

Project ID: CES050706-BCC

Easting: 329843.486

Project: ESA

Northing: 6243214.480

Client: Boyd Cooks Cove

Elevation: 2.05







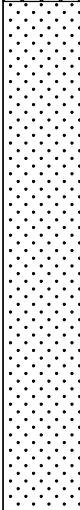





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Jones Bay Wharf 19-21, Lower Level Suite 121  
26-32 Pirrama Road Pyrmont 2009  
PH: (02) 8569 2200 FAX: (02) 9552 4399

Location: Cooks Cove - Area A

Environmental Log: **ABH274**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty sand topsoil, brown, dry, fine grained with rootlets	130508-289-KW	Push Tube							
				FILL: Crushed sandstone, orange/brown, coarse grained with clay and moist									
				FILL: Sand, dark brown, fine to medium grained, loose and moist									
				SAND: Sand, pale grey, fine to medium grained, loose, moist with shells. Saturated from 1.4-2.5m									
1													
2							130508-291-KW	Push Tube					
						CLAYEY SILT: Clayey silt, dark brown, firm and wet							
						SILTY CLAY: Silty clay, dark brown, soft and moist							
				EOH at 2.8mBGL (targeted depth)									
3													
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329883.398



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Project: ESA

Northing: 6243214.269










Client: Boyd Cooks Cove

Elevation: 1.36

Location: Cooks Cove - Area A

Environmental Log:

**ABH275**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand, brown, fine grained, loose, moist with roots	130508-285-KW	Push Tube						
					FILL: Sand, pale brown, fine to medium grained, loose, dry to moist, shells with orange mottles and roots							
					FILL: Sand, yellow, fine to medium grained, moderately turbid, dense, large shells and moist	130508-288-KW	Push Tube					
1					SAND: Sand, pale grey, fine to medium grained, shells and moist	130508-287-KW	Push Tube					
						130508-286-KW	Push Tube					
					SILTY CLAY: Silty clay, dark grey, very soft and wet							
2				SILTY SAND: Silty clayey sand, dark grey, dense, moist, with shells at 2.7-2.8m								
3				EOH at 2.8mBGL (targeted depth)								
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 329929.395



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Project: ESA

Northing: 6243205.442

Client: Boyd Cooks Cove

Elevation: 1.81

Location: Cooks Cove - Area A

Environmental Log: ABH276

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty sand, topsoil, dark brown, loose and dry with rootlets	130508-282-KW	Push Tube							
1						FILL: Sand, brown, fine to medium grained, gravels and ash (black/grey/white), dry to moist and loose	130508-283-KW	Push Tube					
						FILL: Sand, pale grey, fine grained, moderately dense, moist with shells							
				FILL: Sand, orange, fine grained, dense and moist	130508-284-KW	Push Tube							
				FILL: Sand, yellow, medium grained, moderately dense, moist and shells									
2													
				SAND: Sand, pale grey, fine to medium grained and moderately dense									
				SILTY SAND: Silty clayey sand, dark grey, soft and moist with organic odour									
3			EOH at 2.8mBGL (targeted depth)										
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329968.774

Project: ESA

Northing: 6243234.696

Client: Boyd Cooks Cove

Elevation: 0.96


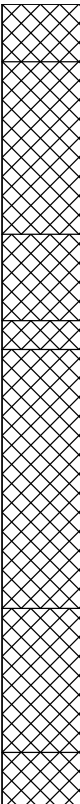


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Location: Cooks Cove - Area A

Environmental Log: **ABH277**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown/black, fine grained, loose and moist with roots	130508-279-KW	Push Tube					
				FILL: Sand, yellow, fine to medium grained, loose and moist with shells and rootlets	130508-278-KW	Push Tube					
				FILL: Sand, yellow and pale grey with trace silt and large shells. Moist, medium grained and loose							
1				FILL: Sandy clayey silt, dark brown/black, strong H2S odour	130508-280-KW	Push Tube					
				FILL: Silty sand, dark grey, moist with rootlets, shells and strong H2S odour							
2				FILL: Silty clayey sand, fine grained, dark brown, soft and saturated with H2S odour	130508-281-KW	Push Tube					
				FILL: Silty clay, dark brown/grey, soft and moist with large shells and H2S odour							
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins



Project ID: CES050706-BCC

Easting: 330013.553



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Project: ESA



Northing: 6243235.996

Client: Boyd Cooks Cove

Elevation: 0.89

Location: Cooks Cove - Area A

Environmental Log: ABH278

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, soft, fine grained and moist	120508-276-KW	Push Tube							
						FILL: Sand, yellow grading to pale brown, fine to medium grained, moderately dense and moist							
						FILL: Silty sand with trace clay, dark grey. Mostly shells		120508-277-KW	Push Tube				
1						FILL: Silty sand, grey, fine to medium grained, moderately dense and moist with shells							
						FILL: Sand, pale grey, medium grained, moist to wet with large shells							
						FILL: Clayey silt, dark brown, soft and moist to wet							
						FILL: Sand, pale grey, medium grained, wet with shells							
2						FILL: Clayey silt, dark brown/black and wet							
						SILTY SAND: Silty sand with trace clay, dark grey, wet with slight H2S odour							
3						EOH at 2.8mBGL (targeted depth)							
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329709.653



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Project: ESA

Northing: 6243160.286

Client: Boyd Cooks Cove

Elevation: 2.58

Location: Cooks Cove - Area A

Environmental Log: ABH279

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over sandy topsoil, dark brown, loose, dry with roots	130508-319-KW	Push Tube						
				FILL: Sand, dark brown, fine grained, dry with gravels and clay								
1				FILL: Sand and silt layers, brown, grey with shells	130508-320-KW	Push Tube						
				SAND: Sand, pale grey, medium grained, wet, dense with trace silt and shells	130508-321-KW	Push Tube						
2				SAND: Sand, grey, medium grained and wet								
				CLAYEY SILT: Clayey silt, dark grey, firm and moist. EOH at 2.8mBGL (targeted depth)								
3												
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329745.044

Project: ESA

Northing: 6243167.894

Client: Boyd Cooks Cove

Elevation: 2.87















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Location: Cooks Cove - Area A

Environmental Log: **ABH280**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over sandy topsoil, brown, fine to medium grained, dry and loose	130508-299-KW	Push Tube					
				FILL: Sand, brown, fine to medium grained, dry to moist and loose							
				FILL: Clay, brown/grey/orange mottles, gravels and very stiff	130508-300-KW	Push Tube					
				FILL: Sand, pale grey, fine to medium grained, dry and loose with shells							
1				FILL: Crushed sandstone, white/pink, dry and hard							
				UNKNOWN: Core loss							
2				SAND: Sand, pale grey, fine to medium grained, loose, moist with shells							
				SILTY SAND: Silty sand, grey, fine to medium grained, moist, shells, silt lenses with shells and H2S odour	130508-301-KW	Push Tube					
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329789.418



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Project: ESA

Northing: 6243190.974

Client: Boyd Cooks Cove

Elevation: 1.85

Location: Cooks Cove - Area A

Environmental Log: ABH281

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL				
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)							
							0	250	500	750				
0	Direct Push			FILL: Grass over unknown due to core loss	130508-302-KW	Push Tube								
							FILL: Sand, yellow, fine to medium grained, loose, moist with shells. Silt lenses at 0.9m							
1														
							FILL: Silty sand, fine to medium grained, loos and moist to wet. Grading through brown/grey/yellow and grey. Wet from 1.4m	130508-303-KW	Push Tube					
2							FILL: Silty clay, dark grey, soft and wet							
							FILL: Silty sand, dark grey, fine to medium grained, wet, moderately dense with shells and trace clay							
							FILL: Sandy clayey silt, black, moderately dense and wet							
							FILL: Silty clay, dark brown/grey, soft and moist							
3				FILL: Silty clayey sand, fine grained, dark brown, dense and moist. EOH at 2.8mBGL (targeted depth)										
4														
5														

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329825.352



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Project: ESA

Northing: 6243184.501






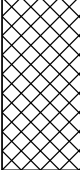

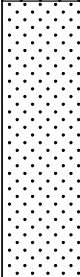



Client: Boyd Cooks Cove

Elevation: 1.35

Location: Cooks Cove - Area A

Environmental Log:

ABH282

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, moist with rootlets	130508-296-KW	Push Tube						
				FILL: Sand, pale brown, fine to medium grained, loose and moist with shells								
				FILL: Sand, yellow, fine to medium grained, loose and moist with shells								
				FILL: Sand, dark grey, fine to medium grained, loose and moist with shells								
1				FILL: Sand, pale grey, with dark brown, fine to coarse grained, moderately dense and moist with silt lenses, orange mottles and shells	130508-297-KW	Push Tube						
				SAND: Sand, pale grey, medium grained, moderately dense and wet at 1.5m								
2				SAND: Shell layer								
				SILTY SAND: Silty clayey sand, grey, moist and soft	130508-298-KW	Push Tube						
3				EOH at 2.8mBGL (targeted depth)								
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329888.702



Jones Bay Wharf 19-21, Lower Level Suite 121  
26-32 Pirrama Road Pyrmont 2009  
PH: (02) 8569 2200 FAX: (02) 9552 4399

Project: ESA

Northing: 6243165.119

Client: Boyd Cooks Cove

Elevation: 1.59

Location: Cooks Cove - Area A

Environmental Log: ABH283

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty clayey sand topsoil, dark brown, firm, dry to moist with roots and charcoal	150508-381-KW	Push Tube						
				FILL: Sand, pale brown, fine grained, loose and dry to moist								
				FILL: Sand, pale yellow, grading to grey, fine to medium grained, loose and moist. Wet at 1.5m	150508-382-KW	Push Tube						
1												
				SAND: Sand, pale grey, medium grained, moderately dense and wet with shells	150508-383-KW	Push Tube						
2												
			SILTY CLAY: Silty clay, dark brown, firm and wet									
			SILTY SAND: Silty sand, grey, medium grained and wet									
3			SILTY CLAY: Silty clay, dark grey, firm and wet. EOH at 2.8mBGL (targeted depth)									
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329927.212



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26-32 Pirrama Road Pyrmont 2009  
PH: (02) 8569 2200 FAX: (02) 9552 4399

Project: ESA

Northing: 6243176.201

Client: Boyd Cooks Cove

Elevation: 1.76

Location: Cooks Cove - Area A

Environmental Log:

ABH284

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty top soil, dark brown, firm, dry with roots	150508-384-KW	Push Tube					
				FILL: Sand, yellow, fine grained, loose and dry							
				FILL: Silty clay, dark brown, firm and dry							
				FILL: Sand, yellow, fine to medium grained, orange mottles, shells and wet from 1.4m							
1				SAND: Sand, grey, medium grained, moderately dense and wet	150508-387-KW	Push Tube					
					150508-386-KW	Push Tube					
					150508-385-KW	Push Tube					
2				SILTY SAND: Silty clayey sand, dark brown, soft and wet with shells							
					150508-388-KW	Push Tube					
3			EOH at 2.8mBGL (targeted depth)								
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329971.624



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26-32 Pirrama Road Pyrmont 2009  
PH: (02) 8569 2200 FAX: (02) 9552 4399

Project: ESA

Northing: 6243183.325

Client: Boyd Cooks Cove

Elevation: 1.74

Location: Cooks Cove - Area A

Environmental Log: ABH285

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION				WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Bark over silty sand topsoil, dark brown, dry, loose with roots	150508-389-KW	Push Tube					
				FILL: Silty clay, dark brown, firm and dry							
				FILL: Sand, pale grey with orange mottles and shells, fine to medium grained, loose to dense and moist. Wet at 1.4m	150508-390-KW	Push Tube					
1											
2				SILTY SAND: Silty clayey sand, fine grained, dark brown and wet							
				SILTY SAND: Silty sand, dark grey with trace clay and wet							
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins



Project ID: CES050706-BCC

Easting: 330001.417



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Jones Bay Wharf 19-21, Lower Level Suite 121  
26-32 Pirrama Road Pyrmont 2009  
PH: (02) 8569 2200 FAX: (02) 9552 4399

Project: ESA

Northing: 6243192.728

Client: Boyd Cooks Cove

Elevation: 1.44

Location: Cooks Cove - Area A

Environmental Log:

**ABH286**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass on silty sand topsoil with trace clay, dark brown, moist, roots and gravels	150508-391-KW	Push Tube							
						FILL: Sand, yellow, fine to medium grained, dry, loose, shells and orange mottles. Ash at 0.3m							
1						FILL: Sand, grey, fine to medium grained, moist, shells, loose with orange mottles and wet at 1.3m	150508-392-KW	Push Tube					
						FILL: Silty clayey sand, dark brown, wet and soft							
2						SILTY SAND: Silty sand, grey, fine to medium grained, moderately dense, wet with rootlets	150508-394-KW	Push Tube					
						SILTY SAND: Silty clayey sand, dark grey, soft, moist to wet with shells. EOH at 2.8mBGL (targeted depth)	150508-393-KW	Push Tube					
3													
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329802.345



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Jones Bay Wharf 19-21, Lower Level Suite 121  
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PH: (02) 8569 2200 FAX: (02) 9552 4399

Project: ESA

Northing: 6243164.287

Client: Boyd Cooks Cove

Elevation: 1.88

Location: Cooks Cove - Area A

Environmental Log: ABH287

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty topsoil, brown, fine grained, dry, loose with rootlets	150508-379-KW	Push Tube						
					150508-378-KW	Push Tube						
1												
						SILTY SAND: Silty sand, dark grey, firm, fine to medium grained, wet with shells and silt lenses	150508-380-KW	Push Tube				
2			SILTY SAND: Silty clay, dark brown and moist									
3				EOH at 2.8mBGL (targeted depth)								
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329838.139



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Project: ESA

Northing: 6243142.892


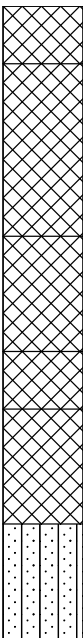



Client: Boyd Cooks Cove

Elevation: 1.53

Location: Cooks Cove - Area A

Environmental Log:

ABH288

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL				
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)							
							0	250	500	750				
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, moist and rootlets	150508-373-KW	Push Tube								
						FILL: Sand, pale grey, fine to medium grained, loose and moist with shells								
						FILL: Silty clay, brown/grey mottled, firm and dry to moist	150508-374-KW	Push Tube						
1						FILL: Sand, pale grey with orange mottles, fine to medium grained, moist and dense with shells								
						FILL: Sand, orange, medium grained, wet and loose								
2						SILTY SAND: Silty sand, medium grained, wet with shells								
						SILTY CLAY: Silty clay, dark brown, soft and moist								
				EOH at 2.8mBGL (targeted depth)	150508-375-KW	Push Tube								
3														
4														
5														

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329888.068



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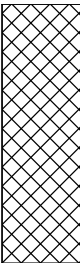

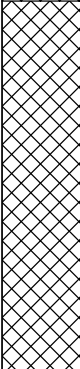



Northing: 6243145.122

Client: Boyd Cooks Cove

Elevation: 1.88

Location: Cooks Cove - Area A

Environmental Log: ABH289

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, moist with rootlets	150508-371-KW	Push Tube							
					150508-370-KW	Push Tube							
1					FILL: Sand, pale grey/orange mottles, fine to medium grained, moderately dense, moist with shells. Wet at 1.4m								
2							150508-372-KW	Push Tube					
				SANDY CLAY: Sandy silty clay, dark brown, firm and moist									
				SILTY SAND: Silty clayey sand, dark brown, firm and moist with shells and roots									
3				EOH at 2.8mBGL (targeted depth)									
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329924.715



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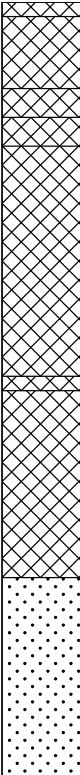


Northing: 6243131.849

Client: Boyd Cooks Cove

Elevation: 1.87

Location: Cooks Cove - Area A

Environmental Log: ABH290

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand, topsoil, dark brown, firm with trace clay	150508-358-KW	Push Tube						
				FILL: Crushed sandstone, coarse grained, orange and dry								
				FILL: Silty sand, dark brown, fine grained and dry								
				FILL: Silty clay, dark brown, firm and dry								
1				FILL: Sand, pale, grey, fine to medium grained, dry and dense with shells and orange mottles								
				FILL: Silty clay, dark brown, firm and dry	150508-359-KW	Push Tube						
				FILL: Sand, pale grey, medium grained, orange mottles, moist with shells								
2				SAND: Sand, pale grey, fine to medium grained, dense and wet with shells								
				SILTY CLAY: Silty clay, dark brown, soft and moist								
3				EOH at 2.8mBGL (targeted depth)								
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329972.055



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Project: ESA

Northing: 6243136.666

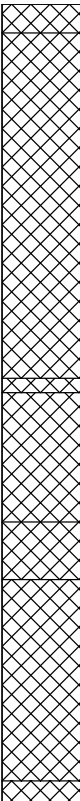





Client: Boyd Cooks Cove

Elevation: 2.52

Location: Cooks Cove - Area A

Environmental Log:

**ABH291**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, firm and moist	150508-354-KW	Push Tube							
				FILL: Sand, pale brown, fine to medium grained, loose to dense, dry to moist with sandstone gravels	150508-353-KW	Push Tube							
					150508-352-KW	Push Tube							
1						FILL: Silty clayey sand, brown, soft and moist with shells	150508-355-KW	Push Tube					
					FILL: Sand, pale grey, fine to medium grained, moist and loose								
2						FILL: Silt clay, dark brown, firm and moist							
					FILL: Sand, pale grey, medium grained, dense and wet with shells								
					FILL: Ash waste, black/white, loose and wet								
3						SILTY SAND: Silty clayey sand, dark grey, soft and wet	150508-356-KW	Push Tube					
4							SAND: Sand with trace clay, brown, fine grained and moist to wet	150508-357-KW	Push Tube				
				EOH at 4.2mBGL (targeted depth)									
5													

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 329795.443



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Project: ESA

Northing: 6243093.234


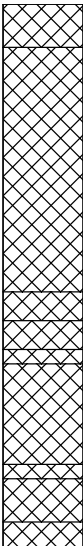


Client: Boyd Cooks Cove

Elevation: 1.88

Location: Cooks Cove - Area A

Environmental Log:

**ABH292**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							○	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil, brown, fine to medium grained, moist and loose.							
				FILL: Sand, yellow, fine to medium grained, moist and loose with ash gravels at 0.8-0.9m							
				FILL: Clayey silt, brown/orange mottles, dense and moist	130508-325-KW	Push Tube					
1				FILL: Silty sand, yellow, fine to medium grained, with shells and as gravels	130508-326-KW	Push Tube					
				FILL: Silty clay, grey/brown, dense and moist with orange mottles							
				FILL: Sand, pale grey, medium grained, moist and loose with shells. Saturated from 1.4-1.6m	130508-327-KW	Push Tube					
2				FILL: Silty sand, grey, dense and moist with shells							
				FILL: Clayey silt, grey dense and moist with shells							
				FILL: Clayey silt with trace sands, black, dense and moist with ash wast, glass and gravels. Refusal on sandstone fill at 1.9mBGL							
3											
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329831.892



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Project: ESA

Northing: 6243084.592










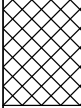


Client: Boyd Cooks Cove

Elevation: 1.91

Location: Cooks Cove - Area A

Environmental Log:

**ABH293**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over sand topsoil, dark brown and moist with rootlets	130508-328-KW	Push Tube					
				FILL: Crushed sandstone (white/brown), brown with silt, clay and ash at 0.4-0.5m							
				FILL: Silty clay, brown/orange, moist, firm with charcoal and gravels							
1				FILL: Crushed sandstone, orange, coarse grained and moist	130508-329-KW	Push Tube					
				FILL: Silty sand, brown/grey with charcoal							
				FILL: Sand, pale grey, fine to medium grained with silt lenses and shells. Wet at 1.4m							
2				SILTY CLAY: Silty clay, dark grey, firm and moist with shells	130508-330-KW	Push Tube					
				SILT: Silt, black, fine grained and firm							
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins



Project ID: CES050706-BCC

Easting: 329858.669



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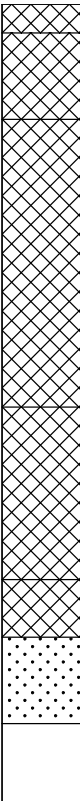



Northing: 6243120.087

Client: Boyd Cooks Cove

Elevation: 1.70

Location: Cooks Cove - Area A

Environmental Log: ABH294

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty sand, dark brown, moist and roots	150508-367-KW	Push Tube							
						FILL: Silty clayey sand, dark brown, gravels, firm and moist with shells							
						FILL: Silty clay, brown/grey, firm and dry with rootlets	150508-368-KW	Push Tube					
1						FILL: Sand, grey, silty, fine to medium grained with shells and wet from 1.4m							
						FILL: silty clay, dark grey, soft and wet	150508-369-KW	Push Tube					
2						SAND: Sand, grey, silty, medium grained and wet with shells							
				SILTY CLAY: Silty clay, dark grey, soft and wet									
3				EOH at 2.8mBGL (targeted depth)									
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329741.167



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Project: ESA

Northing: 6243137.961


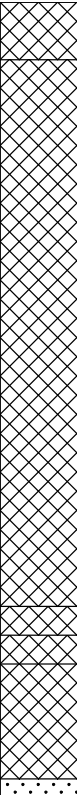



Client: Boyd Cooks Cove

Elevation: 2.02

Location: Cooks Cove - Area A

Environmental Log:

ABH295

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
								250	500	750			
0	Direct Push			FILL: Grass over silty sand topsoil, fine grained, dry and loose with roots	130508-324-KW	Push Tube							
				FILL: Sand, yellow, fine to medium grained, loose and dry with shells. Moist at 1.4m. Wet at 1.6m with silt lenses	130508-322-KW								
1													
						130508-323-KW	Push Tube						
2					FILL: Silty clay, dark grey, firm and moist								
					FILL: Sand, pale grey, medium grained, wet and dense								
					FILL: Silty clay, dark grey, firm and moist								
						SAND: Silty sand, dark grey, moist, dense with slight H2S odour							
3						EOH at 2.8mBGL (targeted depth)							
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 13/05/2008

Drill Model: Mac200

Date Completed: 13/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 329442.022

Project: ESA

Northing: 6243279.278

Client: Boyd Cooks Cove

Elevation: 1.42



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Location: Cooks Cove - Area A

Environmental Log: **ABH296**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION				WELL DETAIL				
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty topsoil, dark brown, dense and moist with roots	120508-261-KW	Push Tube							
				FILL: Sand, pale brown, fine grained, loose and dry	120508-262-KW	Push Tube							
				FILL: Silty sand, dark brown, fine grained, dense and moist									
1				SAND: Sand, pale grey, fine to medium grained, loose to moderately dense, moist with trace silt lenses and roots									
2					120508-263-KW	Push Tube							
3				EOH at 2.8mBGL (targeted depth)									
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 12/05/2008

Drill Model: Mac200

Date Completed: 12/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329954.741



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Project: ESA

Northing: 6243567.285









Client: Boyd Cooks Cove

Elevation: 1.82

Location: Cooks Cove - Area A

Environmental Log:

ABH297

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push ↕			ASPHALT: Bitumen	090508-166-KW	Push Tube						
				FILL: Sand, dark brown, fine to medium grained, loose and dry with gravels and shell fragments	090508-164-KW							
				FILL: Sand, yellow, fine grained, loose, dry and odourless	090508-165-KW	Push Tube						
1				FILL: Silty sand, dark grey, fine grained, loose, dry and odourless	090805-166-KW							
				<del>FILL: Silty sand, dark grey, fine grained, loose, dry and odourless</del>	<del>090508-181-KW</del>	Push Tube						
		SANDSTONE: Sanstone, yellow/white/orange, course grained, moist and odourless. Refusal on sandstone bedrock at 1.3mBGL										
2												
3												
4												
5												

Drill Company: Macquarie Drilling







Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push ↑ ↓			ASPHALT: Bitumen	090508-167-KW	Push Tube					
				FILL: Sand, brown, fine to medium grained, loose and dry with gravels, shells and trace clay							
1				FILL: Silty sand, dark brown, fine grained, dry, loose and odourless							
				FILL: Sand, yellow, fine to medium grained, loose and dry.	EOH at 1.5mBGL (targeted depth)	090508-184-KW	Push Tube				
2											
3											
4											

Project ID: CES050706-BCC

Easting: 329956.887



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Project: ESA

Northing: 6243568.981

Client: Boyd Cooks Cove

Elevation: 1.86

Location: Cooks Cove - Area A

Environmental Log:

ABH299

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push ↑ ↓			ASPHALT: Bitumen	090508-168-KW	Hand Auger	◆					
				FILL: Sand, brown, fine to medium grained, loose, dry with gravels, shells and charcoal	090508-169-KW	Hand Auger	◆					
				FILL: Sand, grey/brown, fine grained, loose, dry to moist and odourless	090508-170-KW	Hand Auger	◆					
1				FILL: Sand, yellow, fine grained, dense, dry and odourless	090508-182-KW	Push Tube	◆					
				FILL: Silty sand, dark grey, fine grained, dry, loose and odourless	090508-183-KW	Push Tube						
				FILL: Sandstone, yellow/orange, course grained and moist. Refusal on sandstone at 1.5mBGL								
2												
3												
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329957.565



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Project: ESA

Northing: 6243566.232



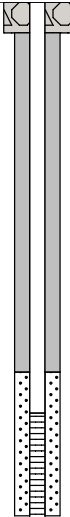













Client: Boyd Cooks Cove

Elevation: 2.16

Location: Cooks Cove - Area A

Environmental Log:

**ABH2100**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Auger Solid Flight			ASPHALT: Bitumen	090508-171-KW	Hand Auger						
			FILL: Sand, brown, fine grained, loose, dry, gravel, brick, blue metal, shells and odourless	090508-172-KW	Hand Auger							
			FILL: Sand, grey, fine grained, dry and odourless									
1			FILL: Sand, yellow/grey, fine grained, dry, loose and odourless	090508-173-KW	Hand Auger							
			FILL: Silty sand, dark grey, fine grained, loose and dry	090508-180-KW	Push Tube							
				090508-179-KW	Push Tube							
2			SANDSTONE: Orange/yellow sandstone, fine grained and dry									
			SANDSTONE: Sandstone, white and moist									
												
3												
4												
5												
6												
7				EOH at 6.5mBGL (targeted depth)								

Drill Company: Macquarie Drilling

Date Commenced: 21/05/2008

Drill Model: Mac200

Date Completed: 21/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329960.173



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Project: ESA

Northing: 6243565.265













Client: Boyd Cooks Cove

Elevation: 2.16

Location: Cooks Cove - Area A

Environmental Log:

**ABH2101**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			ASPHALT: Bitumen								
				FILL: Sand, brown, fine grained, loose, dry with gravels and blue metals	090508-174-KW	Hand Auger						
				FILL: Sand, grey, fine grained, loose dry and odourless	090508-175-KW	Hand Auger						
				FILL: Sand, yellow/brown, fine grained, loose, dry and odourless								
1				FILL: Silt sand, dark brown, fine grained, dry, loose and odourless	090508-176-KW	Hand Auger						
												
				SANDSTONE: Weathered sandstone, white/orange, moist and odourless	090508-177-KW	Push Tube						
				EOH at 1.7mBGL (refusal on sandstone bedrock)	090508-178-KW	Push Tube						
2												
3												
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1



Project ID: CES050706-BCC

Easting: 329960.984



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Project: ESA

Northing: 6243570.536














Client: Boyd Cooks Cove

Elevation: 2.16

Location: Cooks Cove - Area A

Environmental Log:

ABH2102

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			ASPHALT: Bitumen and blue metal	090508-185-KW	Push Tube						
				FILL: Crushed sandstone fill, pale brown/orange, coarse grained, sandstone gravels, loose and dry								
				FILL: Sand, grey/brown, loose and dry with black gravels								
				FILL: Crushed brick, red. hard and dry	090508-186-KW	Push Tube						
1				FILL: Sand, pale brown, fine grained, moderately dense dry								
				FILL: Silty sand, dark brown, fine grained, moderately dense and dry								
				FILL: Sand, yellow/pale brown, medium grained and dry to moist								
				FILL: Silty sand with trace clay, dark brown/grey. Wet at 1.6m	090508-187-KW	Push Tube						
2				FILL: Sand, pale grey with silt lenses and wet. Refusal on sandstone at 2.0mBGL								
3												
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329920.146



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Project: ESA

Northing: 6243581.574




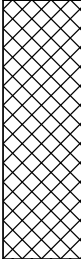

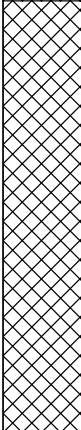




Client: Boyd Cooks Cove

Elevation:

Location: Cooks Cove - Area A

Environmental Log:

ABH2103

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			ASPHALT: Bitumen	090508-195-KW	Hand Auger						
				FILL: Sand, brown, fine grained, loose, dry to moist with gravels and shells. Terracota at 0.3m. Moist with orange mottles at 0.9m and gravels	090508-194-KW	Hand Auger						
					090508-196-KW	Hand Auger						
						Hand Auger						
1						FILL: Sand, grey with silt lenses, fine to medium grained, wet from 1.4m. Saturated from 1.4-2.8m	090508-197-KW	Hand Auger				
			090508-199-KW	Push Tube								
2				FILL: Silty clayey sand, brown, soft and saturated with several shells								
					090508-201-KW	Push Tube						
3			EOH at 2.8mBGL (targeted depth)									
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 329920.146

Project: ESA

Northing: 6243581.574

Client: Boyd Cooks Cove

Elevation: 1.89



Location: Cooks Cove - Area A

Environmental Log: ABH2104

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							○	250	500	750	
0	Direct Push			FILL: Sand, brown, fine to medium grained, loose and moist with gravels							
				090508-198-KW	Hand Auger						
				FILL: Sand, yellow, fine grained and odourless. Grading to grey/yellow, fine to medium grained and wet	090508-334-KW	Hand Auger					
1											
				090508-335-KW	Hand Auger						
				FILL: Sand, silty brown, fine grained, moist, dense and wet at 1.5m							
				FILL: Sand, grey, medium grained, wet and dense							
2											
				FILL: Silty clayey sand, grey/brown, dense and wet with shells							
				090508-349-KW	Push Tube						
3											
				FILL: Sand, pale grey, course grained, dense, wet and odourless							
				090508-350-KW	Push Tube						
4				EOH at 4.0mBGL (targeted depth)							
5											

Drill Company: Macquarie Drilling

Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329916.377



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Project: ESA

Northing: 6243589.938



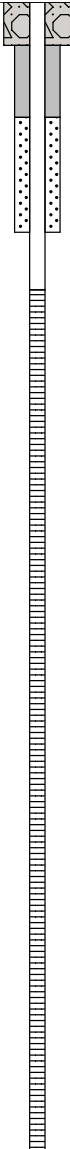
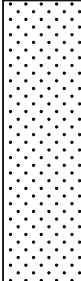



Client: Boyd Cooks Cove

Elevation: 1.98

Location: Cooks Cove - Area A

Environmental Log:

ABH2105

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Gravels								
				FILL: Clayey sand, orange/grey, coarse grained, odourless and moist, large boulder rocks, sandstone and concrete. Very strong, hydrocarbon odour from 1m	150508-323-KW	Hand Auger						
1					UNKNOWN: Core loss	150508-333-KW	Hand Auger					
2												
3				SAND: Sand grey, fine to medium grained, saturated, hydrocarbon odour and loose	150508-346-KW	Push Tube						
4				SAND: Brown sand, fine to medium grained with no odour	150508-600-KW	Solid Flight Auger						
				EOH at 4.0mBGL (targeted depth)								
5												

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329905.057



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Project: ESA

Northing: 6243586.237













Client: Boyd Cooks Cove

Elevation: 2.25

Location: Cooks Cove - Area A

Environmental Log:

ABH2106

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			ASPHALT: Bitumen	090508-204-KW	Push Tube					
				FILL: Silty brown topsoil, fine grained and moist							
				FILL: Sand, brown, loose, moist with shells and gravels							
1				FILL: Brick, yellow sandstone and moist	090508-205-KW	Push Tube					
				FILL: Sand, yellow, medium grained, moderately dense with shells and moist. Saturated at 2.0m							
											
2				FILL: Sand, grey, medium grained, moderately dense with shells and moist. Saturated at 2.0m	090508-206-KW	Push Tube					
				FILL: Silty clay, grey, soft and wet with H2S odour							
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 329919.941



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Project: ESA

Northing: 6243590.875






Client: Boyd Cooks Cove

Elevation:

Location: Cooks Cove - Area A

Environmental Log:

**ABH2107**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			CONCRETE: Concrete								
				FILL: Silty sand topsoil, fine to medium grained, moist and odourless with gravels	150508-339-KW	Hand Auger						
				FILL: Sand, brown/grey, fine to medium grained, gravels and odourless	150508-340-KW	Hand Auger						
1				FILL: Rocks, sand, grey becoming brown, moist to wet with strong hydrocarbon odour and surface sheen.	150508-341-KW	Hand Auger						
					150508-342-KW	Hand Auger						
			EOH at 1.6mBGL due to access restrictions									
2												
3												
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Project ID: CES050706-BCC

Easting: 329921.010



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Project: ESA

Northing: 6243586.932

Client: Boyd Cooks Cove

Elevation:

Location: Cooks Cove - Area A

Environmental Log:

**ABH2108**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			CONCRETE: Concrete	150508-343-KW	Hand Auger						
				FILL: Sand, yellow, fine grained, most to dry. Rocks at 0.3m								
				FILL: Silty sand, dark brown, fine grained with trace clay, moist with slight HC odour	150508-344-KW	Hand Auger						
				FILL: Very strong Hydrocarbon odour								
1					FILL: Silty sand, dark grey, fine to medium grained, wet with shells and hydrocarbon odour	150508-345-KW	Hand Auger					
2												
3							150508-347-KW	Push Tube				
4						SAND: Sand, pale grey, silty lenses, odourless and moist	150508-348-KW	Push Tube				
						EOH at 4.5mBGL (targeted depth)						
5												

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 329905.057



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Project: ESA


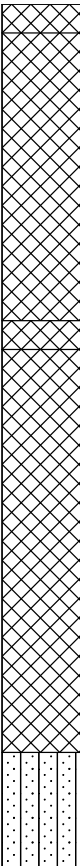



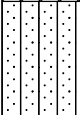

Northing: 6243586.237

Client: Boyd Cooks Cove

Elevation: 2.25

Location: Cooks Cove - Area A

Environmental Log: ABH2109

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Gravels and roadbase	150508-336-KW	Hand Auger							
				FILL: Silty sand, dark brown, fine to medium grained, moist and odourless									
					150508-337-KW	Hand Auger							
1				FILL: Sand, grey, fine to medium grained, moist and odourless									
				FILL: Sand, pale grey, fien to medium grained, dense, odourless and wet at 1.4m	150508-338-KW	Hand Auger							
2													
				SILTY SAND: Silty sand, grey, fine to medium grained, moist and dense									
				150508-351-KW	Push Tube								
3			EOH at 3.0mBGL (targeted depth)										
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 50

Logged/checked by: K.Weir/L.Jenkins



Project ID: CES050706-BCC

Easting: 329956.998



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Project: ESA

Northing: 6243565.240

Client: Boyd Cooks Cove

Elevation: 1.9

Location: Cooks Cove - Area A

Environmental Log: ABH2110

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			ASPHALT: Bitumen							
				FILL: Sand, brown, fine grained, loose, dry, gravel, brick, blue metal, shells and odourless							
				FILL: Sand, grey, fine grained, dry and odourless							
1				FILL: Sand, yellow/grey, fine grained, dry, loose and odourless							
				FILL: Silty sand, dark grey, fine grained, loose and dry							
				SANDSTONE: Orange/yellow sandstone, fine grained and dry							
2				EOH at 2.0mBGL (targeted depth)							
3											
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 21/05/2008

Drill Model: Mac200

Date Completed: 21/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329464.951



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Project: ESA

Northing: 6243255.406



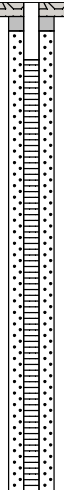


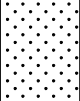

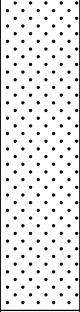


Client: Boyd Cooks Cove

Elevation: 1.09

Location: Cooks Cove - Area A

Environmental Log:

ALG201

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, moist, roots and fine grained							
				FILL: Sand, brown, fine to medium grained, moist, loose with roots and trace silt	120508-267-KW	Push Tube					
				FILL: Silty sand, brown, fine grained, dense and moist	120508-268-KW	Push Tube					
1				SAND: Sand, pale grey, fine to medium grained, moderately dense with silt lenses. Saturated from 1.5-2.6m. H2S odour at 2.0m	120508-269-KW	Push Tube					
2				SAND: Silty sand, brown, fine grained, dense and moist							
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 12/05/2008

Drill Model: Mac200

Date Completed: 12/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329556.712



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Project: ESA


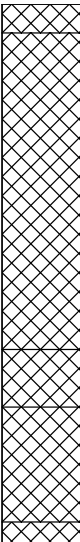


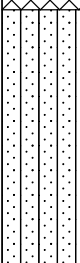
Northing: 6243218.788

Client: Boyd Cooks Cove

Elevation: 1.68

Location: Cooks Cove - Area A

Environmental Log: **ALG202**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, fine grained with roots	120508-270-KW	Push Tube					
				FILL: Sand, pale brown, fine grained, dry and loose with sandstone fragments (white), minor coal fragments. Orange/red mottles							
1				FILL: Clay, red/brown/orange/grey mottles, coal fragments, pebbles and dry to moist	120508-272-KW	Push Tube					
				FILL: Silty sand, fine to medium grained, loose and wet . Saturated from 1.5-2.0m	120508-271-KW	Push Tube					
				FILL: Silty clay, brown, moist and soft							
2				SILTY SAND: Silty sand, pale grey, dense and moist with silt lenses							
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 12/05/2008

Drill Model: Mac200

Date Completed: 12/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329702.791



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Project: ESA




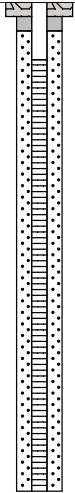
Northing: 6243184.299

Client: Boyd Cooks Cove

Elevation: 1.98

Location: Cooks Cove - Area A

Environmental Log: **ALG203**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, fine grained, dry to moist	130508-317-KW	Push Tube					
				FILL: Silty sand, dark brown, fine grained, dense and dry to moist							
				FILL: Silty sand, yellow, fine grained, moist and loose							
				FILL: Sand, yellow, medium grained, loose, moist with shells and silt lenses, orange mottles and wet at 1.5m	130508-318-KW	Push Tube					
1											
				FILL: Sand, grey, fine to medium grained, moderately dense, wet with shells							
2				FILL: Silty clay, dark brown, moist and soft							
				SILTY SAND: Silty sand, dark brown/grey, moist and soft							
				EOH at 2.8mBGL (targeted depth)							
3											
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 12/05/2008

Drill Model: Mac200

Date Completed: 12/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329801.119



Jones Bay Wharf 19-21, Lower Level Suite 121  
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Project: ESA

Northing: 6243134.358

Client: Boyd Cooks Cove

Elevation: 1.54

Location: Cooks Cove - Area A

Environmental Log: **ALG204**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Auger Solid Flight			FILL: Grass over silty clay topsoil, dark brown, moist with roots	150508-376-KW	Push Tube							
				FILL: Sand, yellow, fine to medium grained, loose, dry, shells. Wet at 1.4m									
1													
				FILL: Sand, grey, fine to medium grained, wet and dense	150508-377-KW	Push Tube							
				FILL: Silty clay, dark grey, firm to moist and wet									
2				FILL: Sand, grey, fine to medium grained, wet and dense									
				FILL: Silty clay, dark brown, firm and wet. Slight H2S odour									
				FILL: Siltyb sand, dark brown, dense and moist									
3				FILL: Silty clay, dark brown, firm and moist									
				FILL: Silt, dark grey, trace clay, firm, moist with shells. EOH at 2.8mBGL (targeted depth)									
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329892.571



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Project: ESA

Northing: 6243104.247


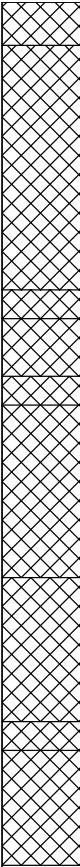

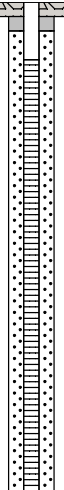



Client: Boyd Cooks Cove

Elevation: 2.49

Location: Cooks Cove - Area A

Environmental Log:

**ALG205**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL				
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)							
							0	250	500	750				
0	Auger Solid Flight			FILL: Grass on silty sand, dark brown, firm, dry to moist	150508-363-KW	Push Tube								
						FILL: Sand, yellow, fine to medium grained, loose, dry, grading to grey								
						FILL: Silty clay, lense, brown, dry with roots								
1						FILL: Sand, pale grey, fine to medium grained, moist, sandstone gravels with charcoal and ash	150508-364-KW	Push Tube						
						FILL: Silty clay, dark brown, soft and moist								
						FILL: SSand, pale brown, fine to medium grained, wet at 1.4m, shells and moderately dense								
2						FILL: Silty clay, dark brown/grey, soft and wet								
						FILL: Silt, black, fine grained, organics								
						FILL: Crushed sandstone, grey and white	150508-365-KW	Push Tube						
3						SILTY CLAY: Silty clay, shells, moist to wet with H2S odour								
					150508-366-KW	Push Tube								
4														
				EOH at 4.2mBGL (targeted depth)										
5														

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329967.076



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Project: ESA

Northing: 6243101.231









Client: Boyd Cooks Cove

Elevation: 1.75

Location: Cooks Cove - Area A

Environmental Log:

ALG206

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, dry with roots						
				FILL: Sand, yellow, fine grained, dense, moist, grading to pale grey with silt lenses						
1				FILL: Silty clay, dark brown, soft and moist						
				FILL: Sandy silty clay, dark brown, soft and wet at 1.4m. Becoming grey at 1.9m						
2				FILL: Silty clay, dark grey, firm and moist						
				SAND: Sand, pale grey, medium grained, dense, wet with shells						
				SILTY SAND: Silty sand with trace clay, dark brown/grey, soft and moist						
3				EOH at 2.8mBGL (targeted depth)						
4										
5										

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329456.755



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Project: ESA

Northing: 6243292.819




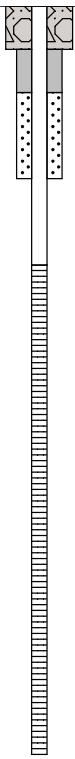




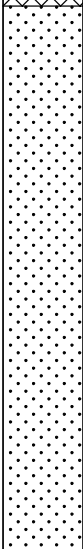
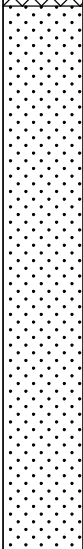
Client: Boyd Cooks Cove

Elevation: 1.15

Location: Cooks Cove - Area A

Environmental Log:

**AMW201**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, moist with roots	120508-257-KW	Push Tube					
				FILL: Sand, pale brown, fine grained, moderately dense, moist with gravels							
				FILL: Silty clayey sand, brown, fine grained, moist and very dense							
				FILL: Sand, pale grey, fine to medium grained, loose and moist	120508-260-KW	Push Tube					
1				FILL: Silty sand, dark brown, fine grained, trace clay, dense and moist	120508-259-KW	Push Tube					
				SAND: Sand, pale grey, fine to medium grained, moist with silt lenses	120508-258-KW	Push Tube					
2											
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 12/05/2008

Drill Model: Mac200

Date Completed: 12/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 329693.146



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Project: ESA




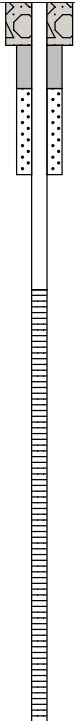


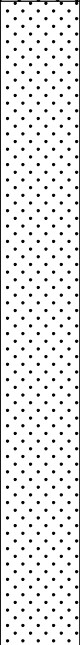
Northing: 6243513.796

Client: Boyd Cooks Cove

Elevation: 1.37

Location: Cooks Cove - Area A

Environmental Log: **AMW202**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose with roots	070508-65-KW	Push Tube					
				FILL: Silty sand, pale brown, fine grained, dense, moist with sandstone gravels, tiles and no odour	070508-66-KW	Push Tube					
				FILL: Silty clayey sand, brown/orange, moist, dense with no odour							
				SAND: Sand, dark grey grading to pale grey with depth, fine to medium grained, moist and dense with trace silt. Saturated from 1.5-1.8m. H2S odour							
1											
2											
3				EOH at 2.8mBGL (targeted depth)							
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 07/05/2008

Drill Model: Mac200

Date Completed: 07/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329961.734

Project: ESA

Northing: 6243611.832

Client: Boyd Cooks Cove

Elevation: 1.97



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Location: Cooks Cove - Area A

Environmental Log: **AMW203**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, loose and dry with rootlets								
				FILL: Sand, dark brown, fine grained, dry with crushed sandstone fill, course grained, yellow and dry	090508-188-KW	Push Tube						
				FILL: Ash ffill, black gravels with sand, dark grey, fine grained and dry	090508-189-KW	Push Tube						
				FILL: Sand, brown, trace clay, fine to medium grained, loose and dry								
				FILL: Ash waste, black and dry								
				FILL: Sand, pale brown/yellow, fine to medium grained, moist to wet at 1.4m. Shells and H2S odour								
1												
2				SAND: Sand, pale grey with trace silt and clay, wet with shells and H2S odour	090508-190-KW	Push Tube						
				SILTY CLAY: Silty clay, dark grey, soft, wet with H2S odour								
				SILTY SAND: Silty clayey sand, dark brown, fine to medium grained, soft and wet with shells								
3				EOH at 2.8mBGL (targeted depth)								
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329812.026



Project: ESA




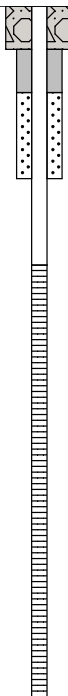

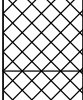

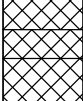


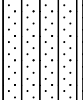

Northing: 6243339.925

Client: Boyd Cooks Cove

Elevation: 1.21

Location: Cooks Cove - Area A

Environmental Log: **AMW204**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Auger Solid Flight			FILL: Grass over silty sand top soil, dark brown, fine grained, loose, dry to moist with roots	080508-118-KW	Push Tube						
				FILL: Sand, yellow, fine to medium grained, loose grading to dense with depth, dry to moist with depth and shells								
1				FILL: Silty clay, brown, soft and moist	080508-119-KW	Push Tube						
				FILL: Silty sand, dark grey/black, rootlets, fine grained and moist								
				FILL: Sand, pale grey, fine to medium grained, moderately dense, moist with silt lenses								
2				SILTY SAND: Silty clayey sand, brown/grey, wet from 1.4-2.4m								
				SAND: Sand, grey, fine to medium grained, dense and wet	080508-120-KW	Push Tube						
3				EOH at 2.8mBGL (targeted depth)								
4												
5												

Drill Company: Macquarie Drilling

Date Commenced: 09/05/2008

Drill Model: Mac200

Date Completed: 09/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329962.633



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Project: ESA

Northing: 6243424.415

Client: Boyd Cooks Cove

Elevation: 0.78

Location: Cooks Cove - Area A

Environmental Log: **AMW205**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Auger Solid Flight			FILL: Grass over silty sand top soil, dark brown, firm, moist with rootlets	080508-155-KW	Push Tube					
				FILL: Sand, yellow, fine to medium grained, loose to moderate density and moist							
				FILL: Sand, pale grey, fine to medium grained, loose and moist	080508-156-KW	Push Tube					
				FILL: Silty clay, brown, firm and moist							
1				FILL: Silty sand, brown grading to grey, fine to medium grained, dense and moist							
				FILL: Silty clayey sand, saturated from 1.4 to 2.0m. Brown and stiff							
2				SAND: Sand, pale grey, fine grained, dense and wet with shells. Refusal at 2.2mBGL on sandstone	080508-157-KW	Push Tube					
				EOH at 2.2mBGL (refusal on sandstone bedrock)							
3											
4											
5											

Drill Company: Macquarie Drilling

Date Commenced: 08/05/2008

Drill Model: Mac200

Date Completed: 08/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 329965.424

Project: ESA

Northing: 6243103.057

Client: Boyd Cooks Cove

Elevation: 1.80



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Location: Cooks Cove - Area A

Environmental Log:

**AMW206**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							○	250	500	750
0	Auger Solid Flight			FILL: Grass over silty sand topsoil, dark brown, dry with roots	150508-361-KW	Push Tube				
				FILL: Sand, yellow, fine grained, dense, moist, grading to pale grey with silt lenses						
1				FILL: Silty clay, dark brown, soft and moist						
				FILL: Sandy silty clay, dark brown, soft and wet at 1.4m. Becoming grey at 1.9m	150508-362-KW	Push Tube				
2				FILL: Silty clay, dark grey, firm and moist						
				SAND: Sand, pale grey, medium grained, dense, wet with shells						
				SILTY SAND: Silty sand with trace clay, dark brown/grey, soft and moist						
3					EOH at 2.8mBGL (targeted depth)					
4										
5										

Drill Company: Macquarie Drilling

Date Commenced: 15/05/2008

Drill Model: Mac200

Date Completed: 15/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 330009.173



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Project: ESA

Northing: 6243281.985


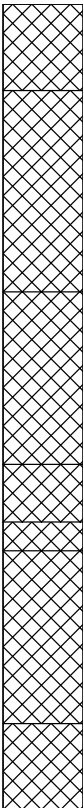

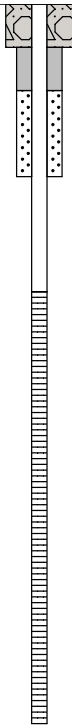




Client: Boyd Cooks Cove

Elevation: 1.71

Location: Cooks Cove - Area A

Environmental Log:

AMW207

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Auger Solid Flight			FILL: Silty sand top soil, brown, dry, loose with rootlets. Ash at 0.2m	120508-218-KW	Push Tube							
					FILL: Sand fill, fine to medium grained, alternating sand layers. Dark brown/grey/pale brown/grey. Slightly moist with minor ash throughout fill. Metal shavings at 0.6m	120508-219-KW	Push Tube						
					FILL: Sandy clay to clayey sand, pale brown/orange to dark brown, moist and dense with ash gravels at 1.4-1.5m								
1					FILL: Clayey sand, grey/brown, wet, fine to medium grained	120508-220-KW	Push Tube						
					FILL: Silty clay, dark brown and wet, soft with H2S odour	120508-221-KW	Push Tube						
2					FILL: Clayey sand, brown, wet, fine to medium grained, silt layers with H2S odour								
					FILL: Silty clay, dark grey, soft and wet with shells	120508-222-KW	Push Tube						
3				EOH at 2.8mBGL (targeted depth)									
4													
5													

Drill Company: Macquarie Drilling

Date Commenced: 12/05/2008

Drill Model: Mac200

Date Completed: 12/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243578.389



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Project: Cooks Cove

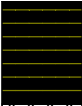
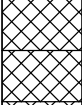

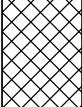
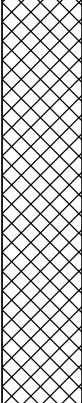


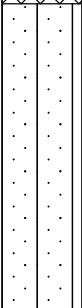

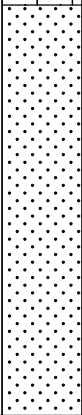
Northing: 329982.604

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH401**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			ASPHALT: Bitumen surface									
				FILL: Sand, medium grained, white/brown, dry and odourless	280408-01-KW	Push Tube							
				FILL: Crushed red brick, hard, dry									
				FILL: Sand, white/pale brown, loose, possible thin peat with shells grading to dark brown/grey. Moist at 1.2m	280408-02-KW	Push Tube							
1							280408-03-KW	Push Tube					
						SANDY SILT: Sandy clay silt, dark grey, organics, some shells, dense and wet							
							280408-04-KW	Push Tube					
2						SAND: Sand, white/light grey, shell content, some dark grey silt lenses (potentially peat), wet and dense							

Drill Company: Macquarie Drilling

Date Commenced: 28/04/2008

Drill Model:

Date Completed: 28/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243477.126



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Project: Cooks Cove

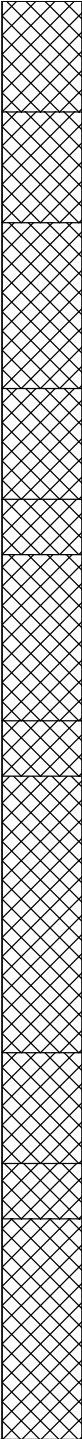





Northing: 330007.791

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH402**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	<div>Direct Push</div>			FILL: Grass over sandy clay topsoil, brown, roots, dry and loose	280408-05-KW	Push Tube					
				FILL: Clayey sand, orange/brown, ash, sandstone fragments (pink/white)							
				FILL: Gravelly sand fill, brown, loose, dry to moist, ash (black) with sandstone fragments	280408-06-KW	Push Tube					
				FILL: Sand, light to dark brown, moderately dense, fine to medium grained, coal/ash (small air bubbles) at 0.8-0.9m. Dry to moist							
				FILL: White crushed sandstone	280408-07-KW	Push Tube					
1				FILL: Sand, dark brown, organic/shell content. Very dense, fine grained with sandstone							
				FILL: Silty sand, trace clay, black/dark brown, shells with organic odour. Very dense, fine grained and moist	280408-08-KW	Push Tube					
				FILL: Fractured sandstone, white and dry							
				FILL: Sand, brown, loose, fine to medium grained with shells	280408-09-KW	Push Tube					
2				FILL: Silty clay, brown, moist and plastic							
				FILL: Sandy clay, black, dense, fine grained, moist and wet at 2.5m, shells and organic odour. Refusal on sandstone fill							

Drill Company: Macquarie Drilling

Date Commenced: 28/04/2008

Drill Model:

Date Completed: 28/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6243347.165



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Project: Cooks Cove

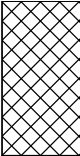

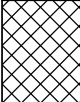

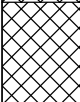

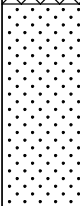
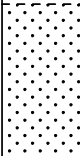

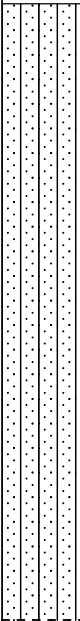

Northing: 330025.068

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH403**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand topsoil, brown with rootlets	280408-10-KW	Push Tube						
				FILL: Sand, yellow/orange, trace clay, fine grained, dry to moist gravels, dense								
				FILL: Becoming dark brown, shells at 0.7m	280408-11-KW	Push Tube						
				SAND: Sand, light grey, moist to wet, fine to medium grained, loose								
1												
				SAND: Becoming dark grey, silty clay lenses, organic odour	280408-14-KW	Push Tube						
				SILTY SAND: Silty clay sand, dark grey, oganic odour and inclusions, wet at 2.3m	280408-13-KW	Push Tube						
					280408-12-KW	Push Tube						
2												
				SAND: Sand, light grey, medium grained, loose and wet								

Drill Company: Macquarie Drilling

Date Commenced: 28/04/2008

Drill Model:

Date Completed: 28/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243231.781



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Project: Cooks Cove

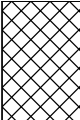

















Northing: 330048.383

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH404**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over sand, light grey, fine to medium grained, moist with shells, rootlets and gravels	280408-15-KW	Push Tube							
					FILL: Dark brown, silty clayey sand, fine grained and moist								
					FILL: Clay, light grey with red ironstone gravels								
					FILL: Dark brown, silty sand, fine grained, gravels, organic odour, moist and dense	280408-16-KW	Push Tube						
					FILL: Sandstone, white/orange, crushed								
1					SAND: Sand, grey, fine grained, loose, dry to moist, organic black peat lense at 1.3m								
					SAND: Becoming grey/orange fine to medium grained	280408-17-KW	Push Tube						
													
													
													
2			CLAY: Clay, dark brown, moist to wet, plastic										
													
			SAND: Sand, grey, fine grained, moderately dense and moist										
			PEAT: Black peat silty lense with brown sand, medium grained, loose										
			End of borehole.										
3													

Drill Company: Macquarie Drilling

Date Commenced: 28/04/2008

Drill Model:

Date Completed: 28/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 6243252.022



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Project: Cooks Cove

Northing: 329429.637

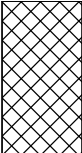


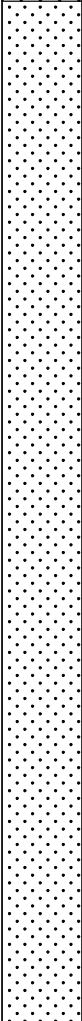
Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH406

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	<div>Direct Push</div>			FILL: Grass over silty sand topsoil. Medium grained, light brown, moist, loose, some gravels	290408-46-KW	Push Tube						
				FILL: Sandy silt, dark brown, fine to medium grained								
				FILL: Silty sand, darker brown, moist, dense medium grained								
				290408-47-KW	Push Tube							
1						SAND: Sand, pale grey, medium grained, moist, moderately dense, brown peat lenses throughout, wet at 1.5m						
2												

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243213.42

Project: Cooks Cove

Northing: 329440.547

Client: Boyd Cook Cove

Elevation:



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Location: Cooks Cove

Environmental Log: **BBH407**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	<div>Direct Push</div>		<div></div>	FILL: Grass over silty sand top soil, fine grained, dark brown, moist with gravels	290408-43-KW	Push Tube	<div></div>				
			<div></div>	FILL: Clayey sand, fine to medium grained, light brown/orange with crushed white sandstone and ironstone gravels, moist and dense	290408-44-KW	Push Tube	<div></div>				
			<div></div>	FILL: Silty clayey sand, dark brown, fine to medium grained, very dense, minor gravels, bone, moist with organic odour							
1			<div></div>	SILTY SAND: Silty sand, dark grey, fine grained, very dense, moist to wet. Wet at 1.6m.	290408-45-KW	Push Tube	<div></div>				
2			<div></div>								

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243233.644



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Project: Cooks Cove

Northing: 329503.188

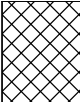



Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH408

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand top soil, grey/brown, roots, moist, medium grained and loose	290408-50-KW	Push Tube						
					FILL: Silty sand, dark grey/brown, dense, moist, fine grained with gravels							
					FILL: Sandy silt, dark brown, moderately dense and moist							
1				SAND: Sand, grey, medium grained, moderately dense, moist, wet at 1.4m. Organic odour								
							290408-52-KW	Push Tube				
						SAND: Becoming dark brown	290408-51-KW	Push Tube				
2												
						SAND: Becoming light grey						

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6243199.687



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Project: Cooks Cove

Northing: 329560.807

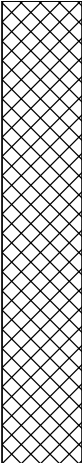



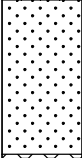

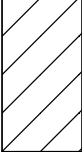

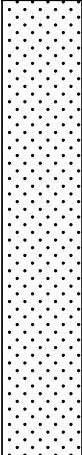

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH410**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0										
Direct Push				FILL: Grass over sandy topsoil, brown/orange/yellow, fine grained with minor clay. Ash at 0.1m. Red ironstone gravels at 0.5m, black charcoal fragments throughout	280408-25-KW	Push Tube				
				FILL: Sand, dark brown, fine grained with glass, bone, moist and loose	280408-26-KW	Push Tube				
				SAND: Grey, fine grained, moderately dense, moist, shells throughout						
				PEAT: Black decaying organic fibres						
				CLAY: Clay, black, wet at 1.6m, plastic, organic odour, roots, shells with bacterial sheen	280408-27-KW	Push Tube				
2				SAND: Sand, fine to medium grained, grey with shells throughout , wet						
					280408-28-KW	Push Tube				

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Sheet: 1 of 1



Project ID: CES050706-BCC

Easting: 6243134.049



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Project: Cooks Cove

Northing: 329478.399

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH411**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0	Direct Push			FILL: Grass over silty sand topsoil, fine to medium grained, grey/brown, moist with rootlets						
				FILL: Clay, grey/red/orange, stiff and dry with trace sand, gravels, ironstone gravels, sandstone and shale fragments with ash at 0.8-0.9m	290408-36-KW	Push Tube				
						290408-37-KW	Push Tube			
1					SAND: Silty sand, dark brown/grey with sandstone gravels, loose and dry					
				SILT: Silt, black to dark brown, loose, organic odour, moist						
2										
				SILT: Sand, medium grained, grey, moist and dense						
					290408-38-KW	Push Tube				

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 6243161.139



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Project: Cooks Cove

Northing: 329551.915

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH412**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass overlying sandy clay topsoil, brown, rootlets, moist with charcoal pieces	280408-21-KW	Push Tube					
				FILL: Sand, dark brown/grey, fine grained, loose, trace clay, moist							
					280408-22-KW	Push Tube					
				FILL: Light grey/brown sand							
				FILL: Silty sandy clay, black with glass and ash inclusions, ash odour							
1					280408-23-KW	Push Tube					
				SAND: Sand, grey, with trace silt and clay, moderately dense, moist and fine grained							
					280408-24-KW	Push Tube					
2											

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 6243132.138



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Project: Cooks Cove

Northing: 329689.226

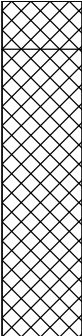






Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH414**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty sand topsoil, roots and moist	020508-169-KW	Push Tube							
				FILL: Sand, brown, trace clay, fine grained, moist with some gravels									
					020508-168-KW	Push Tube							
					020508-170-KW	Push Tube							
						FILL: Sand, yellow, fine to medium grained, loose, shells, moist, silt lenses, wet at 1.5m							
1													
								020508-171-KW	Push Tube				
2													
				SAND: Sand, grey, fine to medium grained, moderately dense, shells and moist									
				SILTY SAND: Silty sand, dark grey, fine grained, dense and moist									
				SILTY CLAY: Silty clay, dark grey soft and moist									
				SILT: Black silt, organic odour, fine grained moist									
				End of borehole.									
3													

Drill Company: Macquarie Drilling

Date Commenced: 02/05/2008

Drill Model:

Date Completed: 02/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243127.487



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Project: Cooks Cove

Northing: 330037.091

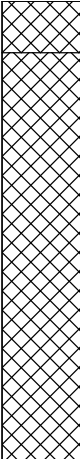

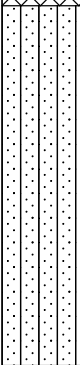

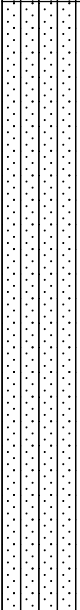

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH415**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	<div>Direct Push</div>			FILL: Grass over silty sand topsoil with trace clay and gravels, fine grained and moist	300408-78-KW	Push Tube					
1				SILTY SAND: Silty sand, dark grey, medium grained, moderately dense, moist with organic odour	300408-79-KW	Push Tube					
2				SILTY SAND: Silty sand, dark grey, medium grained, moderately dense, wet with H2S odour at 2.6m	300408-80-KW	Push Tube					

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243103.394



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Project: Cooks Cove

Northing: 329558.472

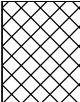
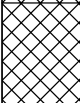
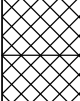

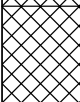
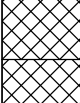
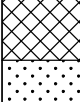
Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH417

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty clay topsoil, fine grained and odourless								
				FILL: Clayey silty sand, grey/brown with ash and glass fragments, moist and dense	290408-29-KW	Push Tube						
				FILL: Clayey sand, grey/orange, moist and dense								
				FILL: Becoming dark grey								
1				FILL: Black silt, fibrous root mass, organic odour, gravels (possible ash), moist to wet	290408-30-KW	Push Tube						
				SAND: Sand, grey, fine to medium grained, moist to wet								
				SILTY SAND: Silty sand, dark grey, moist to wet, moderately dense, organic odour. Shells and rootlets from 2.3m								
2							290408-31-KW	Push Tube				

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243065.891



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Project: Cooks Cove

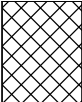
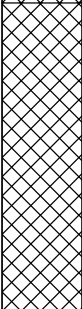
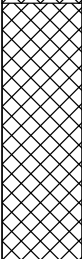


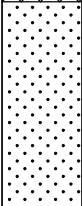

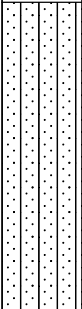
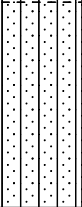
Northing: 329619.808

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH418**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil, fine grained, moist, roots and loose	290408-66KW	Push Tube					
				FILL: Sand, pale grey, fine grained, moderately dense, moist with shells							
				FILL: Clayey silt, dark brown, soft, dense. Layered grey/orange silt from 0.8 to 0.9m	290408-67-KW	Push Tube					
1				FILL: Silty sand, dark brown, fine grained, dense and moist							
				SAND: Sand, pale grey, wet, medium grained and dense	290408-68-KW	Push Tube					
				SILTY SAND: Silty sand, dark brown, fine grained, dense with trace clay							
2				SILTY SAND: Silty sand, grey, fine grained, dense, wet with shells							

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243081.721



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Project: Cooks Cove

Northing: 329679.285

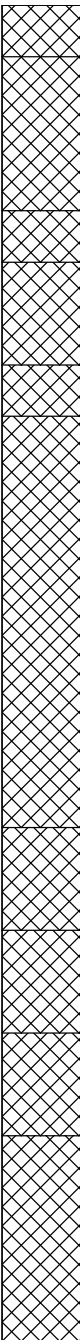




Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH419

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass oversilty sand topsoil, brown, loose, fine grained, rootlets and moist	290408-62-KW	Push Tube						
				FILL: Sand, brown/grey, fine to medium grained, loose, moist with gravels coal and sandstone								
				FILL: Silt, dark brown, moist with gravels	290408-63-KW	Push Tube						
				FILL: Clay, grey/orange, moist, stiff with gravels								
				FILL: Silty sand, black, fine grained, moderately dense, moist with gravels								
				FILL: Sand, pale grey, fine grained with trace clay, moist to wet with shells at 1.5m								
1												
				FILL: Sandy silt, brown/grey and wet								
				FILL: Silty clay, dark brown, soft, wet and dense								
2					FILL: Fibrous black mass, silt, ash, rock, glass and wet	290408-64-KW	Push Tube					
					FILL: Clayey silt, dark brown, soft, wet and dense							
					SAND: Sand, grey with silt, shells, moist to wet and dense	290408-65-KW	Push Tube					

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6243090.111



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Project: Cooks Cove

Northing: 329732.258






Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH420**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Auger Solid Flight			FILL: Grass over silty sand top soil, dark brown, fine grained, loose, moist with roots	020508-165-KW	Push Tube						
				FILL: Sand, yellow, fine grained to medium grained. Moderately dense, moist with shells								
						020508-166-KW	Push Tube					
1						FILL: Silty clay, dark brown. Fine grained sand, dense, moist with organic odour						
						FILL: Sand. Pale grey, fine to medium grained, moist to wet, moderately dense with silt lenses. Wet at 1.6m						
						FILL: Silty sand, minor clay, dark grey, fine grained, moist to wet						
						FILL: Silty clay. Dark brown, fine grained, soft, moist to wet						
2						FILL: Silt. Black, sandy and moist						
				FILL: Crushed sandstone, orange/white, clay content, moist (wet at 2.4m) and odourless								
					020508-167-KW	Push Tube						
				SILTY SAND: NOTE: End depth was null so start depth was used instead. Dark brown, clay content with organic odour.								

Drill Company: Macquarie Drilling

Date Commenced: 02/05/2008

Drill Model:

Date Completed: 02/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243083.702



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Project: Cooks Cove

Northing: 329934.986

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH421**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over sandy topsoil, brown, fine grained, loose, dry with rootlets	300408-105-KW	Push Tube					
				FILL: Sand, pale grey, fine to medium grained, loose, dry with rootlets. Silty clay lenses at 0.3m, shells, moist and dense at 0.6m							
					300408-104-KW	Push Tube					
1					FILL: Silty clay, dark brown, fine grained and dense						
					FILL: Sand, pale grey, medium grained, moderately dense, shells and wet at 1.4m						
					SILTY CLAY: Silty clay, dark brown/grey, fine grained, soft, wet with H2S odour						
2					SILTY SAND: Silty sand, trace clay, dark grey, fine grained, moist with H2S odour						
					SILTY CLAY: Silty clay, dark grey, soft, moist to wet						
					SAND: Sand, pale grey, medium grained, dense, wet with shells						
				SILTY CLAY: Silty clay, dark grey, soft, moist to wet with trace sand							

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243065.802



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Project: Cooks Cove

Northing: 329981.096

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH422**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	<div>Direct Push</div>		<div></div>	FILL: Grass over silty sand topsoil, brown, moist with rootlets	300408-112-KW	Push Tube	<div></div>	<div></div>	<div></div>	<div></div>	
			<div></div>	FILL: Sand, yellow, fine to medium grained, moderately dense with gravels from 0.2-0.4m							
			<div></div>	FILL: Sand, pale grey, fine to medium grained, moderately dense, moist and shells							
			<div></div>	FILL: Silty clay, dark grey, soft and moist to wet							
			<div></div>	SAND: Sand, pale grey, fine to medium grained, moderately dense and moist							
1											
2			<div></div>	SILTY CLAY: Silty clay, dark brown, soft and wet (saturated at 2.0-2.2m) and organic odour	300408-113-KW	Push Tube					
			<div></div>	SILTY SAND: Silty sand, fine to medium grained, brown with organic odour							

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243077.14

Project: Cooks Cove

Northing: 330027.905

Client: Boyd Cook Cove

Elevation:



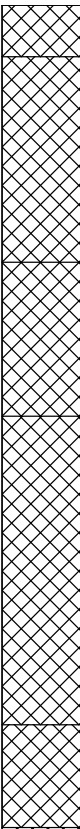



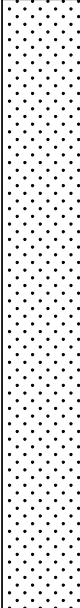
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Location: Cooks Cove

Environmental Log:

**BBH423**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil, brown, fine grained, loose and moist	300408-81-KW	Push Tube					
				FILL: Weathered sandstone, orange/white, medium to coarse grained, moderately dense and moist							
				FILL: Sand, grey to dark grey, medium grained, moderately dense, moist, gravels and ash at 0.7-0.8m	300408-82-KW	Push Tube					
				FILL: Sand, pale grey, silt layers, moist to wet at 1.3m							
1				FILL: Silty sand, dark grey, fine to medium grained, dense, wet with H2S odour. Shells at 2.2m	300408-83-KW	Push Tube					
				SAND: Sand, pale grey, trace silts, medium grained, dense, moist and odourless							
2											

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243018.161



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Project: Cooks Cove

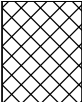
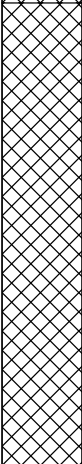
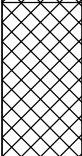
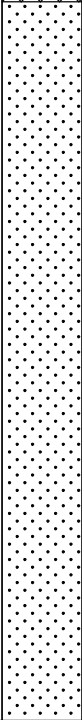
Northing: 329618.635

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH425**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose and moist							
				FILL: Sand, yellow, fine to medium grained, loose, dry to moist, moderately dense with shells at 0.8-1.1m	290408-57-KW	Push Tube					
1				FILL: Clayey silt, black, moderately dense with organic odour							
					290408-58-KW	Push Tube					
2				SAND: Sand, pale grey, wet with numerous unbroken shells							

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243029.629

Project: Cooks Cove

Northing: 329677.034

Client: Boyd Cook Cove

Elevation:

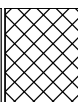
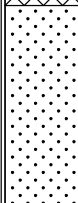


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Location: Cooks Cove

Environmental Log: **BBH426**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0	Direct Push			FILL: Grass over silty sand topsoil, brown, medium grained, loose, dry to moist	290408-69-KW	Push Tube				
				FILL: Sand, yellow grading to pale grey with depth, dense and dry to moist						
					290408-70-KW	Push Tube				
1					FILL: Clayey silt, dark brown, soft. Wet at 1.5m					
				FILL: Silt, dark brown, soft with glass, gravel and roots	290408-71-KW	Push Tube				
2				FILL: Silty sand with trace clay, dark grey, wet and dense						
				SAND: Sand, pale grey, medium grained, dense, wet with shells						

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243015.816



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Project: Cooks Cove

Northing: 329761.281

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH427

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose and moist	290408-59-KW	Push Tube				
				FILL: Clayey sand, brown/orange with concrete rubble, gravels and shells. Some stiffer brown clay						
				FILL: Sand, yellow, medium grained						
					290408-60-KW	Push Tube				
1					FILL: Orange sand lenses					
						290408-61-KW	Push Tube			
2				CLAYEY SILT: Clayey silt, dark brown, stiff dense with shells						

Drill Company: Macquarie Drilling

Date Commenced: 29/04/2008

Drill Model:

Date Completed: 29/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243055.224



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Project: Cooks Cove

Northing: 329789.882





Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH428

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty sand topsoil, brown, loose, dry, fine grained with roots	010508-162-KW	Push Tube							
						FILL: Silty sand, brown, fine grained moist with gravels and roots							
						FILL: Sand, yellow/pale grey with orange mottles, shells and peat sections throughout	010508-163-KW	Push Tube					
1							FILL: Silty clay, dark grey, moist and soft						
							FILL: Sand, grey, fine grained to medium grained, loose, wet with shells and peat layers						
							FILL: Silty clay, dark grey, wet with organic odour						
							FILL: Sand, silt lenses, grey/orange, moist to wet and dense						
							FILL: Silty clay, dark grey, moist and soft						
							FILL: Silty sand, moist with gravels, glass and organic odour	010508-164-KW	Push Tube				
2				FILL: Silt clay, dark brown/black, soft with organic odour									

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6243040.823



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Project: Cooks Cove

Northing: 329870.154

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH429**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, roots and gravels	010508-152-KW	Push Tube						
		FILL: Crushed sandstone (white)										
		FILL: Clayey sand, dark brown, moist, dense with gravels, silt lenses. Ash at 0.5m										
		FILL: Clay, dark grey/brown mottles, moist, stiff, roots and sand at 1.3m		010508-153-KW	Push Tube							
1												
		FILL: Sand, grey, wet, fine grained with silt lenses										
		FILL: Silty clay, dark grey, soft and wet with H2S odour										
2												
		FILL: Sandy silt, black, roots, glass, plastic, moist to wet with gravels and H2S odour		010508-155-KW	Push Tube							
		FILL: Sand with trace silts, grey, fine grained to moist, moderately dense, moist										
	FILL: Silty clay, dark brown, soft with H2S odour											
				End of borehole.								
3												

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243044.653



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Project: Cooks Cove

Northing: 329936.013

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH430

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, moist, rootlets and minor sand	300408-106-KW	Push Tube					
				FILL: Sand, pale grey, fine to medium grained, moderately dense, moist with shells throughout							
				FILL: Silty peat layer at 0.6m (dark brown)							
				FILL: Orange/brown/grey mottles							
1				FILL: Silty clay, dark brown, soft and moist							
				FILL: Sand, pale grey, fine to medium grained, wet with shells. Grading to silty clay at 1.6m							
			FILL: Silty clay, dark brown, stiff however soft due to moisture and organics								
2				FILL: Silt, black with gravels and organic odour	300408-107-KW	Push Tube					
				FILL: Silty clay, dark brown, soft and moist							
		FILL: Sand, grey, fine to medium grained, moist and dense									

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 6243019.116



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Project: Cooks Cove

Northing: 329848.468

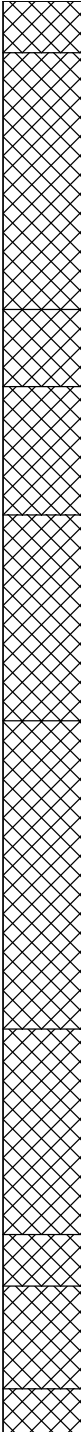


Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH433

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL			
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)						
							0	250	500	750			
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, fine grained, moist with roots	010508-157-KW	Push Tube							
				FILL: Sandy silt clay, brown with gravels, ceramic pieces, charcoal, moist and dense									
					010508-156-KW	Push Tube							
						FILL: Silty clay, brown, moist and hard							
						FILL: Sand (grey) lense at 0.75m							
1						FILL: Silty clay becoming soft and moist							
						FILL: Silty sand, grey, fine grained and wet							
						FILL: Silty clay, dark grey, soft, moist to wet with organic odour							
2						FILL: Silt, black, moist with glass, gravels and sand	010508-159-KW	Push Tube					
						FILL: Silty sand, grey, fine to medium grained, moderately dense and moist							
						FILL: Silty clay, dark brown, moist with H2S odour							

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Sheet: 1 of 1

Project ID: CES050706-BCC

Easting: 6243005.174



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Project: Cooks Cove

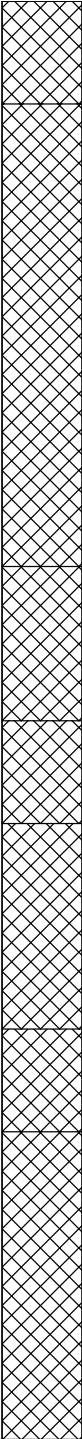
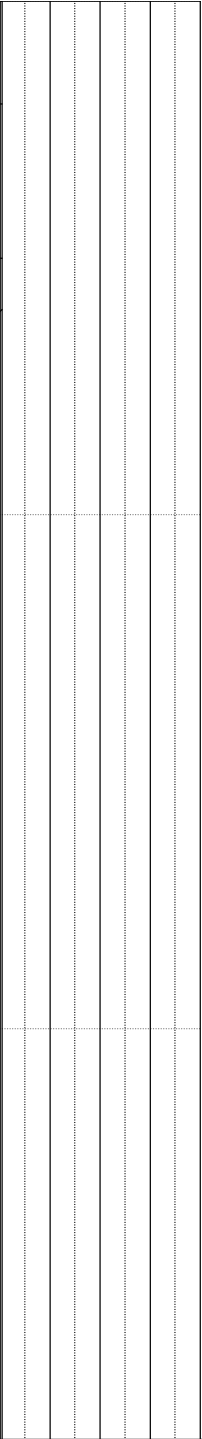
Northing: 329919.656

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH434**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over sandy topsoil, dark brown, loose, dry to moist, rootlets with trace clays	300408-108-KW	Push Tube					
				FILL: Sand, yellow, fine to medium grained, concrete rubble and gravels at 0.4m. Ironstone gravels at 0.8m							
					300408-109-KW	Push Tube					
1					FILL: Sand, grey, fine to medium grained, moderately dense, moist with shells						
					FILL: Sand yellow, fine to medium grained, dense, wet with shells throughout						
					FILL: Sand, grey, fine to medium grained, dense, wet grading to moist at 1.9m, Increasing clay content with depth						
2					FILL: Clayey sand, grey, fine to medium grained and moist						
					FILL: Silty clay, dark brown/grey, moist, soft grading to stiff with depth						

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243031.649



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Project: Cooks Cove

Northing: 329978.796

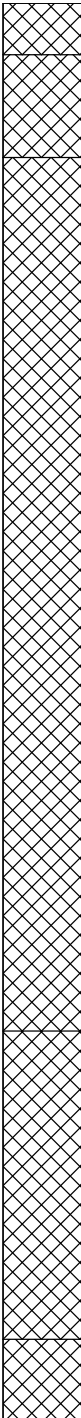


Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH435

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	<div>Direct Push</div>			FILL: Grass over silty sand topsoil with trace clay, brown, moderately dense, dry to moist with rootlets	300408-110-KW	Push Tube						
						FILL: Clayey silt sand, grey/brown, fine grained, dense, dry to moist						
						FILL: Sand, yellow grading to grey at 1.0m, fine to medium grained, moderately dense, moist to wet at 1.4m						
1					300408-111-KW	Push Tube						
2				FILL: Silty clay, dark brown/grey, stiff grading to soft with depth, moist to wet								
				FILL: Silty sand, dark brown/grey, fine grained, moist to wet								

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242995.182



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Project: Cooks Cove

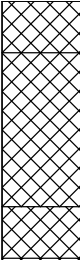

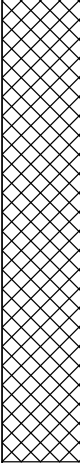
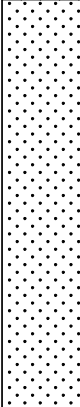
Northing: 330012.116

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH436**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0										
0	↑			FILL: Grass over silty sand topsoil, fine grained, loose, moist with rootlets	300408-87-KW	Push Tube				
				FILL: Sand, pale grey, fine to medium grained, loose, moist with black gravels						
				FILL: Crushed sandstone fill, white, coarse grained and slightly dense						
				FILL: Sand with trace silt and clay at 1.1m, brown/grey/orange, medium grained, dense, moist	300408-88-KW	Push Tube				
1			SAND: Sand, pale grey, medium grained, dense, wet at 1.6m							
2			SANDY CLAY: Sandy silty clay, dark grey, fine grained, moist with organic odour							

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242976.331



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Project: Cooks Cove

Northing: 329674.761

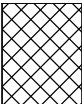
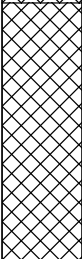

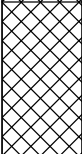
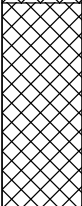
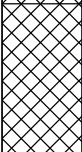


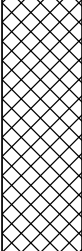

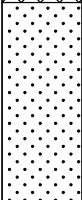
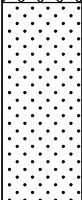
Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH438

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil, brown, dry loose with rootlets							
				FILL: Silty sand with trace clay, brown, dry to moist, dense with rootlets	290408-72-KW	Push Tube					
				FILL: Sand, yellow, fine grained, dense, moist with shells							
1				FILL: Clayey silt, dark brown with brown clay lenses, shells, organics and moist							
				FILL: Sand, yellow/pale grey, medium grained, dense, wet with shells							
				FILL: Clayey silt, dark brown, soft and wet							
				FILL: Silty clay, wet with ash and glass							
2				FILL: Clayey silt, dark brown, soft, dense and wet	290408-73-KW	Push Tube					
				FILL: Clayey silt, dark brown, soft, dense and wet							
					SAND: Sand, grey, moist to wet, dense with shells						

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6242962.433



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Project: Cooks Cove

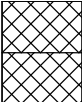


Northing: 329755.357

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH439**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand topsoil with trace clay, brown, fine grained, dry with roots	010508-133-KW	Push Tube	 					
				FILL: Sandy clay, brown sand with orange clay, black gravels, glass, dry and odourless	010508-134-KW	Push Tube						
				FILL: Silty sand, dark brown/orange with black gravels								
				FILL: Sand, yellow, fine to medium grained, loose, dry to moist. Shells at 1.0m with orange sand								
1												
2												

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6242971.259



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Project: Cooks Cove

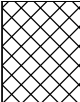
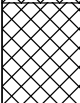
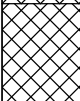
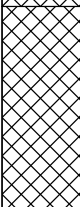
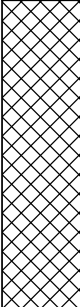
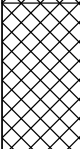
Northing: 329862.301

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH441**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand topsoil, fine grained, dark brown, loose, dry with roots	010508-150-KW	Push Tube						
				FILL: Sand, yellow, fine grained, dry and loose								
				FILL: Silty sand, brown, dry with shells								
				FILL: Sand, pale grey, fine to medium grained, slightly dense, moist to wet with shells throughout								
1						010508-151-KW	Push Tube					
2					FILL: Sand, grey with silt lenses, fine to medium grained, dense and wet							
					FILL: Silty clay, dark grey, soft and wet							

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243065.802



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Project: Cooks Cove

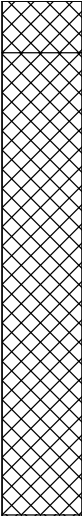

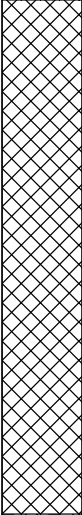

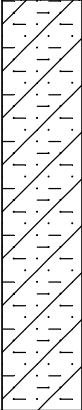
Northing: 329981.096

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH442**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty clay topsoil with trace sand, dark brown, fine grained, moist with rootlets	300408-102-KW	Push Tube						
				FILL: Sand, brown/grey, fine to medium grained, loose, moist with shells								
1				FILL: Sand, pale grey, medium grained, moist, broken shells. Rock/gravels at 1.3m	300408-103-KW	Push Tube						
2				SILTY CLAY: Silty clay, dark brown, organic odour, moist and soft								

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242955.64

Project: Cooks Cove

Northing: 330006.678

Client: Boyd Cook Cove

Elevation:

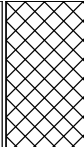

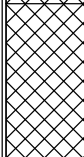
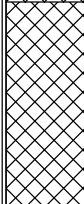
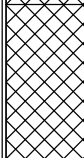
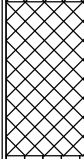
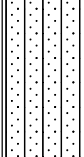
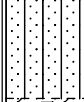
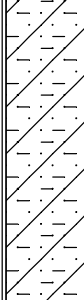


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Location: Cooks Cove

Environmental Log: **BBH443**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, fine grained, loose to firm, dry to moist with rootlets						
				FILL: Sand, trace clay, grey, fine grained, dense, moist to dry, gravels						
				FILL: Crushed sandstone, orange/white, coarse grained, dense, moist to dry with rock/gravels	300408-90-KW	Push Tube				
					300408-89-KW	Push Tube				
				FILL: Sand, dark grey, fine to medium grained, dense, trace clay, moist, grading to light grey with orange sand at 1.1m						
1				FILL: Silty clay, dark grey, minor medium grained sand, very dense with no odour						
				FILL: Sand, grey/orange, medium grained, moderately dense, wet at 1.5m						
				SILTY SAND: Silty sand, dark grey, fine grained, dense and moist to wet						
2				SILTY CLAY: Silty clay, dark grey, fine grained, dense and moist	300408-91-KW	Push Tube				

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting:

Project: Cooks Cove

Northing:

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove










Environmental Log:

BBH445



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DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, loose, dry with roots	010508-138-KW	Push Tube						
				FILL: Sand, yellow, fine to medium grained, loose, dry. Brown silty lense at 1.2m	010508-137-KW	Push Tube						
					010508-136-KW	Push Tube						
1						FILL: Silty sand, grey, fine to medium grained, moist and dense	010508-139-KW	Push Tube				
				FILL: Silty clay, dark brown, soft and wet								
2						SAND: Sand with trace silt, grey, fine to medium grained, moderately dense, shells throughout						
						SILTY CLAY: Silty clay, dark grey, wet and soft with H2S odour						
						SILTY SAND: Silty sand, fine to medium grained, wet with shells and dense						
						SILTY CLAY: Silty clay, dark grey, moist and soft						
3						SILTY SAND: Silty sand, grey, fine to medium grained, moist with H2S odour						
			SILTY CLAY: Silty clay, dark grey, soft wet with H2S odour									
			SILT: Silt, black, moist to dry, fine grained with H2S odour									
4												

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242919.264



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Project: Cooks Cove

Northing: 329830.177

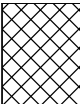


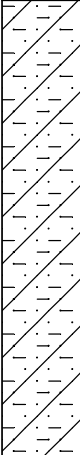
Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH446**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty clay topsoil, dark brown, moist with roots and gravels	010508-146-KW	Push Tube						
				FILL: Sand, yellow, fine to medium grained layers, moist and loose								
				FILL: Silty clay, dark grey/brown mottles, moist and rootlets	010508-147-KW	Push Tube						
							FILL: Sand, yellow, fine grained, loose and moist					
1							FILL: Silty clay, dark grey, moist and soft					
							FILL: Sand, white/pale grey, fine to medium grained, loose, moist to dry					
							FILL: Silty clay, dark grey, wet, soft with organic odour					
				SILTY SAND: Silty sand, grey, moist and dense								
				SILTY SAND: Silty sand, grey, moist to wet at 1.4m, dense with shells throughout								
2				SILTY CLAY: Silty clay, dark grey, wet, soft, H2S odour and shells at 2.7m								

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242925.015



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Project: Cooks Cove

Northing: 329881.732

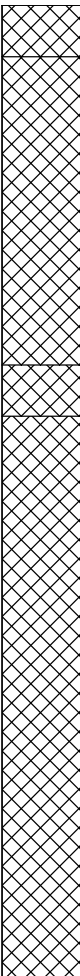



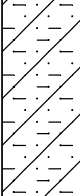
Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH447**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0											
Direct Push				FILL: Grass over silty sand topsoil, brown, fine grained, loose, dry and roots	010508-144-KW	Push Tube					
				FILL: Sand, yellow, fine to medium grained, loose, dry, becoming moist at 0.5m							
				FILL: Silty sand, dark brown, fine grained, rootlets, moderately dense and moist	010508-145-KW	Push Tube					
				FILL: Sand, pale grey, medium grained, moist, moderately dense, shells and gravels, brown silty clay lenses at 1.4m, moist to wet from 1.4m							
				FILL: Silty clay, dark grey, minor sand, wet, soft with organic odour							
				FILL: Sand, pale grey, fine to medium grained, wet and moderately dense							
				FILL: Soft clay, dark grey, wet, soft with organic odour							
				SAND: Sand, pale grey, dark grey, moderately dense, fine to medium grained, moist to wet with H2S odour							
				SILTY CLAY: Silty clay, dark grey, moist, soft with H2S odour							
											

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6242916.076



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Project: Cooks Cove

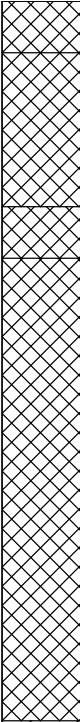



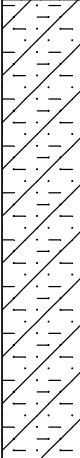
Northing: 329928.224

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH448**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0										
Direct Push				FILL: Grass over silty clay topsoil, brown, stiff, moist with rootlets	300408-98-KW	Push Tube				
				FILL: Sand, pale grey, fine to medium grained, loose to dense, moist. Shells at 0.3m						
				FILL: Silty clay, dark brown, shells, soft with organic odour	300408-99-KW	Push Tube				
				FILL: Sand, fine to medium grained, pale grey, and wet						
1					300408-100-KW	Push Tube				
2				SILTY CLAY: Silty clay, soft, wet, brown with organic odour. Stiffer from 2.0m						
				SILTY SAND: Silty sand, grey, fine grained, dense, moist with organic odour						
				SILTY CLAY: Silty clay, brown, stiff, moist with organic odour. Becoming stiffer with depth						

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242777.469



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Project: Cooks Cove

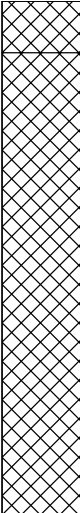


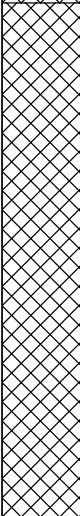

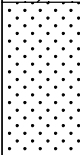
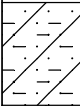

Northing: 329955.331

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH450**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil, brown, dry, loose with roots	010508-140-KW	Push Tube					
				FILL: Sand, yellow, fine to medium grained, loose, dry to moist (increasing with depth), minor charcoal/coal fragments, from 0.1-0.8m. Crushed white sandstone at 0.8m							
				010508-141-KW	Push Tube						
1					FILL: Sand, yellow/pale grey, loose, moist to wet and shells throughout						
2					SILTY CLAY: Silty clay, dark grey, soft and wet						
			SAND: Sand, dark grey, fine to medium grained, wet and dense with shells at silt lenses								
			SILTY CLAY: Silty clay, dark grey, moist and soft								
			SILTY CLAY: Sand with silt lenses, dark grey, fine to medium grained and moist								

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242875.203



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Project: Cooks Cove

Northing: 329862.954












Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH451**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Sand, yellow, fine to medium grained, moist and loose	010508-A1-KW	Grab						
					FILL: Silty clay, brown, moist and soft with roots	010508-142-KW	Push Tube					
							010508-143-KW	Push Tube				
						FILL: Sand, pale grey with orange lenses						
1						FILL: Silty clay, dark brown, soft and wet						
						SAND: Sand, grey fine to medium grained, dense with shells, silt lenses and H2S odour						
						SILTY CLAY: Silty clay, dark grey, wet, soft with H2S odour						
												
2						SILTY SAND: Silty sand, grey, fine to medium grained, wet and dense with H2S odour						
						CLAYEY SAND: Clayey silty sand, grey, soft and wet with H2S odour						
						SILTY SAND: Silty sand, grey, wet and dense with shells						
				SILTY CLAY: Silty clay with trace sand, wet with shells and H2S odour								

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242877.696



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Project: Cooks Cove





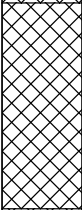
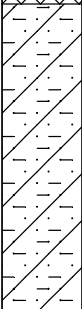
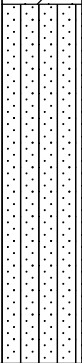
Northing: 329916.604

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH452**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0												
Direct Push				FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with rootlets and trace clays	300408-96-KW	Push Tube						
				FILL: Sandy clay, dark brown, fine grained, dense/stiff and moist								
				FILL: Sand, pale grey, fine to medium grained, loose and dense, moist with shells at 0.7-0.8m	300408-97-KW	Push Tube						
				FILL: Silty clay, brown/dark grey mottles, stiff and moist								
				FILL: Silty clay, dark brown, stiff, moist with organic odour. Soft layer at 1.4m								
				FILL: Sand, aple grey, wet, fine to medium grained, loose with shells								
				SILTY CLAY: Silty clay, dark brown, soft and wet								
2				SILTY SAND: Silty sand with trace clay, dark grey, wet and soft with shells. Increasing clay content from 2.4m								

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242882.563



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Project: Cooks Cove

Northing: 329994.194

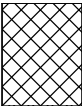

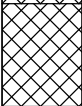

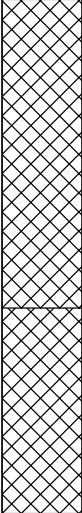
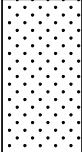
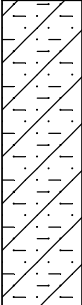


Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH453**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil with trace clay, brown, dense, fine grained and moist with rootlets							
				FILL: Crushed sandstone, orange/white, coarse grained and dry	300408-92-KW	Push Tube					
					FILL: Sand, brown, fine to medium grained, loose and dry						
				FILL: Clayey sand, brown, fine grained, dense and moist	300408-93-KW	Push Tube					
					FILL: Silty clay with trace sand, dark brown, fine grained, soft and dense, moist with slight organic odour						
1					SAND: Sand, grey, medium grained, dense and wet						
					SILTY CLAY: Silty sandy clay, dark grey, fine grained, moist, soft and dense						
2					SILT: Silt, black, moist with H2S odour						
					SAND: Sand with trace silt and clay, pale grey, medium grained, dense and moist						

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242816.885



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Project: Cooks Cove

Northing: 329876.016

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

**BBH455**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Direct Push			FILL: Grass over silty sand topsoil, fine grained, dry to moist with rootlets	010508-120-KW	Push Tube						
				FILL: Sand, light brown, fine to medium grained, loose, dry to moist								
				FILL: Silty sand, dark brown, fine grained, loose and dry to moist								
				FILL: Sand, yellow/pale grey, fine grained, loose, dry to moist	010508-121-KW	Push Tube						
				FILL: Silty clay, dark brown and dry								
				FILL: Sand, yellow, fine to medium grained, dense and moist								
				SAND: Sand, pale grey, medium grained, dense, moist with shells								
1												
				SAND: Sand, dark grey, medium grained, dense, moist to wet with shells throughout								
2												
				SILTY CLAY: Silty clay, dark grey, moist to wet with organic odour								
				SILTY SAND: Silty sand, dark grey, medium grained and moist								
				SILT: Silt, black, moist with organic odour								
				End of borehole.								
3												

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting:

Project: Cooks Cove

Northing:

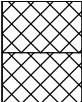




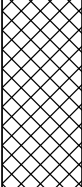

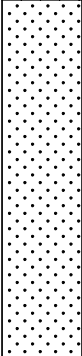
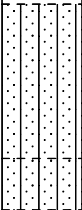




Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove



Environmental Log: **BBH456**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL				
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)							
							0	250	500	750				
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grain, dense, moist with rootlets	010508-118-KW	Push Tube								
				FILL: Sandy silt, brown, moist and dense										
				FILL: Sandy clay, brown with weathered/crushed sandstone (white/yellow)										
				FILL: Silty clay, brown/grey, moderately stiff										
				FILL: Sand, yellow, fine to medium grained, slightly dense, moist with shells										
1							010508-119-KW	Push Tube						
						SAND: Sand, pale grey, fine to medium grained, moderately dense, moist to wet at 1.4m								
						SILTY SAND: Silty sand, grading to silty clay, wet from 1.9-2.2m								
2						SILTY SAND: Silty sand, grey, fine grained, moist and dense								
						SILTY CLAY: Silty clay, dark grey, fine grained, soft, moist to wet								
				SILTY SAND: Silty sand, grey, fine grained, moist and dense										
				SILTY CLAY: Silty clay, grey, minor sand and moist to wet										

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6242838.899



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Project: Cooks Cove

Northing: 329986.908






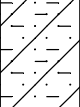

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log:

BBH457

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, loose, moist with rootlets							
				FILL: Sandy clay, brown, fine grained, soft, moist with rootlets							
				FILL: Sand, dry to moist, black with ash(black and white), crunchy and sharp	300408-94-KW	Push Tube					
				FILL: Crushed weathered sandstone with trace clay, white/orange, dense and dry to moist							
				SILTY CLAY: Silty clay, dark brown, fine grained, stiff, soft from 1.1m, shells at 1.3m and organic odour							
1					300408-95-KW	Push Tube					
2											

Drill Company: Macquarie Drilling

Date Commenced: 30/04/2008

Drill Model:

Date Completed: 30/04/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6242800.902



Jones Bay Wharf 19-21, Lower Level Suite 121  
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PH: (02) 8569 2200 FAX: (02) 9552 4399

Project: Cooks Cove

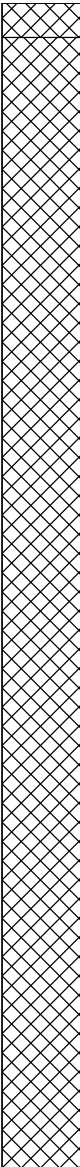


Northing: 329820.421

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BBH458**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL				
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)							
							0	250	500	750				
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, loose, dry with rootlets	010508-124-KW	Push Tube								
				FILL: Sand pale grey, fine to medium grained, loose and dry. Interspersed silt layers. H2S odour at 2.6m. Moist to wet at 2.8m	010508-123-KW	Push Tube								
					010508-122-KW	Push Tube								
1							010508-125-KW	Push Tube						
2														
3														

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting:

Project: Cooks Cove

Northing:


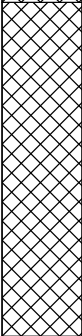
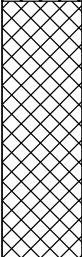

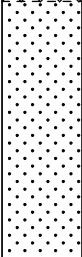
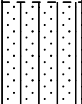
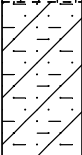
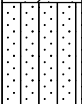
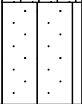
Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove



Environmental Log: **BBH460**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)			
							0	250	500	750
0	Direct Push			FILL: Grass over silty sand topsoil, dark brown, fine grained, moist with rootlets	010508-114-KW	Push Tube				
				FILL: Sand, yellow, fine to medium grained, moderately dense, moist shells, silty clay, lenses at 0.8m						
1				FILL: Sand, pale grey, fine to medium grained, moderately dense and moist						
				FILL: Silty clay, dark grey, soft, fine grained, moist to wet						
				SAND: Sand, pale grey, fine to medium grained, wet at 1.5m and shells						
				SILTY SAND: Silty sand, dark grey, fine to medium grained, wet with shells						
2				SILTY CLAY: Silty clay, dark grey, fine grained, soft to dense and wet						
				SILTY SAND: Silty sand, grey, medium grained, moist with shells						
				SANDY SILT: Sandy silt, black/dark grey, organic and H2S odour						

Drill Company: Macquarie Drilling

Date Commenced: 01/05/2008

Drill Model:

Date Completed: 01/05/2008

Hole Diameter (mm):

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243088.007



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Project: Cooks Cove

Northing: 329478.534

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BLG401**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Auger Solid Flight			FILL: Sandy clay, brown with concrete rubble and gravel, crushed sandstone and ironstone gravels	020508-185-KW	Push Tube						
				FILL: Clay, orange/grey/red mottled, gravels, shell, dry								
				FILL: Sand, yellow, fine grained, dry to moist, gravels and clear plastic sheeting								
1				FILL: Black gravels, sand and dry	020508-186-KW	Push Tube						
				FILL: Clay. Grey/orange/red, gravels, stiff and dry								
				FILL: Clayey sand, brown/grey/red, with brown gravels, glass at 1.9m, crushed brick/sandstone								
2				SAND: Grey, fine grained, dense, dry to moist with silt lenses								
				SAND: Pale grey, fine to medium grained, minor silt throughout, moist and dense. Becoming wet at 3.4m								
3												

Drill Company: Macquarie Drilling

Date Commenced: 02/05/2008

Drill Model:

Date Completed: 02/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243088.007



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Project: Cooks Cove

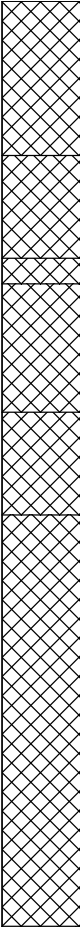

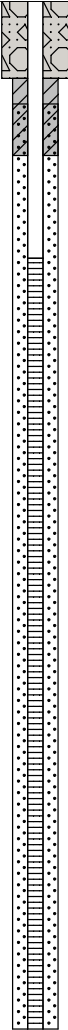


Northing: 329478.534

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BLG402**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION						WELL DETAIL
Depth	Method	Water	Symbol	Description	Sample ID	Type	○	FID/PID (ppm)			
								250	500	750	
0	Auger Solid Flight			FILL: Grass over silty clay top soil, brown, fine grained, moist, loose with rootlets	020508-172-KW	Push Tube					
				FILL: Silty sand clay, brown, dense, slightly moist, rootlets							
				FILL: Silty sand, light brown, fine grained, dense, moist and shells	020508-173-KW	Push Tube					
				FILL: Sand, pale grey, medium grained, dense, moist, orange sand mottles							
				FILL: Silty clay, brown/orange/grey mottles, moist and stiff							
1				FILL: Silty sand, dark grey, fine grained, gravels, moist, wet at 1.7m. Minor clay content	020508-174-KW	Push Tube					
2	SILTY SAND: Silty clay sand, dark grey/brown, fine grained, soft and wet										

Drill Company: Macquarie Drilling

Date Commenced: 02/05/2008

Drill Model:

Date Completed: 02/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir



Project ID: CES050706-BCC

Easting: 6243088.007



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Project: Cooks Cove


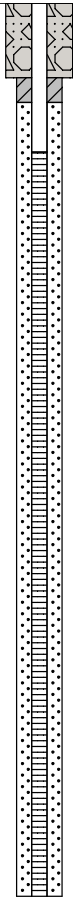
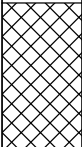
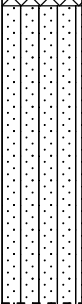
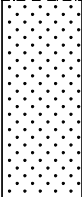



Northing: 329478.534

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BLG404**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL		
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)					
							0	250	500	750		
0	Auger Solid Flight			FILL: Silty sand top soil, brown, fine grained, dry and loose with gravels	020508-178-KW	Push Tube						
				UNKNOWN: Coreless								
1				FILL: Sand, pale grey, fine grained, loose and dry. Silt layers interspersed, dark brown with ash	020508-179-KW	Push Tube						
				SILTY SAND: Dark brown, fine grained, wet at 1.5m and shells								
2				SAND: Pale grey, fine to medium grained, wet and dense								
				SILTY SAND: Silty sand with clay content, dark grey and fine grained								
				SAND: Pale grey, fine to medium grained								
				SILTY CLAY: Dark brown, wet with H2S odour	020508-180-KW	Push Tube						
				End of borehole.								

Drill Company: Macquarie Drilling

Date Commenced: 02/05/2008

Drill Model:

Date Completed: 02/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243174.979



Project: Cooks Cove













Northing: 329414.632

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BMW401**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL							
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)										
							0	250	500		750						
0	↑ Auger Solid Flight ↓			TOPSOIL: Grass over silty sand, brown, dry, loose, rootlets with gravels.	020508-187-KW	Push Tube											
				CONCRETE: Concrete rubble													
				FILL: Crushed weathered sandstone													
				FILL: Clayey sand fill, brown, fine grained, dry, large gravels.	020508-A2-KW	Push Tube											
				FILL: Crushed sandstone fill, white, dry.													
1				FILL: Clay fill with brown/orange sand, dry with black gravels. Asbestos fragments at 0.7m.													
				FILL: Crushed sandstone, coarse grained, orange.	020508-188-LJ	Push Tube											
				FILL: Fill. Clay, brown/orange, stiff, dry, gravels, crushed sandstone, sandy clay with ash at 1.3m.													
2				SAND: Sand. Dark grey grading to pale grey. Fine grained, moist and loose. Becoming wet at 3.4m. Silt lenses throughout at depth.													
3																	
4																	

Drill Company: Macquarie Drilling

Date Commenced: 02/05/2008

Drill Model:

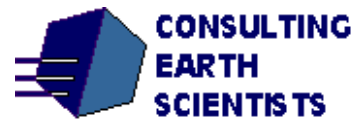
Date Completed: 02/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir

Project ID: CES050706-BCC

Easting: 6243090.111



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Project: Cooks Cove

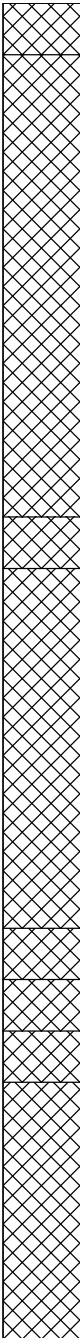
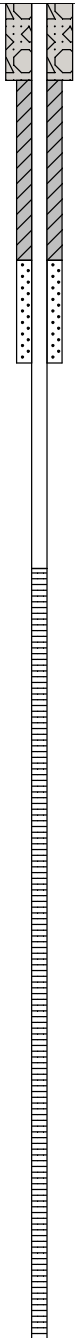
Northing: 329732.258

Client: Boyd Cook Cove

Elevation:

Location: Cooks Cove

Environmental Log: **BMW402**

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500		750
0	Auger Solid Flight			FILL: Grass over silty sand top soil, dark brown, fine grained, loose, moist with roots							
				FILL: Sand, yellow, fine grained to grained. Moderately dense, moist with shells							
1				FILL: Silty clay, dark brown. Fine grained sand, dense, moist with organic odour							
				FILL: Sand. Pale grey, fine to medium grained, moist to wet, moderately dense with silt lenses. Wet at 1.6m							

Drill Company: Macquarie Drilling

Date Commenced: 02/05/2008

Drill Model:

Date Completed: 02/05/2008

Hole Diameter (mm): 75

Logged/checked by: Jenkins/Weir



Sheet: 1 of 1

Project ID:

Project:


Client:

Location:

Easting:









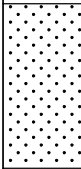
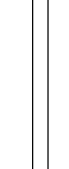
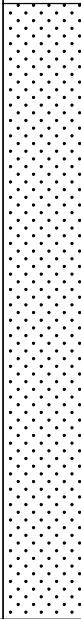
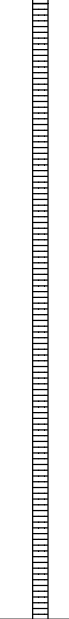
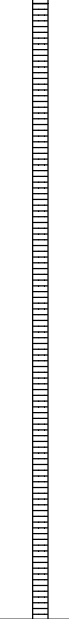
Northing:

Elevation:

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26-32 Pirrama Road Pyrmont 2009  
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Environmental Log:

DRILLING INFO.			LITHOLOGY		SAMPLING INFORMATION					WELL DETAIL	
Depth	Method	Water	Symbol	Description	Sample ID	Type	FID/PID (ppm)				
							0	250	500	750	
0											
Auger Solid Flight				FILL: Grass over silty sand top soil, brown, dry, loose with roots	020508-175-KW	Push Tube					
				FILL: Crushed sandstone, white, coarse grained, gravels and ceramics							
				FILL: Sand, brown, fine grained, loose, dry, black gravels with silt inclusions	020508-176-KW	Push Tube					
				FILL: Sand, black, dry with black as gravels							
				UNKNOWN: Core loss							
				SAND: Sand, yellow, fine to medium grained, loose, dry to moist							
				UNKNOWN: Core loss							
				SAND: Sand, grey, fine to medium grained, silt lenses, dry to moist							
					020508-177-KW	Push Tube					
3											

Drill Company:

Drill Model:

Hole Diameter (mm):

Date Commenced:

Date Completed:

Logged/checked by:

Sheet:

## **Appendix 6**

### **Summary of 95% UCL Calculation**

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.122/02/2023 6:05:32 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	B(a)P TEQ											
12												
13	General Statistics											
14	Total Number of Observations				86		Number of Distinct Observations				28	
15							Number of Missing Observations				0	
16	Minimum				0.244		Mean				0.636	
17	Maximum				5.755		Median				0.244	
18	SD				1.022		Std. Error of Mean				0.11	
19	Coefficient of Variation				1.607		Skewness				3.612	
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic				0.445		Shapiro Wilk GOF Test					
23	5% Shapiro Wilk P Value				0		Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic				0.351		Lilliefors GOF Test					
25	5% Lilliefors Critical Value				0.0957		Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
30	95% Student's-t UCL				0.82		95% Adjusted-CLT UCL (Chen-1995)				0.864	
31							95% Modified-t UCL (Johnson-1978)				0.827	
32												
33	Gamma GOF Test											
34	A-D Test Statistic				14.43		Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value				0.779		Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic				0.309		Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value				0.0989		Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)				1.155		k star (bias corrected MLE)				1.122	
42	Theta hat (MLE)				0.551		Theta star (bias corrected MLE)				0.567	
43	nu hat (MLE)				198.6		nu star (bias corrected)				193	
44	MLE Mean (bias corrected)				0.636		MLE Sd (bias corrected)				0.601	
45							Approximate Chi Square Value (0.05)				161.9	
46	Adjusted Level of Significance				0.0472		Adjusted Chi Square Value				161.4	
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))				0.759		95% Adjustor Gamma UCL (use when n<50)				0.761	
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic				0.649		Shapiro Wilk Lognormal GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L
53	5% Shapiro Wilk P Value					0	Data Not Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.315	Lilliefors Lognormal GOF Test					
55	5% Lilliefors Critical Value					0.0957	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					-1.411	Mean of logged Data					-0.944
60	Maximum of Logged Data					1.75	SD of logged Data					0.794
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					0.637	90% Chebyshev (MVUE) UCL					0.685
64	95% Chebyshev (MVUE) UCL					0.754	97.5% Chebyshev (MVUE) UCL					0.851
65	99% Chebyshev (MVUE) UCL					1.041						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data do not follow a Discernible Distribution (0.05)											
69												
70	Nonparametric Distribution Free UCLs											
71	95% CLT UCL					0.818	95% Jackknife UCL					0.82
72	95% Standard Bootstrap UCL					0.816	95% Bootstrap-t UCL					0.913
73	95% Hall's Bootstrap UCL					0.833	95% Percentile Bootstrap UCL					0.832
74	95% BCA Bootstrap UCL					0.866						
75	90% Chebyshev(Mean, Sd) UCL					0.967	95% Chebyshev(Mean, Sd) UCL					1.117
76	97.5% Chebyshev(Mean, Sd) UCL					1.325	99% Chebyshev(Mean, Sd) UCL					1.733
77												
78	Suggested UCL to Use											
79	95% Chebyshev (Mean, Sd) UCL					1.117						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.17/03/2023 10:01:13 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10												
11	B(a)P											
12												
13	General Statistics											
14	Total Number of Observations				88		Number of Distinct Observations				16	
15							Number of Missing Observations				0	
16	Minimum				0.05		Mean				0.249	
17	Maximum				1.4		Median				0.205	
18	SD				0.233		Std. Error of Mean				0.0248	
19	Coefficient of Variation				0.936		Skewness				3.292	
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic				0.573		Shapiro Wilk GOF Test					
23	5% Shapiro Wilk P Value				0		Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic				0.37		Lilliefors GOF Test					
25	5% Lilliefors Critical Value				0.0946		Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)						
30	95% Student's-t UCL				0.29		95% Adjusted-CLT UCL (Chen-1995)				0.299	
31							95% Modified-t UCL (Johnson-1978)				0.291	
32												
33	Gamma GOF Test											
34	A-D Test Statistic				7.781		Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value				0.763		Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic				0.315		Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value				0.0964		Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)				2.221		k star (bias corrected MLE)				2.153	
42	Theta hat (MLE)				0.112		Theta star (bias corrected MLE)				0.115	
43	nu hat (MLE)				391		nu star (bias corrected)				379	
44	MLE Mean (bias corrected)				0.249		MLE Sd (bias corrected)				0.169	
45							Approximate Chi Square Value (0.05)				334.9	
46	Adjusted Level of Significance				0.0473		Adjusted Chi Square Value				334.2	
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))				0.281		95% Adjusted Gamma UCL (use when n<50)				0.282	
50												

	A	B	C	D	E	F	G	H	I	J	K	L
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic					0.852	Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk P Value					2.222E-12	Data Not Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.276	Lilliefors Lognormal GOF Test					
55	5% Lilliefors Critical Value					0.0946	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					-2.996	Mean of logged Data					-1.633
60	Maximum of Logged Data					0.336	SD of logged Data					0.647
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					0.276	90% Chebyshev (MVUE) UCL					0.294
64	95% Chebyshev (MVUE) UCL					0.319	97.5% Chebyshev (MVUE) UCL					0.353
65	99% Chebyshev (MVUE) UCL					0.419						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data do not follow a Discernible Distribution (0.05)											
69												
70	Nonparametric Distribution Free UCLs											
71	95% CLT UCL					0.29	95% Jackknife UCL					0.29
72	95% Standard Bootstrap UCL					0.289	95% Bootstrap-t UCL					0.307
73	95% Hall's Bootstrap UCL					0.307	95% Percentile Bootstrap UCL					0.293
74	95% BCA Bootstrap UCL					0.303						
75	90% Chebyshev(Mean, Sd) UCL					0.323	95% Chebyshev(Mean, Sd) UCL					0.357
76	97.5% Chebyshev(Mean, Sd) UCL					0.404	99% Chebyshev(Mean, Sd) UCL					0.496
77												
78	Suggested UCL to Use											
79	95% Chebyshev (Mean, Sd) UCL					0.357						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.16/03/2023 5:23:16 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Cu											
11												
12	General Statistics											
13	Total Number of Observations				156	Number of Distinct Observations				90		
14	Number of Detects				141	Number of Non-Detects				15		
15	Number of Distinct Detects				89	Number of Distinct Non-Detects				2		
16	Minimum Detect				1.1	Minimum Non-Detect				1		
17	Maximum Detect				260	Maximum Non-Detect				5		
18	Variance Detects				1531	Percent Non-Detects				9.615%		
19	Mean Detects				22.62	SD Detects				39.13		
20	Median Detects				9.9	CV Detects				1.73		
21	Skewness Detects				3.925	Kurtosis Detects				17.87		
22	Mean of Logged Detects				2.365	SD of Logged Detects				1.16		
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic				0.53	Normal GOF Test on Detected Observations Only						
26	5% Shapiro Wilk P Value				0	Detected Data Not Normal at 5% Significance Level						
27	Lilliefors Test Statistic				0.291	Lilliefors GOF Test						
28	5% Lilliefors Critical Value				0.075	Detected Data Not Normal at 5% Significance Level						
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean				20.55	KM Standard Error of Mean				3.022		
33	KM SD				37.61	95% KM (BCA) UCL				25.84		
34	95% KM (t) UCL				25.55	95% KM (Percentile Bootstrap) UCL				25.68		
35	95% KM (z) UCL				25.52	95% KM Bootstrap t UCL				27.51		
36	90% KM Chebyshev UCL				29.62	95% KM Chebyshev UCL				33.73		
37	97.5% KM Chebyshev UCL				39.43	99% KM Chebyshev UCL				50.62		
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic				5.291	Anderson-Darling GOF Test						
41	5% A-D Critical Value				0.794	Detected Data Not Gamma Distributed at 5% Significance Level						
42	K-S Test Statistic				0.176	Kolmogorov-Smirnov GOF						
43	5% K-S Critical Value				0.0819	Detected Data Not Gamma Distributed at 5% Significance Level						
44	Detected Data Not Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)				0.789	k star (bias corrected MLE)				0.777		
48	Theta hat (MLE)				28.68	Theta star (bias corrected MLE)				29.13		
49	nu hat (MLE)				222.5	nu star (bias corrected)				219.1		
50	Mean (detects)				22.62							



	A	B	C	D	E	F	G	H	I	J	K	L
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58	Minimum					0.01	Mean					20.45
59	Maximum					260	Median					8.5
60	SD					37.79	CV					1.848
61	k hat (MLE)					0.483	k star (bias corrected MLE)					0.478
62	Theta hat (MLE)					42.36	Theta star (bias corrected MLE)					42.8
63	nu hat (MLE)					150.6	nu star (bias corrected)					149.1
64	Adjusted Level of Significance ( $\beta$ )					0.0485						
65	Approximate Chi Square Value (149.06, $\alpha$ )					121.8	Adjusted Chi Square Value (149.06, $\beta$ )					121.6
66	95% Gamma Approximate UCL (use when n>=50)					25.02	95% Gamma Adjusted UCL (use when n<50)					25.06
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					20.55	SD (KM)					37.61
70	Variance (KM)					1415	SE of Mean (KM)					3.022
71	k hat (KM)					0.299	k star (KM)					0.297
72	nu hat (KM)					93.17	nu star (KM)					92.71
73	theta hat (KM)					68.82	theta star (KM)					69.16
74	80% gamma percentile (KM)					31.45	90% gamma percentile (KM)					60.69
75	95% gamma percentile (KM)					94.31	99% gamma percentile (KM)					181.8
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (92.71, $\alpha$ )					71.51	Adjusted Chi Square Value (92.71, $\beta$ )					71.34
79	95% Gamma Approximate KM-UCL (use when n>=50)					26.65	95% Gamma Adjusted KM-UCL (use when n<50)					26.71
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Approximate Test Statistic					0.967	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk P Value					0.03	Detected Data Not Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.0841	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.075	Detected Data Not Lognormal at 5% Significance Level					
86	Detected Data Not Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					20.53	Mean in Log Scale					2.113
90	SD in Original Scale					37.74	SD in Log Scale					1.356
91	95% t UCL (assumes normality of ROS data)					25.53	95% Percentile Bootstrap UCL					25.7
92	95% BCA Bootstrap UCL					26.95	95% Bootstrap t UCL					27.59
93	95% H-UCL (Log ROS)					27.45						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					2.142	KM Geo Mean					8.517
97	KM SD (logged)					1.296	95% Critical H Value (KM-Log)					2.498
98	KM Standard Error of Mean (logged)					0.104	95% H-UCL (KM -Log)					25.58
99	KM SD (logged)					1.296	95% Critical H Value (KM-Log)					2.498
100	KM Standard Error of Mean (logged)					0.104						

	A	B	C	D	E	F	G	H	I	J	K	L
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					20.51	Mean in Log Scale					2.081
105	SD in Original Scale					37.75	SD in Log Scale					1.411
106	95% t UCL (Assumes normality)					25.51	95% H-Stat UCL					29.22
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Data do not follow a Discernible Distribution at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM (Chebyshev) UCL					33.73						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.122/02/2023 3:45:06 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Lead											
11												
12	General Statistics											
13	Total Number of Observations				157	Number of Distinct Observations				91		
14	Number of Detects				151	Number of Non-Detects				6		
15	Number of Distinct Detects				89	Number of Distinct Non-Detects				2		
16	Minimum Detect				1.1	Minimum Non-Detect				1		
17	Maximum Detect				1200	Maximum Non-Detect				5		
18	Variance Detects				19471	Percent Non-Detects				3.822%		
19	Mean Detects				63.45	SD Detects				139.5		
20	Median Detects				26	CV Detects				2.199		
21	Skewness Detects				5.963	Kurtosis Detects				41.82		
22	Mean of Logged Detects				3.158	SD of Logged Detects				1.441		
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic				0.422	Normal GOF Test on Detected Observations Only						
26	5% Shapiro Wilk P Value				0	Detected Data Not Normal at 5% Significance Level						
27	Lilliefors Test Statistic				0.327	Lilliefors GOF Test						
28	5% Lilliefors Critical Value				0.0725	Detected Data Not Normal at 5% Significance Level						
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean				61.08	KM Standard Error of Mean				10.96		
33	KM SD				136.9	95% KM (BCA) UCL				80.13		
34	95% KM (t) UCL				79.22	95% KM (Percentile Bootstrap) UCL				79.91		
35	95% KM (z) UCL				79.11	95% KM Bootstrap t UCL				93.6		
36	90% KM Chebyshev UCL				93.97	95% KM Chebyshev UCL				108.9		
37	97.5% KM Chebyshev UCL				129.5	99% KM Chebyshev UCL				170.2		
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic				3.062	Anderson-Darling GOF Test						
41	5% A-D Critical Value				0.808	Detected Data Not Gamma Distributed at 5% Significance Level						
42	K-S Test Statistic				0.119	Kolmogorov-Smirnov GOF						
43	5% K-S Critical Value				0.08	Detected Data Not Gamma Distributed at 5% Significance Level						
44	Detected Data Not Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)				0.62	k star (bias corrected MLE)				0.612		
48	Theta hat (MLE)				102.4	Theta star (bias corrected MLE)				103.7		
49	nu hat (MLE)				187.1	nu star (bias corrected)				184.7		
50	Mean (detects)				63.45							
51												
52	Gamma ROS Statistics using Imputed Non-Detects											

	A	B	C	D	E	F	G	H	I	J	K	L
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58	Minimum				0.01	Mean				61.03		
59	Maximum				1200	Median				25		
60	SD				137.4	CV				2.251		
61	k hat (MLE)				0.507	k star (bias corrected MLE)				0.502		
62	Theta hat (MLE)				120.4	Theta star (bias corrected MLE)				121.7		
63	nu hat (MLE)				159.2	nu star (bias corrected)				157.5		
64	Adjusted Level of Significance ( $\beta$ )				0.0485							
65	Approximate Chi Square Value (157.48, $\alpha$ )				129.5	Adjusted Chi Square Value (157.48, $\beta$ )				129.2		
66	95% Gamma Approximate UCL (use when n>=50)				74.23	95% Gamma Adjusted UCL (use when n<50)				74.36		
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)				61.08	SD (KM)				136.9		
70	Variance (KM)				18744	SE of Mean (KM)				10.96		
71	k hat (KM)				0.199	k star (KM)				0.199		
72	nu hat (KM)				62.5	nu star (KM)				62.64		
73	theta hat (KM)				306.9	theta star (KM)				306.2		
74	80% gamma percentile (KM)				80.38	90% gamma percentile (KM)				184.7		
75	95% gamma percentile (KM)				314.9	99% gamma percentile (KM)				673.5		
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (62.64, $\alpha$ )				45.43	Adjusted Chi Square Value (62.64, $\beta$ )				45.3		
79	95% Gamma Approximate KM-UCL (use when n>=50)				84.21	95% Gamma Adjusted KM-UCL (use when n<50)				84.46		
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Approximate Test Statistic				0.972	Shapiro Wilk GOF Test						
83	5% Shapiro Wilk P Value				0.0863	Detected Data appear Lognormal at 5% Significance Level						
84	Lilliefors Test Statistic				0.0711	Lilliefors GOF Test						
85	5% Lilliefors Critical Value				0.0725	Detected Data appear Lognormal at 5% Significance Level						
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale				61.08	Mean in Log Scale				3.037		
90	SD in Original Scale				137.3	SD in Log Scale				1.546		
91	95% t UCL (assumes normality of ROS data)				79.22	95% Percentile Bootstrap UCL				81.09		
92	95% BCA Bootstrap UCL				86.5	95% Bootstrap t UCL				93.25		
93	95% H-UCL (Log ROS)				96.96							
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)				3.046	KM Geo Mean				21.03		
97	KM SD (logged)				1.519	95% Critical H Value (KM-Log)				2.741		
98	KM Standard Error of Mean (logged)				0.122	95% H-UCL (KM -Log)				93.01		
99	KM SD (logged)				1.519	95% Critical H Value (KM-Log)				2.741		
100	KM Standard Error of Mean (logged)				0.122							
101												
102	DL/2 Statistics											
103	DL/2 Normal					DL/2 Log-Transformed						
104	Mean in Original Scale				61.07	Mean in Log Scale				3.031		

	A	B	C	D	E	F	G	H	I	J	K	L
105	SD in Original Scale					137.4	SD in Log Scale					1.558
106	95% t UCL (Assumes normality)					79.21	95% H-Stat UCL					98.64
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Lognormal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	KM H-UCL					93.01						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.16/03/2023 1:43:51 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Ni											
11												
12	General Statistics											
13	Total Number of Observations				155	Number of Distinct Observations				63		
14	Number of Detects				125	Number of Non-Detects				30		
15	Number of Distinct Detects				62	Number of Distinct Non-Detects				3		
16	Minimum Detect				1	Minimum Non-Detect				1		
17	Maximum Detect				59	Maximum Non-Detect				5		
18	Variance Detects				77.61	Percent Non-Detects				19.35%		
19	Mean Detects				6.552	SD Detects				8.81		
20	Median Detects				3.4	CV Detects				1.345		
21	Skewness Detects				3.574	Kurtosis Detects				15.55		
22	Mean of Logged Detects				1.37	SD of Logged Detects				0.949		
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic				0.606	Normal GOF Test on Detected Observations Only						
26	5% Shapiro Wilk P Value				0	Detected Data Not Normal at 5% Significance Level						
27	Lilliefors Test Statistic				0.264	Lilliefors GOF Test						
28	5% Lilliefors Critical Value				0.0796	Detected Data Not Normal at 5% Significance Level						
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean				5.49	KM Standard Error of Mean				0.659		
33	KM SD				8.174	95% KM (BCA) UCL				6.695		
34	95% KM (t) UCL				6.581	95% KM (Percentile Bootstrap) UCL				6.62		
35	95% KM (z) UCL				6.574	95% KM Bootstrap t UCL				7.018		
36	90% KM Chebyshev UCL				7.468	95% KM Chebyshev UCL				8.364		
37	97.5% KM Chebyshev UCL				9.607	99% KM Chebyshev UCL				12.05		
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic				4.033	Anderson-Darling GOF Test						
41	5% A-D Critical Value				0.78	Detected Data Not Gamma Distributed at 5% Significance Level						
42	K-S Test Statistic				0.137	Kolmogorov-Smirnov GOF						
43	5% K-S Critical Value				0.0853	Detected Data Not Gamma Distributed at 5% Significance Level						
44	Detected Data Not Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)				1.118	k star (bias corrected MLE)				1.097		
48	Theta hat (MLE)				5.858	Theta star (bias corrected MLE)				5.973		
49	nu hat (MLE)				279.6	nu star (bias corrected)				274.2		
50	Mean (detects)				6.552							

	A	B	C	D	E	F	G	H	I	J	K	L
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58	Minimum					0.01	Mean					5.286
59	Maximum					59	Median					2.4
60	SD					8.32	CV					1.574
61	k hat (MLE)					0.446	k star (bias corrected MLE)					0.441
62	Theta hat (MLE)					11.86	Theta star (bias corrected MLE)					11.98
63	nu hat (MLE)					138.1	nu star (bias corrected)					136.8
64	Adjusted Level of Significance ( $\beta$ )					0.0485						
65	Approximate Chi Square Value (136.80, $\alpha$ )					110.8	Adjusted Chi Square Value (136.80, $\beta$ )					110.6
66	95% Gamma Approximate UCL (use when n>=50)					6.528	95% Gamma Adjusted UCL (use when n<50)					6.54
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					5.49	SD (KM)					8.174
70	Variance (KM)					66.81	SE of Mean (KM)					0.659
71	k hat (KM)					0.451	k star (KM)					0.447
72	nu hat (KM)					139.9	nu star (KM)					138.5
73	theta hat (KM)					12.17	theta star (KM)					12.29
74	80% gamma percentile (KM)					8.956	90% gamma percentile (KM)					15.19
75	95% gamma percentile (KM)					21.95	99% gamma percentile (KM)					38.74
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (138.49, $\alpha$ )					112.3	Adjusted Chi Square Value (138.49, $\beta$ )					112.1
79	95% Gamma Approximate KM-UCL (use when n>=50)					6.771	95% Gamma Adjusted KM-UCL (use when n<50)					6.784
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Approximate Test Statistic					0.935	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk P Value					4.3615E-6	Detected Data Not Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.0982	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.0796	Detected Data Not Lognormal at 5% Significance Level					
86	Detected Data Not Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					5.399	Mean in Log Scale					0.973
90	SD in Original Scale					8.252	SD in Log Scale					1.204
91	95% t UCL (assumes normality of ROS data)					6.496	95% Percentile Bootstrap UCL					6.565
92	95% BCA Bootstrap UCL					6.704	95% Bootstrap t UCL					6.782
93	95% H-UCL (Log ROS)					6.902						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					1.114	KM Geo Mean					3.045
97	KM SD (logged)					1	95% Critical H Value (KM-Log)					2.208
98	KM Standard Error of Mean (logged)					0.0808	95% H-UCL (KM -Log)					5.999
99	KM SD (logged)					1	95% Critical H Value (KM-Log)					2.208
100	KM Standard Error of Mean (logged)					0.0808						

	A	B	C	D	E	F	G	H	I	J	K	L
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					5.406	Mean in Log Scale					0.999
105	SD in Original Scale					8.248	SD in Log Scale					1.152
106	95% t UCL (Assumes normality)					6.503	95% H-Stat UCL					6.562
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Data do not follow a Discernible Distribution at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	95% KM (Chebyshev) UCL					8.364						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												



	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Data Sets with Non-Detects											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.16/03/2023 11:50:11 AM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	Zn											
11												
12	General Statistics											
13	Total Number of Observations				156	Number of Distinct Observations				94		
14	Number of Detects				153	Number of Non-Detects				3		
15	Number of Distinct Detects				93	Number of Distinct Non-Detects				1		
16	Minimum Detect				2.1	Minimum Non-Detect				1		
17	Maximum Detect				540	Maximum Non-Detect				1		
18	Variance Detects				5913	Percent Non-Detects				1.923%		
19	Mean Detects				55.95	SD Detects				76.9		
20	Median Detects				32	CV Detects				1.374		
21	Skewness Detects				3.362	Kurtosis Detects				14.41		
22	Mean of Logged Detects				3.373	SD of Logged Detects				1.186		
23												
24	Normal GOF Test on Detects Only											
25	Shapiro Wilk Test Statistic				0.643	Normal GOF Test on Detected Observations Only						
26	5% Shapiro Wilk P Value				0	Detected Data Not Normal at 5% Significance Level						
27	Lilliefors Test Statistic				0.242	Lilliefors GOF Test						
28	5% Lilliefors Critical Value				0.072	Detected Data Not Normal at 5% Significance Level						
29	Detected Data Not Normal at 5% Significance Level											
30												
31	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
32	KM Mean				54.89	KM Standard Error of Mean				6.127		
33	KM SD				76.28	95% KM (BCA) UCL				64.79		
34	95% KM (t) UCL				65.03	95% KM (Percentile Bootstrap) UCL				65.12		
35	95% KM (z) UCL				64.97	95% KM Bootstrap t UCL				68.26		
36	90% KM Chebyshev UCL				73.28	95% KM Chebyshev UCL				81.6		
37	97.5% KM Chebyshev UCL				93.16	99% KM Chebyshev UCL				115.9		
38												
39	Gamma GOF Tests on Detected Observations Only											
40	A-D Test Statistic				1.862	Anderson-Darling GOF Test						
41	5% A-D Critical Value				0.788	Detected Data Not Gamma Distributed at 5% Significance Level						
42	K-S Test Statistic				0.105	Kolmogorov-Smirnov GOF						
43	5% K-S Critical Value				0.0783	Detected Data Not Gamma Distributed at 5% Significance Level						
44	Detected Data Not Gamma Distributed at 5% Significance Level											
45												
46	Gamma Statistics on Detected Data Only											
47	k hat (MLE)				0.898	k star (bias corrected MLE)				0.885		
48	Theta hat (MLE)				62.32	Theta star (bias corrected MLE)				63.25		
49	nu hat (MLE)				274.7	nu star (bias corrected)				270.7		
50	Mean (detects)				55.95							

	A	B	C	D	E	F	G	H	I	J	K	L
51												
52	Gamma ROS Statistics using Imputed Non-Detects											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58	Minimum					0.01	Mean					54.88
59	Maximum					540	Median					32
60	SD					76.54	CV					1.395
61	k hat (MLE)					0.761	k star (bias corrected MLE)					0.75
62	Theta hat (MLE)					72.13	Theta star (bias corrected MLE)					73.13
63	nu hat (MLE)					237.4	nu star (bias corrected)					234.1
64	Adjusted Level of Significance ( $\beta$ )					0.0485						
65	Approximate Chi Square Value (234.12, $\alpha$ )					199.7	Adjusted Chi Square Value (234.12, $\beta$ )					199.4
66	95% Gamma Approximate UCL (use when n>=50)					64.33	95% Gamma Adjusted UCL (use when n<50)					64.43
67												
68	Estimates of Gamma Parameters using KM Estimates											
69	Mean (KM)					54.89	SD (KM)					76.28
70	Variance (KM)					5819	SE of Mean (KM)					6.127
71	k hat (KM)					0.518	k star (KM)					0.512
72	nu hat (KM)					161.6	nu star (KM)					159.8
73	theta hat (KM)					106	theta star (KM)					107.2
74	80% gamma percentile (KM)					90.24	90% gamma percentile (KM)					147.8
75	95% gamma percentile (KM)					209.1	99% gamma percentile (KM)					359.5
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78	Approximate Chi Square Value (159.81, $\alpha$ )					131.6	Adjusted Chi Square Value (159.81, $\beta$ )					131.3
79	95% Gamma Approximate KM-UCL (use when n>=50)					66.67	95% Gamma Adjusted KM-UCL (use when n<50)					66.79
80												
81	Lognormal GOF Test on Detected Observations Only											
82	Shapiro Wilk Approximate Test Statistic					0.974	Shapiro Wilk GOF Test					
83	5% Shapiro Wilk P Value					0.127	Detected Data appear Lognormal at 5% Significance Level					
84	Lilliefors Test Statistic					0.0626	Lilliefors GOF Test					
85	5% Lilliefors Critical Value					0.072	Detected Data appear Lognormal at 5% Significance Level					
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89	Mean in Original Scale					54.9	Mean in Log Scale					3.314
90	SD in Original Scale					76.52	SD in Log Scale					1.248
91	95% t UCL (assumes normality of ROS data)					65.04	95% Percentile Bootstrap UCL					65.75
92	95% BCA Bootstrap UCL					66.97	95% Bootstrap t UCL					67.18
93	95% H-UCL (Log ROS)					76.62						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96	KM Mean (logged)					3.308	KM Geo Mean					27.34
97	KM SD (logged)					1.259	95% Critical H Value (KM-Log)					2.46
98	KM Standard Error of Mean (logged)					0.101	95% H-UCL (KM -Log)					77.44
99	KM SD (logged)					1.259	95% Critical H Value (KM-Log)					2.46
100	KM Standard Error of Mean (logged)					0.101						

	A	B	C	D	E	F	G	H	I	J	K	L
101												
102	DL/2 Statistics											
103	DL/2 Normal						DL/2 Log-Transformed					
104	Mean in Original Scale					54.88	Mean in Log Scale					3.295
105	SD in Original Scale					76.53	SD in Log Scale					1.301
106	95% t UCL (Assumes normality)					65.02	95% H-Stat UCL					81.7
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Lognormal Distributed at 5% Significance Level											
111												
112	Suggested UCL to Use											
113	KM H-UCL					77.44						
114												
115	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
116	Recommendations are based upon data size, data distribution, and skewness.											
117	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
118	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
119												