45

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1672	37663	AS17	36924	0	1
13-0339-1767	37664	AS17	36924	1	2
13-0339-1772	37665	AS17	36924	2	3
13-0339-1697	37666	AS17	36924	3	4
13-0339-1648	37667	AS17	36924	4	5
13-0339-1740	37668	AS17	36924	5	6
13-0339-1675	37669	AS17	36924	6	7
13-0339-1744	37670	AS17	36924	7	8
13-0339-1673	37671	AS17	36924	8	9
13-0339-1774	37672	AS17	36924	9	10
13-0339-1699	37673	AS17	36924	10	11
13-0339-1771	37674	AS17	36924	11	12
13-0339-1646	37678	AS17	36924	12	13
13-0339-1647	37679	AS17	36924	13	14
13-0339-1674	37680	AS17	36924	14	15
13-0339-1649	37684	AS17	36924	15	16
13-0339-1745	37685	AS17	36924	16	17
13-0339-1766	37686	AS17	36924	17	18
13-0339-1629	37688	AS17	36924	18	19
13-0339-1773	37689	AS17	36924	19	20
13-0339-1698	37700	AS17	36924	20	21
13-0339-970	37701	AS17	36924	21	22
13-0339-1650	37702	AS17	36924	22	23
13-0339-1701	37703	AS17	36924	23	24
13-0339-1750	37704	AS17	36924	24	25
13-0339-1671	37705	AS17	36924	25	26
13-0339-1696	37707	AS17	36924	26	27
13-0339-1687	37711	AS17	36924	27	28
13-0339-1669	37712	AS17	36924	28	29
13-0339-1662	37713	AS31	36925	0	1
13-0339-1670	37714	AS31	36925	1	2
13-0339-1639	37715	AS31	36925	2	3
13-0339-1638	37716	AS31	36925	3	4
13-0339-1651	37717	AS31	36925	4	5
13-0339-1681	37718	AS31	36925	5	6
13-0339-1692	37719	AS31	36925	6	7
13-0339-1685	37720	AS31	36925	7	8
13-0339-1725	37721	AS31	36925	8	9
13-0339-1714	37722	AS31	36925	9	10
13-0339-1652	37723	AS31	36925	10	11
13-0339-1691	37724	AS31	36925	11	12

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1654	37725	AS31	36925	12	13
13-0339-1799	37726	AS31	36925	13	14
13-0339-1667	37727	AS31	36925	14	15
13-0339-1719	37728	AS31	36925	15	16
13-0339-1717	37729	AS31	36925	16	17
13-0339-1724	37730	AS31	36925	17	18
13-0339-1732	37731	AS31	36925	18	19
13-0339-1573	37732	AS31	36925	19	20
13-0339-1665	37733	AS31	36925	20	21
13-0339-1682	37734	AS31	36925	21	22
13-0339-1645	37735	AS31	36925	22	23
13-0339-1655	37736	AS31	36925	23	24
13-0339-1664	37737	AS31	36925	24	25
13-0339-1688	37738	AS31	36925	25	26
13-0339-1689	37739	AS31	36925	26	27
13-0339-1636	37740	AS31	36925	27	28
13-0339-1693	37741	AS31	36925	28	29
13-0339-1721	37742	AS31	36925	29	30
13-0339-1711	37743	AS31	36925	30	31
13-0339-1713	37744	AS31	36925	31	32
13-0339-1640	37745	AS31	36925	32	33
13-0339-1727	37746	AS31	36925	33	34
13-0339-1728	37750	AS31	36925	34	35
13-0339-1702	37752	AS31	36925	35	36
13-0339-1733	37753	AS31	36925	36	37
13-0339-1680	37755	AS31	36925	37	38
13-0339-1686	37758	AS31	36925	38	39
13-0339-1690	37759	AS31	36925	39	40
13-0339-1780	37761	AS32	36926	0	1
13-0339-1734	37762	AS32	36926	1	2
13-0339-1756	37763	AS32	36926	2	3
13-0339-1758	37764	AS32	36926	3	4
13-0339-1678	37765	AS32	36926	4	5
13-0339-1798	37766	AS32	36926	5	6
13-0339-1668	37767	AS32	36926	6	7
13-0339-1781	37768	AS32	36926	7	8
13-0339-1791	37769	AS32	36926	8	9
13-0339-1782	37770	AS32	36926	9	10
13-0339-1661	37771	AS32	36926	10	11
13-0339-1626	37772	AS32	36926	11	12
13-0339-1630	37774	AS32	36926	12	13

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1628	37775	AS32	36926	13	14
13-0339-1653	37777	AS32	36926	14	15
13-0339-1695	37778	AS32	36926	15	16
13-0339-1574	37779	AS32	36926	16	17
13-0339-1797	37780	AS32	36926	17	18
13-0339-1712	37781	AS32	36926	18	19
13-0339-1760	37782	AS32	36926	19	20
13-0339-1783	37783	AS32	36926	20	21
13-0339-1643	37784	AS32	36926	21	22
13-0339-1694	37785	AS32	36926	22	23
13-0339-1726	37786	AS32	36926	23	24
13-0339-1802	37787	AS32	36926	24	25
13-0339-1787	37788	AS42	36927	0	1
13-0339-1743	37789	AS42	36927	1	2
13-0339-1741	37790	AS42	36927	2	3
13-0339-1749	37791	AS42	36927	3	4
13-0339-1770	37792	AS42	36927	4	5
13-0339-1757	37793	AS42	36927	5	6
13-0339-1803	37794	AS42	36927	6	7
13-0339-1775	37795	AS42	36927	7	8
13-0339-1786	37796	AS42	36927	8	9
13-0339-1765	37797	AS42	36927	9	10
13-0339-1738	37798	AS42	36927	10	11
13-0339-1764	37799	AS42	36927	11	12
13-0339-1742	37800	AS42	36927	12	13
13-0339-1804	37801	AS42	36927	13	14
13-0339-1736	37802	AS42	36927	14	15
13-0339-1657	37803	AS42	36927	15	16
13-0339-1762	37804	AS42	36927	16	17
13-0339-1763	37805	AS42	36927	17	18
13-0339-1785	37806	AS42	36927	18	19
13-0339-1795	37807	AS42	36927	19	20
13-0339-1794	37808	AS42	36927	20	21
13-0339-1788	37809	AS42	36927	21	22
13-0339-1663	37810	AS42	36927	22	23
13-0339-1683	37811	AS42	36927	23	24
13-0339-1631	37812	AS42	36927	24	25
13-0339-1635	37813	AS42	36927	25	26
13-0339-1659	37814	AS42	36927	26	27
13-0339-1656	37815	AS42	36927	27	28
13-0339-1627	37816	AS42	36927	28	29

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1796	37817	AS42	36927	29	30
13-0339-1759	37818	AS42	36927	30	31
13-0339-1737	37819	AS42	36927	31	32
13-0339-1800	37820	AS42	36927	32	33
13-0339-1731	37821	AS42	36927	33	34
13-0339-1684	37822	AS42	36927	34	35
13-0339-1735	37823	AS42	36927	35	36
13-0339-1747	37824	AS41	36928	0	1
13-0339-1805	37825	AS41	36928	1	2
13-0339-1746	37826	AS41	36928	2	3
13-0339-1801	37827	AS41	36928	3	4
13-0339-1792	37828	AS41	36928	4	5
13-0339-1776	37829	AS41	36928	5	6
13-0339-1676	37830	AS41	36928	6	7
13-0339-1632	37831	AS41	36928	7	8
13-0339-1658	37832	AS41	36928	8	9
13-0339-1790	37833	AS41	36928	9	10
13-0339-1784	37834	AS41	36928	10	11
13-0339-1761	37835	AS41	36928	11	12
13-0339-1666	37836	AS41	36928	12	13
13-0339-1633	37837	AS41	36928	13	14
13-0339-1751	37838	AS41	36928	14	15
13-0339-1748	37839	AS41	36928	15	16
13-0339-1753	37840	AS41	36928	16	17
13-0339-1793	37841	AS41	36928	17	18
13-0339-1789	37842	AS41	36928	18	19
13-0339-1768	37843	AS41	36928	19	20
13-0339-1769	37844	AS41	36928	20	21
13-0339-1642	37845	AS41	36928	21	22
13-0339-1660	37846	AS41	36928	22	23
13-0339-1777	37847	AS41	36928	23	24
13-0339-1644	37848	AS41	36928	24	25
13-0339-1634	37849	AS41	36928	25	26
13-0339-1752	37850	AS41	36928	26	27
13-0339-1729	37851	AS41	36928	27	28
13-0339-1739	37852	AS41	36928	28	29
13-0339-1641	37853	AS41	36928	29	30
13-0339-1730	37854	AS41	36928	30	31
13-0339-1778	37855	AS41	36928	31	32
13-0339-1754	37856	AS41	36928	32	33
13-0339-1779	37857	AS41	36928	33	34

SWA	SWC	ASS location	DH ID	Depth from	Depth to
13-0339-1677	37858	AS41	36928	34	35
13-0339-1755	37859	AS41	36928	35	36

B.2 ENVIROLAB SERVICES DETAILED TEST RESULTS

Reference	Description	SWA ID	Sample No.	Replicate	Type of sample	Date analysed	ANC_{BT}	Date prepared	Date analysed	Total Inorganic Carbon in soil	S_{KCl}	Chromium Reducible Sulfur	S_{HCl}	S_{NAS}	pH $_{kcl}$	TAA
Units						-	% $CaCO_3$	-	-	%	%w/w S	%w/w	%w/w S	%w/w S	pH units	moles H^+/t
PQL							0.005			0.01	0.005	0.005	0.005	0.005		5
Method							INORG-068			Ext-053	INORG-064	INORG-068	INORG-068	INORG-068	INORG-064	INORG-064
139792	Cooljarloo West	13-0339-1003	1	0	Frozen soil	11/09/2013	0.2	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1003	1	1	Frozen soil	11/09/2013	0.2	18/09/2013	18/09/2013	0.02						
139792	Cooljarloo West	13-0339-1004	2	0	Frozen soil	11/09/2013	0.3	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1031	3	0	Frozen soil	11/09/2013	11	18/09/2013	18/09/2013	2.5						
139792	Cooljarloo West	13-0339-1038	4	0	Frozen soil	11/09/2013					0.006	0.006	0.053	0.047		
139792	Cooljarloo West	13-0339-1038	4	1	Frozen soil	11/09/2013					0.005	0.007	0.05	0.045		
139792	Cooljarloo West	13-0339-1043	5	0	Frozen soil	11/09/2013					<0.005	<0.005	0.023	0.023		
139792	Cooljarloo West	13-0339-1049	6	0	Frozen soil	11/09/2013					0.018	0.13	0.23	0.22		
139792	Cooljarloo West	13-0339-1068	7	0	Frozen soil	11/09/2013					<0.005	0.005	0.05	0.05		
139792	Cooljarloo West	13-0339-1106	8	0	Frozen soil	11/09/2013					0.012	0.011	0.17	0.16		
139792	Cooljarloo West	13-0339-1108	9	0	Frozen soil	11/09/2013	0.3	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1109	10	0	Frozen soil	11/09/2013					<0.005	<0.005	0.031	0.031		
139792	Cooljarloo West	13-0339-1150	11	0	Frozen soil	11/09/2013									5.2	10
139792	Cooljarloo West	13-0339-1150	11	1	Frozen soil	11/09/2013									5.2	6.4
139792	Cooljarloo West	13-0339-1153	12	0	Frozen soil	11/09/2013	0.3	18/09/2013	18/09/2013	<0.01	0.006	<0.005	0.061	0.055		
139792	Cooljarloo West	13-0339-1155	13	0	Frozen soil	11/09/2013					<0.005	0.009	0.039	0.039		
139792	Cooljarloo West	13-0339-1160	14	0	Frozen soil	11/09/2013					0.024	0.14	0.3	0.28		
139792	Cooljarloo West	13-0339-1161	15	0	Frozen soil	11/09/2013					0.039	0.22	0.59	0.55		
139792	Cooljarloo West	13-0339-1163	16	0	Frozen soil	11/09/2013					0.23	3.4	5.9	5.7		
139792	Cooljarloo West	13-0339-1163	16	1	Frozen soil	11/09/2013					0.24	3.4	5.8	5.6		
139792	Cooljarloo West	13-0339-1178	17	0	Frozen soil	11/09/2013					0.011	0.082	0.17	0.16		
139792	Cooljarloo West	13-0339-1195	18	0	Frozen soil	11/09/2013	0.3	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1196	19	0	Frozen soil	11/09/2013	0.1	18/09/2013	18/09/2013	0.04						
139792	Cooljarloo West	13-0339-1202	20	0	Frozen soil	11/09/2013									6.5	<5
139792	Cooljarloo West	13-0339-1204	21	0	Frozen soil	11/09/2013									5.2	7.6
139792	Cooljarloo West	13-0339-1210	22	0	Frozen soil	11/09/2013	2.5	18/09/2013	18/09/2013	3.7						
139792	Cooljarloo West	13-0339-1212	23	0	Frozen soil	11/09/2013									5	18
139792	Cooljarloo West	13-0339-1234	24	0	Frozen soil	11/09/2013					<0.005	0.005	0.023	0.023		
139792	Cooljarloo West	13-0339-1235	25	0	Frozen soil	11/09/2013					<0.005	<0.005	0.034	0.034		
139792	Cooljarloo West	13-0339-1236	26	0	Frozen soil	11/09/2013					<0.005	<0.005	0.012	0.012		
139792	Cooljarloo West	13-0339-1237	27	0	Frozen soil	11/09/2013					<0.005	0.008	0.018	0.018		
139792	Cooljarloo West	13-0339-1238	28	0	Frozen soil	11/09/2013									5.4	<5
139792	Cooljarloo West	13-0339-1243	29	0	Frozen soil	11/09/2013					<0.005	<0.005	0.013	0.013		
139792	Cooljarloo West	13-0339-1244	30	0	Frozen soil	11/09/2013					<0.005	0.006	0.024	0.024		
139792	Cooljarloo West	13-0339-1246	31	0	Frozen soil	11/09/2013					0.006	<0.005	0.024	0.018		
139792	Cooljarloo West	13-0339-1263	32	0	Frozen soil	11/09/2013									4.8	19
139792	Cooljarloo West	13-0339-1264	33	0	Frozen soil	11/09/2013	<0.005	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1271	34	0	Frozen soil	11/09/2013									5	15
139792	Cooljarloo West	13-0339-1283	35	0	Frozen soil	11/09/2013					0.008	0.046	0.091	0.083		
139792	Cooljarloo West	13-0339-1294	36	0	Frozen soil	11/09/2013	0.06	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1296	37	0	Frozen soil	11/09/2013	0.08	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1296	37	1	Frozen soil	11/09/2013	0.06									
139792	Cooljarloo West	13-0339-1304	38	0	Frozen soil	11/09/2013					0.006	0.006	0.072	0.066		

Reference	Description	SWA ID	Sample No.	Replicate	Type of sample	Date analysed	ANC_{BT}	Date prepared	Date analysed	Total Inorganic Carbon in soil	S_{KCl}	Chromium Reducible Sulfur	S_{HCl}	S_{NAS}	pH_{kcl}	TAA
139792	Cooljarloo West	13-0339-1304	38	1	Frozen soil	11/09/2013					0.006	0.007	0.071	0.065		
139792	Cooljarloo West	13-0339-1306	39	0	Frozen soil	11/09/2013					<0.005	0.006	0.059	0.059		
139792	Cooljarloo West	13-0339-1310	40	0	Frozen soil	11/09/2013	0.2	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1313	41	0	Frozen soil	11/09/2013					0.077	0.35	1.8	1.7		
139792	Cooljarloo West	13-0339-1342	42	0	Frozen soil	11/09/2013					<0.005	0.007	0.044	0.044		
139792	Cooljarloo West	13-0339-1343	43	0	Frozen soil	11/09/2013									5.1	19
139792	Cooljarloo West	13-0339-1350	44	0	Frozen soil	11/09/2013					<0.005	0.006	0.014	0.014		
139792	Cooljarloo West	13-0339-1369	45	0	Frozen soil	11/09/2013					0.005	0.005	0.069	0.064	5.4	16
139792	Cooljarloo West	13-0339-1381	46	0	Frozen soil	11/09/2013					0.006	0.026	0.068	0.062		
139792	Cooljarloo West	13-0339-1384	47	0	Frozen soil	11/09/2013									5.2	29
139792	Cooljarloo West	13-0339-1388	48	0	Frozen soil	11/09/2013					0.033	0.17	0.36	0.33		
139792	Cooljarloo West	13-0339-1390	49	0	Frozen soil	11/09/2013									5.8	5.1
139792	Cooljarloo West	13-0339-1390	49	1	Frozen soil	11/09/2013									5.7	5.1
139792	Cooljarloo West	13-0339-1398	50	0	Frozen soil	11/09/2013					0.24	1.5	4.1	3.9		
139792	Cooljarloo West	13-0339-1415	51	0	Frozen soil	11/09/2013					0.005	0.012	0.054	0.049		
139792	Cooljarloo West	13-0339-1423	52	0	Frozen soil	11/09/2013					0.037	0.11	0.43	0.39		
139792	Cooljarloo West	13-0339-1423	52	1	Frozen soil	11/09/2013					0.036	0.13	0.42	0.38		
139792	Cooljarloo West	13-0339-1442	53	0	Frozen soil	11/09/2013					0.042	0.2	0.49	0.45		
139792	Cooljarloo West	13-0339-1458	54	0	Frozen soil	11/09/2013					0.007	0.007	0.029	0.022		
139792	Cooljarloo West	13-0339-1461	55	0	Frozen soil	11/09/2013	0.06	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1492	56	0	Frozen soil	11/09/2013					0.006	0.005	0.024	0.018		
139792	Cooljarloo West	13-0339-1493	57	0	Frozen soil	11/09/2013					0.008	0.025	0.052	0.044		
139792	Cooljarloo West	13-0339-1535	58	0	Frozen soil	11/09/2013					0.017	0.007	0.12	0.1		
139792	Cooljarloo West	13-0339-1540	59	0	Frozen soil	11/09/2013					0.3	3.9	6.3	6		
139792	Cooljarloo West	13-0339-1558	60	0	Frozen soil	11/09/2013					0.058	0.42	0.74	0.68		
139792	Cooljarloo West	13-0339-1568	61	0	Frozen soil	11/09/2013					0.14	0.005	1.2	1.1		
139792	Cooljarloo West	13-0339-1572	62	0	Frozen soil	11/09/2013									5.6	16
139792	Cooljarloo West	13-0339-1575	63	0	Frozen soil	11/09/2013					0.038	<0.005	0.33	0.29		
139792	Cooljarloo West	13-0339-1580	64	0	Frozen soil	11/09/2013					0.007	0.013	0.039	0.032		
139792	Cooljarloo West	13-0339-1580	64	1	Frozen soil	11/09/2013					0.01	0.012	0.04	0.03		
139792	Cooljarloo West	13-0339-1599	65	0	Frozen soil	11/09/2013									5.6	5.1
139792	Cooljarloo West	13-0339-1601	66	0	Frozen soil	11/09/2013									6.2	<5
139792	Cooljarloo West	13-0339-1604	67	0	Frozen soil	11/09/2013									5.9	<5
139792	Cooljarloo West	13-0339-1629	68	0	Frozen soil	11/09/2013					0.007	<0.005	0.027	0.02		
139792	Cooljarloo West	13-0339-1648	69	0	Frozen soil	11/09/2013	0.08	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1652	70	0	Frozen soil	11/09/2013					0.009	<0.005	0.038	0.029		
139792	Cooljarloo West	13-0339-1662	71	0	Frozen soil	11/09/2013					0.008	<0.005	0.026	0.018		
139792	Cooljarloo West	13-0339-1669	72	0	Frozen soil	11/09/2013	11	18/09/2013	18/09/2013	2.5						
139792	Cooljarloo West	13-0339-1675	73	0	Frozen soil	11/09/2013	0.09	18/09/2013	18/09/2013	<0.01	0.01	<0.005	0.041	0.031		
139792	Cooljarloo West	13-0339-1678	74	0	Frozen soil	11/09/2013					0.009	0.009	0.075	0.066		
139792	Cooljarloo West	13-0339-1705	75	0	Frozen soil	11/09/2013									6.7	<5
139792	Cooljarloo West	13-0339-1706	76	0	Frozen soil	11/09/2013									6	6.4
139792	Cooljarloo West	13-0339-1716	77	0	Frozen soil	11/09/2013	<0.005	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-1740	78	0	Frozen soil	11/09/2013	0.1	18/09/2013	18/09/2013	0.02						
139792	Cooljarloo West	13-0339-1746	79	0	Frozen soil	11/09/2013					0.012	<0.005	0.12	0.11		
139792	Cooljarloo West	13-0339-1757	80	0	Frozen soil	11/09/2013					0.012	<0.005	0.063	0.051		

Reference	Description	SWA ID	Sample No.	Replicate	Type of sample	Date analysed	ANC_{BT}	Date prepared	Date analysed	Total Inorganic Carbon in soil	S_{KCl}	Chromium Reducible Sulfur	S_{HCl}	S_{NAS}	pH_{kcl}	TAA
139792	Cooljarloo West	13-0339-1761	81	0	Frozen soil	11/09/2013					0.009	<0.005	0.029	0.02		
139792	Cooljarloo West	13-0339-1774	82	0	Frozen soil	11/09/2013					0.008	<0.005	0.03	0.022		
139792	Cooljarloo West	13-0339-1791	83	0	Frozen soil	11/09/2013					0.013	<0.005	0.063	0.05		
139792	Cooljarloo West	13-0339-1791	83	1	Frozen soil	11/09/2013					0.01	<0.005	0.062	0.052		
139792	Cooljarloo West	13-0339-201	84	0	Frozen soil	11/09/2013									4.7	47
139792	Cooljarloo West	13-0339-220	85	0	Frozen soil	11/09/2013									5.8	6.4
139792	Cooljarloo West	13-0339-228	86	0	Frozen soil	11/09/2013									5.3	16
139792	Cooljarloo West	13-0339-234	87	0	Frozen soil	11/09/2013									6.3	<5
139792	Cooljarloo West	13-0339-234	87	1	Frozen soil	11/09/2013									6.3	<5
139792	Cooljarloo West	13-0339-243	88	0	Frozen soil	11/09/2013					0.015	0.027	0.13	0.12		
139792	Cooljarloo West	13-0339-249	89	0	Frozen soil	11/09/2013									5.6	22
139792	Cooljarloo West	13-0339-261	90	0	Frozen soil	11/09/2013					0.012	0.027	0.13	0.12		
139792	Cooljarloo West	13-0339-263	91	0	Frozen soil	11/09/2013									6.8	<5
139792	Cooljarloo West	13-0339-267	92	0	Frozen soil	11/09/2013					0.007	0.009	0.053	0.046		
139792	Cooljarloo West	13-0339-278	93	0	Frozen soil	11/09/2013									5.7	19
139792	Cooljarloo West	13-0339-285	94	0	Frozen soil	11/09/2013					0.009	<0.005	0.025	0.016		
139792	Cooljarloo West	13-0339-300	95	0	Frozen soil	11/09/2013					0.12	0.92	2.7	2.6		
139792	Cooljarloo West	13-0339-308	96	0	Frozen soil	11/09/2013					0.009	0.006	0.03	0.021		
139792	Cooljarloo West	13-0339-343	97	0	Frozen soil	11/09/2013									9.2	<5
139792	Cooljarloo West	13-0339-345	98	0	Frozen soil	11/09/2013					0.062	0.14	0.75	0.69		
139792	Cooljarloo West	13-0339-346	99	0	Frozen soil	11/09/2013					0.017	0.032	0.11	0.091		
139792	Cooljarloo West	13-0339-365	100	0	Frozen soil	11/09/2013					0.021	0.026	0.14	0.12		
139792	Cooljarloo West	13-0339-376	101	0	Frozen soil	11/09/2013					0.052	0.48	0.68	0.63		
139792	Cooljarloo West	13-0339-376	101	1	Frozen soil	11/09/2013					0.051	0.48	0.7	0.64		
139792	Cooljarloo West	13-0339-382	102	0	Frozen soil	11/09/2013					0.16	0.93	1.9	1.8		
139792	Cooljarloo West	13-0339-428	103	0	Frozen soil	11/09/2013									5.9	<5
139792	Cooljarloo West	13-0339-442	104	0	Frozen soil	11/09/2013					0.14	0.58	1.5	1.4		
139792	Cooljarloo West	13-0339-444	105	0	Frozen soil	11/09/2013					0.04	0.22	0.42	0.38		
139792	Cooljarloo West	13-0339-486	106	0	Frozen soil	11/09/2013	0.4	18/09/2013	18/09/2013	0.06						
139792	Cooljarloo West	13-0339-490	107	0	Frozen soil	11/09/2013	0.2	18/09/2013	18/09/2013	0.02						
139792	Cooljarloo West	13-0339-501	108	0	Frozen soil	11/09/2013	0.1	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-501	108	1	Frozen soil			18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-512	109	0	Frozen soil	11/09/2013	4.1	18/09/2013	18/09/2013	1						
139792	Cooljarloo West	13-0339-512	109	1	Frozen soil	11/09/2013	4.1									
139792	Cooljarloo West	13-0339-518	110	0	Frozen soil	11/09/2013					0.008	<0.005	0.037	0.029		
139792	Cooljarloo West	13-0339-539	111	0	Frozen soil	11/09/2013					0.009	<0.005	0.038	0.029		
139792	Cooljarloo West	13-0339-548	112	0	Frozen soil	11/09/2013	0.04	18/09/2013	18/09/2013	0.02	0.006	<0.005	0.018	0.012		
139792	Cooljarloo West	13-0339-550	113	0	Frozen soil	11/09/2013					0.008	<0.005	0.03	0.022		
139792	Cooljarloo West	13-0339-557	114	0	Frozen soil	11/09/2013					0.021	0.045	0.18	0.16		
139792	Cooljarloo West	13-0339-558	115	0	Frozen soil	11/09/2013					0.01	<0.005	0.06	0.05		
139792	Cooljarloo West	13-0339-566	116	0	Frozen soil	11/09/2013					0.079	0.65	0.78	0.7		
139792	Cooljarloo West	13-0339-566	116	1	Frozen soil	11/09/2013					0.081	0.62	0.8	0.72		
139792	Cooljarloo West	13-0339-601	117	0	Frozen soil	11/09/2013					0.071	0.11	0.93	0.86		
139792	Cooljarloo West	13-0339-610	118	0	Frozen soil	11/09/2013					0.17	1.4	3.1	2.9		
139792	Cooljarloo West	13-0339-613	119	0	Frozen soil	11/09/2013	0.62	18/09/2013	18/09/2013	0.17						
139792	Cooljarloo West	13-0339-620	120	0	Frozen soil	11/09/2013					0.013	0.007	0.093	0.08		

Reference	Description	SWA ID	Sample No.	Replicate	Type of sample	Date analysed	ANC_{BT}	Date prepared	Date analysed	Total Inorganic Carbon in soil	S_{KCl}	Chromium Reducible Sulfur	S_{HCl}	S_{NAS}	pH $_{kcl}$	TAA
139792	Cooljarloo West	13-0339-623	121	0	Frozen soil	11/09/2013	13	18/09/2013	18/09/2013	3.1						
139792	Cooljarloo West	13-0339-635	122	0	Frozen soil	11/09/2013					0.008	0.008	0.053	0.045	6.5	<5
139792	Cooljarloo West	13-0339-640	123	0	Frozen soil	11/09/2013	6.6	18/09/2013	18/09/2013	1.5						
139792	Cooljarloo West	13-0339-648	124	0	Frozen soil	11/09/2013					0.042	0.31	0.48	0.43	6.7	<5
139792	Cooljarloo West	13-0339-676	125	0	Frozen soil	11/09/2013	0.3	18/09/2013	18/09/2013	<0.01	0.013	0.007	0.083	0.07	9	<5
139792	Cooljarloo West	13-0339-684	126	0	Frozen soil	11/09/2013	0.55	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-691	127	0	Frozen soil	11/09/2013					0.012	0.022	0.078	0.066	7.6	<5
139792	Cooljarloo West	13-0339-696	128	0	Frozen soil	11/09/2013					0.011	<0.005	0.053	0.042	5.4	20
139792	Cooljarloo West	13-0339-709	129	0	Frozen soil	11/09/2013	0.4	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-724	130	0	Frozen soil	11/09/2013					0.11	1.3	2.1	2	5.3	44
139792	Cooljarloo West	13-0339-725	131	0	Frozen soil	11/09/2013					0.019	0.094	0.17	0.15	6.7	<5
139792	Cooljarloo West	13-0339-725	131	1	Frozen soil	11/09/2013					0.019	0.098	0.16	0.14	NT	NT
139792	Cooljarloo West	13-0339-728	132	0	Frozen soil	11/09/2013					0.007	<0.005	0.023	0.016	6.8	<5
139792	Cooljarloo West	13-0339-729	133	0	Frozen soil	11/09/2013					0.011	<0.005	0.056	0.045	5.8	10
139792	Cooljarloo West	13-0339-730	134	0	Frozen soil	11/09/2013					0.007	<0.005	0.036	0.029	6.5	<5
139792	Cooljarloo West	13-0339-741	135	0	Frozen soil	11/09/2013					0.006	<0.005	0.017	0.011	6.7	<5
139792	Cooljarloo West	13-0339-761	136	0	Frozen soil	11/09/2013					0.073	0.12	0.9	0.82		
139792	Cooljarloo West	13-0339-780	137	0	Frozen soil	11/09/2013					0.078	0.46	0.75	0.67		
139792	Cooljarloo West	13-0339-788	138	0	Frozen soil	11/09/2013					0.032	0.26	0.34	0.31		
139792	Cooljarloo West	13-0339-792	139	0	Frozen soil	11/09/2013	6.3	18/09/2013	18/09/2013	1.5						
139792	Cooljarloo West	13-0339-794	140	0	Frozen soil	11/09/2013	0.05	18/09/2013	18/09/2013	<0.01						
139792	Cooljarloo West	13-0339-811	141	0	Frozen soil	11/09/2013					0.018	0.008	0.037	0.019		
139792	Cooljarloo West	13-0339-814	142	0	Frozen soil	11/09/2013					0.072	0.34	0.88	0.81		
139792	Cooljarloo West	13-0339-852	143	0	Frozen soil	11/09/2013					0.025	0.18	0.23	0.2		
139792	Cooljarloo West	13-0339-852	143	1	Frozen soil	11/09/2013					0.025	0.18	0.23	0.2		
139792	Cooljarloo West	13-0339-882	144	0	Frozen soil	11/09/2013					0.023	0.063	0.36	0.34		
139792	Cooljarloo West	13-0339-883	145	0	Frozen soil	11/09/2013									5.3	7.6
139792	Cooljarloo West	13-0339-921	146	0	Frozen soil	11/09/2013					0.02	0.014	0.2	0.18		
139792	Cooljarloo West	13-0339-924	147	0	Frozen soil	11/09/2013	<0.005	18/09/2013	18/09/2013	<0.01	0.02	0.024	0.22	0.2		
139792	Cooljarloo West	13-0339-924	147	1	Frozen soil	11/09/2013	<0.005				NT	NT	NT	NT		
139792	Cooljarloo West	13-0339-934	148	0	Frozen soil	11/09/2013	17	18/09/2013	18/09/2013	3.9	0.018	<0.005	0.59	0.57		
139792	Cooljarloo West	13-0339-935	149	0	Frozen soil	11/09/2013					0.34	1.6	4.6	4.2		
139792	Cooljarloo West	13-0339-944	150	0	Frozen soil	11/09/2013					0.063	0.19	0.28	0.22	9.6	<5
139792	Cooljarloo West	13-0339-955	151	0	Frozen soil	11/09/2013					0.012	0.018	0.15	0.14	6	<5
139792	Cooljarloo West	13-0339-958	152	0	Frozen soil	11/09/2013					0.041	0.25	0.7	0.66	5.5	<5
139792	Cooljarloo West	13-0339-959	153	0	Frozen soil	11/09/2013					0.006	0.005	0.028	0.022	6.1	<5
139792	Cooljarloo West	13-0339-962	154	0	Frozen soil	11/09/2013					0.01	0.009	0.05	0.04	6.4	<5
139792	Cooljarloo West	13-0339-962	154	1	Frozen soil	11/09/2013					0.01	0.01	0.052	0.042	NT	NT
139792	Cooljarloo West	13-0339-999	155	0	Frozen soil	11/09/2013					0.008	0.017	0.06	0.052	6.3	<5

APPENDIX C
TRONOX GEOLOGICAL CODES

C.1 TRONOX GEOLOGICAL CODES

Lithology	Code	Sorting	Strength	Typical Description/Comments
Sand	Q	W		Grey or yellow medium grained well sorted quartz sand. Less than 5% slime.
		P		Typical ore sand. Does not require washing in pan. Use grain size chart.
		VP		
Clayey Sand	QC	M		Grey or yellow medium grained medium sorted quartz sand.5-20% slime.
				Typical overburden. Requires washing in pan. Use grain size chart.
Carbonaceous Clayey Sand	QS			Typically chocolate brown, slimes easily liberated, fine to medium grained medium sorted quartz
				Reducing material, often containing grey/silver graphite streaks
Clay	C			Grey, brown, purple clay. C-code if cored thickness is greater than 0.3m. % is cored thickness.
	C		S	Estimate strength. Soft if moulded by light finger pressure.
	C		F	Firm if moulded by hard finger pressure.
	CST		ST	Stiff if marked by hard thumb pressure.
Silica cemented Sand	CQ			Silica cemented sand (rare).
Pisolitic gravelly Sand	QX			If sand with <50% pisolitic gravel
Pisolitic Gravel	X			If pisolitic gravel with <50% sand
Quartz gravel	QG			Predominantly quartz gravel/pebble horizon
Iron stained Sand	QF			Orange or red brown stained Sand >20%-50%.
Strongly stained Sand	FQ			Orange or red brown stained Sand >50%.
Laterite	QFC			Orange or red brown stained and cemented >20-50%.
Laterite	FC			Orange or red brown stained and cemented >50%.
	FC\QFC		V.W.	Very weak if broken by hand.
	FC\QFC		M.W.	Moderately weak if broken by one light hammer blow.
	FC\QFC		S	Strong if broken by > one hard hammer blow.
Limestone	K			Cemented calcareous sediment (calcarenite)
N.B. Use hyphens, back or forward slashes & full stops in Lithology/Comments & Sorting sections ONLY				

Colour codes	Colour
Gy	Grey
Gr	Green
B	Brown
R	Red
Y	Yellow
Bl	Black
O	Orange
Pi	Pink
P	Purple
GG	Grey Green
GG	olive
Lt	Light
Dk	Dark