Photo 57 Reach 1 Stream T6, Southern Head, 2007

Photo 58 Reach 2 Stream T6, Southern Head, 2007

APPENDIX
C
(Electrofishing Habitat Data Sheets)

July, 2007

Index 1

Electrofishing - Field Data Collection

SITE DESCRIPTION: Southern Head, footprint of Proposed Oil Refinery			
River Name: Holletts Stream		River Code: T-1	
Latitude: 5298806 N NAD27		Longitude: 719847 E Zone 21	
Station Identifier: Station 1 INDEX		Map Reference:	
Date:	Start: Sept 6/06	Time:	Start:
	End: Sept. 6/06		End:
Field Crew: Ben Hammond & Suzanne Gouveia			
Description:			
Station/Habitat Information: section fish RUN(Stream type)			
Length (m):	1 8.65 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width (m):	1 1m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean: ___
Station Area (m^2): 86.5m^2		No. Of Units (100 m^2): 0.87	
Depth (cm):	Top: 1. 35.5 2. 29.0 3. 34.0 Mid: 1. 23.0 2. 24.0 3. 23.0 Btm: 1. 27.5 2. 27.5 3. 23.0	Velocity (m/s): Type:	Top: 1. 2. 3. Mid: 1. 2. 0.33 3. Btm: 1. 2. 3.
photographs (y/n): Roll #: digital Exposures:		Hockey ball	Water Samples (y/n): NO
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather:			
Detailed Habitat Collected (y/n): (If no complete below)			
Habitat type (%): Riffle___ Run 100% Pool___ Flat___ Rapid___ Other___			
Substrate (%): Bedrock___ Lg. Boulder___ Sm. Boulder 2.5% Rubble 5% Cobble 45% Pebble___ Gravel 25% Sand/silt/clay___ Detritus 27.5%			
Cover (%): Instream ___ Overhanging ___ Canopy ___			
Riparian Vegetation (%): Shrub 10% (includes alder/willow) Conif. Tree 20% Decid. Tree___ Grasses/Sedges 70% Other___			
Ice Scour Height (m):	1 Ø 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n): YES % Station:	
		Bank Stability (G/F/P): Poor	
Number of Small Pools: ✓		Pool/Riffle Ratio:	

ELECTROFISHING INFORMATION:

Estimate Type: Removal:____ Mark/Recapture:_____ Multiple Mark/Recapture:_____ Index (300sec):_____	Barrier nets (y/n) [y circled]	Timer (y/n) [y circled]
	Equipment: Electrofisher (LR-24)	
	Pulse Width:	Frequency:
*did not finish entire Sweep due to batteries dying in the electrofisher.	Voltage: 650	Output: Standard Pulse

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	0sec								
Timer (end):	1251								

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										

Others:										

Number of Fish Field Data Forms appended:

Field Fish Data Collection Sheets

River Name: Holletts Stream	Station: Index Stn 1
Date(s): Sept. 6 /06	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
014	Index	BT		57	1.9					
015		BT		60	2.2					
016		BT		53	1.4					
017		BT		55	1.8					
018		BT		111	16.1					fish lice on dorsal fin
019		BT		164	47.1					
020		BT		204	93.2					Severe BSD
001	↓	A.eel		380	98.0					

Electrofishing - Field Data Collection

SITE DESCRIPTION: Bog area on the South Point/South Head area near Come By Chance, NL			
River Name: Holletts Stream		River Code. T-1	
Latitude: 5298928N (UTM) ZONE 21		Longitude: 719947E (UTM) ZONE 21	
Station Identifier: Quantitative Stn 1, Site 1		Map Reference:	
Date:	Start: Sept. 6, 2006	Time:	Start:
	End: Sept. 6, 2006		End:
Field Crew: Ben Hammond and Suzanne Gouveia			
Description:			
Station/Habitat Information: Run			
Length (m):	1 55.3m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width (m):	1 1.0m 2 1.8m 3 2.0m 4 ___ 5 ___ 6 ___ Mean: 1.6m
Station Area (m^2): 88.48 m^2		No. Of Units (100 m^2): 1	
Depth (cm):	1 25.5cm 2 28cm 3 25cm 4 27cm 5 29cm 6 28cm 7 30cm 8 31cm 9 29cm Mean 28.05cm	Velocity (m/s): Type: Hockey ball	1 0.3m/s 2 0.3m/s 3 0.4m/s 4 ___ 5 ___ 6 ___ Mean 0.33
photographs (y/n): yes Roll #: digital Exposures:			Water Samples (y/n): no
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather: Sunny, warm, light wind			
Detailed Habitat Collected (y/n): yes (If no complete below)			
Habitat type (%): Riffle ___ Run 98 Pool 2 Flat ___ Rapid ___ Other ___			
Substrate (%): Bedrock ___ Lg. Boulder 2.5 Sm. Boulder 2.5 Rubble 5 Cobble 55 Pebble ___ Gravel ___ Sand/silt/clay ___ Detritus 35 and muck			
Cover (%): Instream 25 Overhanging 15 Canopy 15			
Riparian Vegetation (%): Grass/shrub 75 (includes alder/willow) Conif. Tree 25 Decid. Tree ___ Bog ___ Other ___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n):	% Station:
		Bank Stability (G/F/P): Poor	

Number of Small Pools: 1	Pool/Riffle Ratio:

ELECTROFISHING INFORMATION:

Estimate Type: Removal:____ Mark/Recapture:_____ Multiple Mark/Recapture:_____ Index (300sec):_____	Barrier nets (y/n) Yes	Timer (y/n) Yes
	Equipment: Electrofisher (LR-24)	
	Pulse Width:	Frequency:
	Voltage: 650	Output: Standard Pulse

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	0 sec	0 sec	0 sec	0 sec	0 sec				
Timer (end):	805 sec	721 sec	692 sec	621 sec					

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	**Total**
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										

Others:										

Number of Fish Field Data Forms appended:

Field Fish Data Collection Sheets

River Name: N/A					Station: Station 1, Run					
Date(s): Sept. 6, 2006					Responsibility: Quantitative Electrofishing					
No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
001	1	BT		140	30.8	n	n	n	y	Mort.
002	1	BT		53	1.4	n	n	n	y	
003	1	BT		**51**	**1.4**	n	n	n	y	
004	1	BT		52	2.0	n	n	n	y	
005	1	BT		92	8.3	n	n	n	y	
006	1	BT		83	6.2	n	n	n	y	
007	2	BT		85	6.9					
008	2	BT		84	5.6					
009	2	BT		142	19.8					
010	2	BT		252	114.4					B.S.D, fish lice
011	3	BT		137	27.1					
012	3	BT		148	32.1					fish lice
013	4	BT		107	12.5					

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
025	2	BT	yoy	51	3.2				No	
026	2	BT	yoy	51	2.4				No	
027	2	**BT**	**yoy**	**51**	1.9				**No**	
028	2	BT	yoy	41	2.1				No	
029	2	BT	yoy	50	1.8				No	
030	2	BT	yoy	42	3.5				No	
031	3	BT		101	15.8				Yes	
032	3	BT		94	9.8				Yes	
033	3	BT		109	17.8				Yes	
034	3	BT		166	55.5				Yes	
035	3	BT		174	45.5				Yes	
036	3	BT		46	2.4				No	
037	3	BT		42	2.8				No	
038	3	BT		48	2.3				No	
039	4	BT		44	1.6				No	
040	4	BT		43	1.2				No	mort
041	4	BT		54	2.3				No	
042	4	BT		50	1.8				No	
043	4	BT		136	34.0				Yes	
044	4	BT		113	18.3				Yes	
045	4	BT		96	11.6				Yes	
046	4	BT		103	14.9				Yes	
047	5	BT		116	24.0				Yes	
048	5	BT		48	2.0				No	

Scanned in

Electrofishing - Field Data Collection

SITE DESCRIPTION: Bog area on the South Point/South Head area near Come By Chance, NL			
River Name: Holletts Stream		River Code: T-1	
Latitude: NAD27 N (UTM) ~~5298910~~ 5298806 (ZONE 21)		Longitude: E (UTM) ~~719847~~ 719984	
Station Identifier: Qunt. Stn. #2 Site 2.		Map Reference:	
Date:	Start: Sept 6/06	Time:	Start:
	End: Sept 11/06		End:
Field Crew: Ben Hammond & Suzanne Gouveia			
Description:			
Station/Habitat Information: Small stream, water levels raise/lower w/tide.			
Length (m):	1 100m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width (m):	1 1m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___
Station Area (m^2): $100m^2$		No. Of Units (100 m^2):	
Depth (cm):	1 35.5 2 29 3 34 4 23 5 24 6 23 7 27.5 8 27.5 9 23 Mean 27.39 cm	Velocity (m/s): Type: (hockey ball)	1. 0.33 2 0.33 3 ___ 4 ___ 5 ___ 6 ___ Mean 0.33 ~~m/s~~
photographs (y/n): Yes Roll #: DIGITAL Exposures:			Water Samples (y/n): no
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather:			
Detailed Habitat Collected (y/n): Yes (If no complete below)			
Habitat type (%): Riffle 10% Run 75% Pool 5% Flat 5% Rapid ___ Other ___			
Substrate (%): Bedrock ___ Lg. Boulder ___ Sm. Boulder 2.5% Rubble 5% Cobble 45% Pebble ___ Gravel 25% Sand/silt/clay ___ Detritus / muck - 27.5%			
Cover (%): Instream 25%-30% Overhanging 15% Canopy 10%			
Riparian Vegetation (%): Grass/~~shrub~~ 70% Alder/willow (shrub) 10% Conif. Tree 20% Decid. Tree ___ Bog ___ Other ___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n): Yes ~10 % Station:	
		Bank Stability (G/F/P): poor	
Number of Small Pools: 2		Pool/Riffle Ratio:	

ELECTROFISHING INFORMATION:

Estimate Type: Removal:____ Mark/Recapture:_____ Multiple Mark/Recapture:_____ Index (300sec):_____				Barrier nets (y/n)			Timer (y/n)		
				Equipment: Electrofisher (LR-24)					
				Pulse Width: 5-8			Frequency: ~30Hz		
				Voltage: 500V			Output: Standard Pulse		
Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):									
Timer (end):	909	824	776	883	849				

Field Fish Data Collection Sheets

River Name: Holletts Stream	Station: Station 2
Date(s): Sept 6th, 2006	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
001	1	BT		67	2.9					
002	1	BT		53	1.9					
003	1	BT		165	47.2					
004	1	BT		88	9.3					
005	1	BT		74	4.3					
006	1	BT		103	12.0					
007	1	BT		140	29.3					
008	1	BT		56	2.7					
009	1	BT		47	1.5					
010	1	BT		56	2.4					
011	1	BT		56	1.7					
012	1	BT		57	2.3					
013	1	BT		53	2.6					
014	1	BT		49	2.0					
015	1	BT		58	2.8					
016	1	BT		80	6.3					
017	2	BT		51	1.6					
018	2	BT		50	1.9					
019	2	BT		49	1.4					
020	2	BT		50	1.4					
021	2	BT		134	28.1					
022	2	BT		220	98.1					Severe BSD
023	2	BT		134	27.4					
024	3	BT		56	2.6					

Field Fish Data Collection Sheets

River Name: HOLLETTS STREAM	Station: STATION 2
Date(s): SEPT 6th, 2006	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
025	3	BT		162	48.6					
026	3	BT		91	10.1					
027	3	BT		89	7.6					
028	4	BT		57	2.0					
029	4	BT		60	3.4					
030	4	BT		52	1.5					
031	4	BT		53	2.0					
032	4	BT		48	1.4					
033	4	BT		89	6.8					
034	5	BT		57	1.9					

Electrofishing - Field Data Collection

SITE DESCRIPTION: POND 8 OUTFLOW

River Name:		River Code: T2-2	
Latitude: 5299600		Longitude: 720648	
Station Identifier: Qtn Stn #1		Map Reference:	
Date:	Start: JUNE 21st	Time:	Start: 10:50
	End: JUNE 21st		End: 17:00
Field Crew: SUZANNE GOUVEIA, ZACK BARTLEIT, MATT GOSSE			
Description:			
Station/Habitat Information:			
Length (m):	1 100 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width ~~(m)~~ cm:	1 145 2 95 3 95 4 ___ 5 ___ 6 ___ Mean: 111.6
Station Area (m^2): 100 m^2		No. Of Units (100 m^2):	
Depth (cm):	Top: 1. 5 2. 8 3. 8 Mid: 1. 10 2. 14 3. 14 Btm: 1. 10 2. 16 3. 18	Velocity (m/s): Type: Hockey ball	Top: 1. 0.18 2. 0.11 3. 0.45 Mid: 1. Ø 2. 0.1 3. Ø Btm: 1. Ø 2. Ø 3. Ø
photographs (y/n): Exposures: Y	Roll #: digital	Water Samples (y/n): N	
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather:			
Detailed Habitat Collected (y/n): Y (If no complete below)			
Habitat type (%): Riffle ___ Run 25% Pool ___ Flat 75% Rapid ___ Other ___			
Substrate (%): Bedrock ___ Lg. Boulder ___ Sm. Boulder 20 Rubble 10 Cobble 0 Pebble ___ Gravel 20 Sand/silt/clay ___ Detritus 40			
Cover (%): Instream ___ Overhanging 30% Canopy Ø			
Riparian Vegetation (%): Shrub 25% (includes alder/willow) Conif. Tree 5% Decid. Tree ___ Grasses/Sedges 70% Other ___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n):	85% Station:
		Bank Stability (G/F/P):	Good - poor
Number of Small Pools:		Pool/Riffle Ratio:	

ELECTROFISHING INFORMATION:			
Estimate Type:	Removal: ✓ Mark/Recapture: ____ Multiple Mark/Recapture: ____ Index (300sec): ____	Barrier nets (y/n) Y	Timer (y/n) [y circled]
		Equipment: Electrofisher P5-D	
		Pulse Width: 5	Frequency: 8
		Voltage: 400-500	Output: Standard Pulse

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	Ø	Ø	Ø	Ø					
Timer (end):	1482	1204	1192	685					

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										

Field Fish Data Collection Sheets

River Name: T2-2	Station: STATION 1
Date(s): JUNE 23rd, 07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
023	1	3SB		49	0.7					
024	1	3SB		51	1.0					
020	1	BT		75	3.9					
025	1	3SB		50	1.0					
026	1	3SB		53	1.1					
027	1	3SB		60	2.2					
028	1	3SB		52	1.2					
029	1	3SB		54	1.5					
030	1	3SB		50	1.0					MORT
031	1	3SB		55	1.4					
032	1	3SB		51	1.2					
033	1	3SB		51	1.1					
034	1	3SB		53	1.1					
035	1	3SB		50	1.2					
036	1	3SB		57	1.5					
037	1	3SB		62	2.4					
038	1	3SB		54	1.0					
039	1	3SB		75	3.0					
040	1	3SB		63	2.5					
041	1	3SB		47	0.9					
042	1	3SB		50	1.1					
043	1	3SB		50	1.0					
044	1	3SB		54	1.2					
045	1	3SB		47	0.8					

Field Fish Data Collection Sheets

River Name:	T 2-2	Station:	Station 1
Date(s):	June 23/07	Responsibility:	

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
046	1	3SB		53	1.5					
047	1	3SB		55	1.2					1 EYE
048	1	3SB		51	1.0					
049	1	3SB		55	1.2					
050	1	3SB		55	1.2					
051	1	3SB		48	0.9					
052	1	3SB		45	0.6					
053	1	3SB		55	1.6					
054	1	3SB		50	1.3					
055	1	3SB		48	0.8					
056	1	3SB		46	0.8					
021	1	BT		30	–					too light to WEIGH
022	1	BT		32	–					
023	1	BT		34	–					
024	1	BT		100	9.0					
057	1	3SB		49	1.2					
025	1	BT		83	6.0					
026	1	BT		80	5.4					
027	1	BT		90	7.2					
028	1	BT		92	7.0					
029	1	BT		76	4.9					
030	1	BT		35	0.5					
031	1	BT		67	3.8					
058	1	3SB		64	–					

Field Fish Data Collection Sheets

River Name: T2-2					Station: Station 1					
Date(s): June 23/07					Responsibility:					
No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
059	1	3SB		53	–					
060	1	3SB		65	–					
061	1	3SB		45	–					
062	1	3SB		63	1.7					
063	1	3SB		49	–					
064	1	3SB		49	–					
065	1	3SB		50	–					
066	1	3SB		50	1.2					
067	1	3SB		50	1.1					
068	1	3SB		45	–					
069	1	3SB		51	1.3					
070	1	3SB		51	–					
071	1	3SB		66	2.7					
072	1	3SB		49	1.1					
073	1	3SB		45	–					
074	1	3SB		49	–					
075	1	3SB		50	–					
032	1	BT		40	0.4					
076	1	3SB		52	–					
077	1	3SB		55	–					
078	1	3SB		47	–					
079	1	3SB		65	–					
080	1	3SB		56	–					
081	1	3SB		48	–					

Field Fish Data Collection Sheets

River Name:	T 2-2	Station:	Station 1
Date(s):	June 23/07	Responsibility:	

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
082	1	3SB		48	–					
033	1	BT		90	7.0					
034	1	BT		73	5.0					
035	1	BT		92	7.9					
036	1	BT		89	7.0					
037	1	BT		85	6.0					
038	1	BT		32	–					
039	1	BT		36	–					
040	1	BT		36	–					
041	1	BT		36	–					
042	1	BT		36	–					
043	1	BT		66	3.3					
044	1	BT		31	–					
045	1	BT		39	–					
046	1	BT		35	–					
047	1	BT		38	–					
048	1	BT		36	–					
049	1	BT		33	–					
083	1	3SB		51	–					
084	1	3SB		50	–					
085	1	3SB		48	–					
086	1	3SB		51	–					
087	1	3SB		59	–					
088	1	3SB		48	–					

Field Fish Data Collection Sheets

River Name: T2-2	Station: Station 1
Date(s): June 23/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
089	1	3SB		49	–					
090	1	3SB		50	–					
091	1	3SB		44	–					
092	1	3SB		55	–					
050	1	BT		34	–					
050A	1	BT		90	6.5					
051	1	BT		34	–					
052	1	BT		34	–					
053	1	BT		34	–					
054	1	BT		37	–					
055	1	BT		32	–					
093	1	3SB		69	2.7					
094	1	3SB		50	1.1					
095	1	3SB		51	1.0					
096	1	3SB		61	1.5					
097	1	3SB		51	1.1					
098	1	3SB		50	1.1					
099	1	3SB		50	1.1					
056	2	BT		93	7.4					
100	2	3SB		49	1.5					
101	2	3SB		55	1.3					
102	2	3SB		66	2.2					
103	2	3SB		55	1.4					
104	2	3SB		59	1.8					

Field Fish Data Collection Sheets

River Name: T2-2					Station: Station 1					
Date(s): June 23/07					Responsibility:					
No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
105	2	3SB		50	1.8					
106	2	3SB		49	1.0					
107	2	3SB		47	0.9					
108	2	3SB		54	1.2					
109	2	3SB		53	1.2					
110	2	3SB		49	–					
111	2	3SB		54	1.3					
112	2	3SB		48	–					RAIN CREATING PROBLEMS WITH SCALE
113	2	3SB		50	–					
114	2	3SB		46	–					MORT
115	2	3SB		64	–					MORT
057	2	BT		33	–					
116	2	3SB		57	–					
117	2	3SB		49	–					
118	2	3SB		52	–					
119	2	3SB		53	–					
120	2	3SB		49	–					
121	2	3SB		53	–					
122	2	3SB		51	–					MORT
123	2	3SB		52	–					MORT
058	2	BT		35	–					
059	2	BT		91	8.1					
124	2	3SB		50	0.9					
125	2	3SB		51	–					

Field Fish Data Collection Sheets

River Name: T2-2	Station: Station1
Date(s): June 23/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
126	2	3SB		63	–					
127	2	3SB		60	1.9					
128	2	3SB		63	2.1					
129	2	3SB		64	2.3					
130	2	3SB		62	2.1					
131	2	3SB		50	1.2					
132	2	3SB		62	2.3					
133	2	3SB		57	–					
134	2	3SB		46	0.9					
135	2	3SB		50	1.0					
136	2	3SB		62	2.4					MORT
137	2	3SB		53	1.5					
138	2	3SB		50	–					
139	2	3SB		68	2.1					
140	2	3SB		53	–					
141	2	3SB		46	–					
142	2	3SB		50	–					
143	2	3SB		45	–					
144	2	3SB		46	–					
145	2	3SB		55	–					
060	2	BT		43	–					MORT
061	2	BT		33	–					
062	2	BT		36	–					
146	2	3SB		50	–					MORT

Field Fish Data Collection Sheets

River Name: T2-2	Station: station 1
Date(s): June 23/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
148	2	3SB		49	–					
149	2	3SB		67	–					
150	2	3SB		54	–					MORT
151	2	3SB		46	–					
152	2	3SB		60	–					
153	2	3SB		53	–					
154	2	3SB		52	–					
155	2	3SB		50	–					
156	2	3SB		68	–					
063	2	BT		96	8.4					
064	2	BT		93	8.3					
065	2	BT		64	2.7					
157	2	3SB		44	0.8					
158	2	3SB		56	1.6					
159	2	3SB		47	0.9					
160	2	3SB		47	1.1					
161	2	3SB		53	1.5					
162	2	3SB		65	2.2					
163	2	3SB		60	1.7					
164	2	3SB		61	2.3					
165	2	3SB		54	1.0					
166	2	3SB		61	1.9					
167	2	3SB		50	1.3					
168	2	3SB		52	1.2					

Field Fish Data Collection Sheets

River Name: T2-2	Station: Station 1
Date(s): June 23 /07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
169	2	3SB		58	1.8					
066	2	BT		35	0.4					
067	3	BT		84	5.7					
068	3	BT		32	—					
069	3	BT		29	—					
170	3	3SB		59	2.0					
171	3	3SB		54	1.4					
172	3	3SB		50.	1.6					MORT
173	3	3SB		49	1.0					MORT
174	3	3SB		49	0.9					
175	3	3SB		53	1.3					
176	3	3SB		45	1.0					
177	3	3SB	—	—	—	NO	FISH	RECORDED	FOR	3SB177
070	3	BT		37	0.4					
178	3	3SB		49	0.9					
179	3	3SB		64	2.2					
180	3	3SB		61	1.8					
181	3	3SB		50	1.2					MORT
182	3	3SB		52	1.1					
183	3	3SB		48	0.9					
184	3	3SB		52	1.1					
185	3	3SB		85	6.8					
186	3	3SB		53	0.9					
187	3	3SB		50	—					

Field Fish Data Collection Sheets

River Name: T 2-2	Station: Station 1
Date(s): June 23/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
188	3	3SB		51	—					
189	3	3SB		62	—					
190	3	3SB		66	2.4					MORT
191	3	3SB		55	1.3					MORT
07~~8~~	3	BT		30	0.1					MORT
072	3	BT		35	0.3					
073	3	BT		39	0.5					
192	3	3SB		60						
193	3	3SB		50						
194	3	3SB		55						
195	3	3SB		49						
196	3	3SB		52						
197	3	3SB		51						
198	3	3SB		54	1.4					MORT
199	3	3SB		52	1.3					
200	3	3SB		55	1.5					
201	3	3SB		46	0.9					MORT
202	3	3SB		65	2.3					
203	3	3SB		42	0.7					MORT
204	3	3SB		50	1.2					
205	3	3SB		55	1.6					
206	3	3SB		49	0.8					
207	3	3SB		55	1.5					
208	3	3SB		49	1.1					

Field Fish Data Collection Sheets

River Name: T 2-2	Station: Station 1
Date(s): June 23/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
209	3	3SB		51	2.1					
210	3	3SB		45	-					
211	3	3SB		55	-					
212	3	3SB		68	2.6					
213	3	3SB		57	1.4					
214	3	3SB		57	1.5					
215	3	3SB		52	-					
216	3	3SB		55	-					
217	3	3SB		45	-					
218	3	3SB		65	-					
219	3	3SB		55	1.3					
074	3	BT		32	0.2					MORT
220	3	3SB		49						
221	3	3SB		49						
222	3	3SB		52						
223	3	3SB		52						MORT
224	3	3SB		51						
225	3	3SB		54						
226	3	3SB		56						
227	3	3SB		50						
228	3	3SB		58						
229	3	3SB		50						MORT
230	3	3SB		50						
231	3	3SB		67						

Field Fish Data Collection Sheets

River Name: T 2-2					Station: Station 1					
Date(s): June 23/07					Responsibility:					
No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
232	3	3SB		59	–					
233	3	3SB		49	–					
234	3	3SB		49	–					
235	3	3SB		60	–					
236	3	3SB		48	–					
237	3	3SB		66	–					
268	3	3SB		51	–					
269	3	3SB		50	–					MORT
270	3	3SB		60	–					
271	3	3SB		53	–					
272	3	3SB		52	–					
273	4	3SB		48						
274	4	3SB		45						
275	4	3SB		55						
276	4	3SB		54						
277	4	3SB		45						MORT
278	4	3SB		45						MORT
279	4	3SB		57						MORT
280	4	3SB		60						
281	4	3SB		51						
282	4	3SB		51						
075	4	3SB		39						
283	4	3SB		46						MORT
284	4	3SB		49						

Field Fish Data Collection Sheets

River Name: T2-2	Station: Station 1
Date(s): June 23/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
~~284~~	~~4~~	~~3SB~~								
285	4	3SB		56						
286	4	3SB		52						
287	4	3SB		52						MORT
288	4	3SB		52						
289	4	3SB		50						
290	4	3SB		52						
291	4	3SB		60						
292	4	3SB		54						
293	4	3SB		62						MORT
294	4	3SB		60						MORT
295	4	3SB		51						
296	4	3SB		54						
297	4	3SB		55						
298	4	3SB		54						
299	4	3SB		55						
300	4	3SB		52						
301	4	3SB		52						
302	4	3SB		50						
303	4	3SB		53						
304	4	3SB		54						
305	4	3SB		55						
306	4	3SB		45						
307	4	3SB		60						

Field Fish Data Collection Sheets

River Name: T2-2	Station: Station 1
Date(s): June 23/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
308	4	3SB		49	–					
309	4	3SB		57	–					
310	4	3SB		50	–					
311	4	3SB		56	–					
312	4	3SB		57	–					
313	4	3SB		56	–					
314	4	3SB		59	–					
315	4	3SB		50	–					
316	4	3SB		46	–					MORT
317	4	3SB		55	–					
318	4	3SB		52	–					MORT
319	4	3SB		63	–					
320	4	3SB		49	–					
321	4	3SB		46	–					
322	4	3SB		47	–					
323	4	3SB		49	–					
324	4	3SB		60	–					
325	4	3SB		47	–					MORT
326	4	3SB		52	–					
327	4	3SB		45	–					
076	4	BT		47	–					
328	4	3SB		51	–					
329	4	3SB		50	–					MORT
330	4	3SB		51	–					

Field Fish Data Collection Sheets

River Name: T 2-2	Station: Station 1
Date(s): June 23/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
331	4	3SB		51						
332	4	3SB		50						
333	4	3SB		51						
334	4	3SB		61						
335	4	3SB		51						
336	4	3SB		52						
337	4	3SB		48						
338	4	3SB		54						
339	4	3SB		49						
340	4	3SB		48						
341	4	3SB		61						
342	4	3SB		59						
343	4	3SB		49						
344	4	3SB		50						
345	4	3SB		50						
346	4	3SB		51						
347	4	3SB		47						
348	4	3SB		54						
077	4	BT		37						
078	4	BT		34						

Electrofishing - Field Data Collection

SITE DESCRIPTION: Southern Head			
River Name: Watson's Brook		River Code: T2-3	
WGS84 Latitude: 5301376		Longitude: 720096	
Station Identifier: Qtn - Stn 1		Map Reference:	
Date:	Start: June 29/07	Time:	Start: 11:26
	End: June 29/07		End: 12:45
Field Crew: Matthew Gosse, Zach Bartlett, & Suzanne Gouveia			
Description:			
Station/Habitat Information: RUN			
Length (m):	1 11m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width (m):	1 9m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean: ___
Station Area (m^2): 100 m^2		No. Of Units (100 m^2): 1	
Depth (cm):	Top: 1. 35.0 2. 33.0 3. 33.0 Mid: 1. 33.0 2. 33.0 3. 30.0 Btm: 1. 25.0 2. 21.0 3. 17.0	Velocity (m/s): Type: Hockey ball	Top: 1. 0.15 2. 0.19 3. 0.09 Mid: 1. 0.09 2. Ø 3. Ø Btm: 1. 0.03 2. 0.10 3. 0.08
photographs (y/n): Y Roll #: digital Exposures:			Water Samples (y/n): YES BTEX
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather: Overcast, foggy, light rain.			
Detailed Habitat Collected (y/n): YES (If no complete below)			
Habitat type (%): Riffle ___ Run 100% Pool ___ Flat ___ Rapid ___ Other ___			
Substrate (%): Bedrock 5 ~~Lg. Boulder~~ Boulder 60 ~~Sm. Boulder~~ ___ Rubble 10 Cobble 15 Pebble ___ Gravel 10 Sand/silt/clay ___ Detritus ___			
Cover (%): Instream ___ Overhanging ___ Canopy ___			
Riparian Vegetation (%): Shrub ___ (includes alder/willow) Conif. Tree ___ Decid. Tree ___ Grasses/Sedges ___ Other ___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n): No % Station:	
		Bank Stability (G/F/P): GOOD	
Number of Small Pools:		Pool/Riffle Ratio:	

ELECTROFISHING INFORMATION:		
Estimate Type: Removal: ✓ Mark/Recapture:_____ Multiple Mark/Recapture:_____ Index (300sec):_____	Barrier nets (y/n) [y circled]	Timer (y/n) [y circled]
	Equipment: Electrofisher 15-D	
	Pulse Width: 5	Frequency: 8
	Voltage: 600	Output: Standard Pulse

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	Ø	Ø	Ø	Ø					
Timer (end):	592	480	450	459					

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										

Field Fish Data Collection Sheets

River Name: WATSON'S BROOK	Station: STATION 1
Date(s): JUNE 29th, 07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
307	1	3SB		45	0.7					
001	1	AS		112	15.0					
002	1	AS		103	12.6					
003	1	AS		103	11.6					
004	1	AS		125	20.6					
005	1	AS		85	7.0					
308	2	3SB		45	0.8					
006	2	AS		115	15.7					
007	2	AS		123	18.2					
309	3	3SB		43	0.8					
094	3	BT		90	7.7					FISH LICE
095	3	BT		45	1.4					
008	4	AS		102	11.0					

Electrofishing - Field Data Collection

SITE DESCRIPTION: Southern Head			
River Name: Watson's Brook		River Code: T2-3	
WGS84 Latitude: 5301369		Longitude: 720101	
Station Identifier: Qtn. Stn.2		Map Reference:	
Date:	Start: June 29/07	Time:	Start: ~13:35
	End: June 29/07		End: 15:44
Field Crew: Matthew Gosse, Zach Bartlett, & Suzanne Gouveia			
Description:			
Station/Habitat Information: Riffle			
Length (m):	1 12.8 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width (m):	1 9.5 2 14.0 3 ___ 4 ___ 5 ___ 6 ___ Mean: 11.75
Station Area (m^2): 150.4 m^2		No. Of Units (100 m^2): 1.5	
Depth (cm):	Top: 1. 27.0 2. 33.0 3. 41.0 Mid: 1. 33.0 2. 24.0 3. 29.0 Btm: 1. 35.0 2. 33.0 3. 33.0	Velocity (m/s):	Top: 1. 0.48 2. 0.00 3. 0.00 Mid: 1. 0.47 2. 0.00 3. 0.00 Btm: 1. 0.15 2. 0.19 3. 0.09
photographs (y/n): Y Roll #: digital Exposures:		Type: Hockey ball	Water Samples (y/n): Y BTEX
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather: Overcast, foggy			
Detailed Habitat Collected (y/n): YES (If no complete below)			
Habitat type (%): Riffle 100% Run___ Pool___ Flat___ Rapid___ Other___			
Substrate (%): Bedrock 20 ~~Lg.~~ Boulder 60 ~~Sm. Boulder~~ ___ Rubble 5 Cobble 5 Pebble___ Gravel 10 Sand/silt/clay___ Detritus___			
Cover (%): Instream ___ Overhanging ___ Canopy ___			
Riparian Vegetation (%): Shrub___(includes alder/willow) Conif. Tree___ Decid. Tree___ Grasses/Sedges ___ Other___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n): NO % Station:	
		Bank Stability (G/F/P): Good	
Number of Small Pools:		Pool/Riffle Ratio:	

ELECTROFISHING INFORMATION:

Estimate Type: Removal: ✓ Mark/Recapture:____ Multiple Mark/Recapture:____ Index (300sec):____	Barrier nets (y/n) [y circled]	Timer (y/n) [y circled]
	Equipment: Electrofisher 15-D	
	Pulse Width: 5	Frequency: 8
	Voltage: 600-700	Output: Standard Pulse

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	Ø	Ø	Ø	Ø	Ø	Ø			
Timer (end):	543	513	497	469	458	403			

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										

Field Fish Data Collection Sheets

River Name: WATSONS BROOK	Station: STATION 2
Date(s): JUNE 29th, 07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
096	1	BT		80	5.2					
009	1	AS		110	15.2					
010	1	AS		99	10.0					
097	1	BT		118	18.0					
011	2	AS		126	20.4					
012	2	AS		111	16.1					
013	2	AS		116	16.4					
014	2	AS		96	8.7					
015	2	AS		95	7.7					
016	2	AS		98	9.6					
017	2	AS		117	18.4					
018	2	AS		83	6.7					
019	2	AS		137	27.1					
310	2	BT		45	0.8					
311	2	BT		48	1.0					
020	3	AS		116	16.6					
021	3	AS		104	12.9					
022	4	AS		110	14.4					
023	4	AS		100	11.0					BUMPY SKIN
024	4	AS		99	11.5					
025	5	AS		120	18.0					
312	5	3SB		52	1.5					

Electrofishing - Field Data Collection

SITE DESCRIPTION: Southern Head T-2, connecting POND 1 & POND 7

River Name: —		River Code: T-2	
Latitude: 5299298		Longitude: 720812 (NAD83)	
Station Identifier: Quantitative Stn # 1		Map Reference:	
Date:	Start: June 21/07	Time:	Start: ~ 11:00
	End: June 21/07		End: 14:09
Field Crew: Matthew Gosse, Zack Bartlett, Suzanne Gouvela			
Description: Bog area			
Station/Habitat Information:			

Length (m):	1 ___ 2 ___ 3 ~~4~~ ___ 5 ~~6~~ ___ Mean ___ Total 100m	Wetted Width (m):	1 1.3 2 0.87 3 0.90 4 ___ 5 ___ 6 ___ Mean: 1.02
Station Area (m^2): 100 m^2		No. Of Units (100 m^2): 1	
Depth (cm):	Top: 1. 40 2. 40 3.38 Mid: 1. 9 2. 13 3.12 Btm: 1. 13 2. 9 3.22	Velocity (m/s): Type: Hockey ~~ball~~	Top: 1. 0.05 2. 0 3. 0 Mid: 1. 0.6 2. 0.37 3. 0.08 Btm: 1. 0.26 2. 0.08 3. 0
photographs (y/n): Y Roll #: digital Exposures:			Water Samples (y/n): No
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather: Cloudy w/ Sunny breaks			

Detailed Habitat Collected (y/n): Y (If no complete below)			
Habitat type (%): Riffle ___ Run 85% Pool 5% Flat 10% Rapid ___ Other ___			
Substrate (%): Bedrock ___ Lg. Boulder 1% Sm. Boulder 2% Rubble 2% Cobble 25% ~~Pebble~~ ___ Gravel ___ Sand/silt/clay ___ Detritus 70%			
Cover (%): Instream 15% Overhanging — Canopy 0			
Riparian Vegetation (%): ~~Grass~~/shrub 10% (includes alder/willow) Conif. Tree 5% Decid. Tree ___ ~~Bog~~ grass 85% Other ___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n): Y	% Station: 30%
		Bank Stability (G/F/P): Good - Poor	

ELECTROFISHING INFORMATION:

Estimate Type: Removal: ✓ Mark/Recapture:____ Multiple Mark/Recapture:____ Index (300sec):____	Barrier nets (y/n): y · Timer (y/n): y
	Equipment: Electrofisher 15-D
	Pulse Width: J · Frequency: 8
	Voltage: 400-600 · Output:

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	0 sec	Ø	Ø	Ø					
Timer (end):	706	736	630	570					

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										
Others:										

Number of Fish Field Data Forms appended:

Field Fish Data Collection Sheets

River Name: T-2					Station: Quantitative Stn. #1					
Date(s): June 21/07					Responsibility:					
No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
1	1	BT		56	2.6					
2	1	BT		95	9.0					
3	1	BT		49	0.9					
4	1	BT		59	2.1					Caudal fin torn
5	1	BT		81	5.8					
6	1	BT		81	5.1					Left operculum exposing gills, caudal fin torn
7	1	BT		91	7.9					
1	1	3SB		66	1.8					
2	1	3SB		42	-------					
8	2	BT		73	3.8					
3	2	3SB		43	0.8					
4	2	3SB		62	1.7					
5	2	3SB		56	1.5					
6	2	3SB		51	1.2					
9	3	BT		69	4.3					
10	3	BT		54	1.5					
11	3	BT		79	4.6					
12	3	BT		61	2.1					
13	3	BT		45	1.0					
7	3	3SB		51	1.4					
8	3	3SB		52	1.5					

9	3	3SB		70	2.6					Eye missing, dead in stream
14	4	BT		90	7.1					
10	4	3SB		51	0.8					

Electrofishing - Field Data Collection

SITE DESCRIPTION: SOUTHERN HEAD T-2 CONNECTING POND 1 and POND 7			
River Name: —		River Code: T-2	
Latitude: 5299213		Longitude: 720859 (WGS84)	
Station Identifier: QUANTITATIVE Stn 2		Map Reference:	
Date:	Start: JUNE 21st 07	Time:	Start:
	End: JUNE 21st 07		End:
Field Crew: SUZANNE GOUVEIA, ZACK BARTLETT, MATTHEW GOSSE			
Description: BOG AREA			
Station/Habitat Information:			
Length (m):	1 ___ 2 ___ 3 ~~4~~ ___ 5 ___ ~~6~~ ___ Mean ___ 100 m	Width (m):	1 1.0 2 1.7 3 0.9 4 ___ 5 ___ 6 ___ Mean: 1.2
Station Area (m^2): 100 m^2		No. Of Units (100 m^2): 1	
Depth (cm):	Top: 1. ~~25~~ 2. 20 3. 30 Mid: 1. 33 2. 23 3. 14 Btm: 1. 40 2. 40 3. 38	Velocity (m/s): Type: Hockey ball	Top: 1.0 2.0 3.0 Mid: 1. 0.09 2. 0.09 3.0 Btm: 1. 0.05 2. 0 3.0
photographs (y/n): Y Roll #: digital Exposures:		Water Samples (y/n): NO	
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather: Cloudy with Sunny Breaks			
Detailed Habitat Collected (y/n): Y (If no complete below)			
Habitat type (%): Riffle___ Run___ Pool___ Flat___ Rapid___ Other___			
Substrate (%): Bedrock___ Lg. Boulder___ Sm. Boulder___ Rubble___ Cobble___ Pebble___ Gravel___ Sand/silt/clay___ Detritus___			
Cover (%): Instream ___ Overhanging ___ Canopy ___			
Riparian Vegetation (%): Grass/shrub___(includes alder/willow) Conif. Tree___ Decid. Tree___ Bog ___ Other___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n):	% Station:
		Bank Stability (G/F/P):	

ELECTROFISHING INFORMATION:

Estimate Type: Removal: ✓ Mark/Recapture:_____ Multiple Mark/Recapture:_____ Index (300sec):_____	Barrier nets (y/n) — y circled	Timer (y/n) — y circled
	Equipment: Electrofisher ~~[crossed out]~~ 15-D	
	Pulse Width: J	Frequency: 8
	Voltage: 400 - 600	Output:

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	Ø	Ø	754	Ø	Ø				
Timer (end):	730	754	1470	704	700				

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										
Others:										

Number of Fish Field Data Forms appended:

Field Fish Data Collection Sheets

River Name: T-2	Station: Quantitative Stn. #2
Date(s): June 21/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
15	1	BT		66	3.0					mort
16	1	BT		81	5.7					
10	1	3SB		60	2.4					
11	1	3SB		45	0.8					Weight questionable
12	1	3SB		42	------					
13	1	3SB		67	3.1					
14	1	3SB		47	0.8					
15	1	3SB		41	0.6					
16	1	3SB		42	0.6					
17	2	BT		40	0.6					YOY
18	2	BT		89	7.2					
19	2	BT		95	10.8					
17	2	3SB		38	0.5					
-----	2	3SB		65	1.8					Found dead in river
18	3	3SB		51	1.2					
19	3	3SB		45	0.6					
20	3	3SB		40	0.4					
21	4	3SB		47	1.0					
22	4	3SB		48	0.9					
-----	5	-----		----	-----					NO fish caught.

Index 2

Electrofishing - Field Data Collection

SITE DESCRIPTION: Southern Head, proposed site for Oil Refinery			
River Name: —		River Code: T-3	
WGS 84 Latitude: 5300607 N		Longitude: 719401 E	
Station Identifier: Index (T-3)		Map Reference:	
Date:	Start: June 25/07	Time:	Start: ~14:00
	End: June 25/07		End: 14:44
Field Crew: Matthew Gosse, Zach Bartlett & Suzanne Gouveia			
Description: Outflow of Pond 3			
Station/Habitat Information: trenched, over land flow			
Length (m):	1 48.3 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width (m):	1 1m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean: ___
Station Area (m^2): 48.3		No. Of Units (100 m^2): 0.48	
Depth (cm):	Top: 1. 2. 3. Mid: 1. 2. 3. Btm: 1. 18 2. 29 3. 29	Velocity (m/s): Type: Hockey ball	Top: 1. 2. 3. Mid: 1. 2. 3. Btm: 1. Ø 2. Ø 3. Ø
photographs (y/n): Y Roll #: digital Exposures:			Water Samples (y/n): NO
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather: Sunny			
Detailed Habitat Collected (y/n): YES (If no complete below)			
Habitat type (%): Riffle___ Run___ Pool___ Flat 100% Rapid___ Other___			
Substrate (%): Bedrock___ Lg. Boulder___ Sm. Boulder___ Rubble___ Cobble___ Pebble___ Gravel___ Sand/silt/clay___ Detritus 100%			
Cover (%): Instream ___ Overhanging ___ Canopy ___			
Riparian Vegetation (%): Shrub___(includes alder/willow) Conif. Tree___ Decid. Tree___ Grasses/Sedges 100% Other___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n):	% Station:
		Bank Stability (G/F/P): Poor	
Number of Small Pools:		Pool/Riffle Ratio:	

ELECTROFISHING INFORMATION:			
Estimate Type: Removal:____ Mark/Recapture:____ Multiple Mark/Recapture:____ Index (300sec): ✓	Barrier nets (y/n) n	Timer (y/n) Y	
	Equipment: Electrofisher 15-D		
	Pulse Width: J	Frequency: 8	
	Voltage: 400-500	Output: Standard Pulse	

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	Ø								
Timer (end):	312								

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										

Field Fish Data Collection Sheets

River Name: T3	Station: INDEX 2
Date(s): June 25/07	Responsibility:

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
091	INDEX	BT		132	26.0					
092	INDEX	BT		115	17.3					
093	INDEX	BT		126	22.8					

Electrofishing - Field Data Collection

SITE DESCRIPTION: Outflow of POND 3

River Name: —		River Code: T-3	
Latitude: 5300654 N		Longitude: 719372	
Station Identifier: Quantitative Stn 1		Map Reference:	
Date:	Start: June 25/07	Time:	Start: 10:00
	End: June 25/07		End: 14:44
Field Crew: Suzanne Gouveia, Matthew Crosse & Zack Bartlett			
Description: Small stream, splays over grass further upstream from Stn.			
Station/Habitat Information: Small stream, splays over grass further upstream			

Length (m):	1 100m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width (m):	1 1.49 2 1.0 3 1.0m 4 ___ 5 ___ 6 ___ Mean: 1.163
Station Area (m^2): 116.3 m^2		No. Of Units (100 m^2): 1	
Depth (cm):	Top: 1. 18 2. 29 3. 29 Mid: 1. 15.5 2. 19.5 3. 19.0 Btm: 1. 21 2. 14 3. 13	Velocity (m/s): Type: Hockey ball	Top: 1. Ø 2. Ø 3. Ø Mid: 1. Ø 2. Ø 3. Ø Btm: 1. 0.15 2. Ø 3. Ø
photographs (y/n): Exposures:	Roll #: digital		Water Samples (y/n):
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather: Sunny			

Detailed Habitat Collected (y/n): Y	(If no complete below)		
Habitat type (%): Riffle ___	Run 70%	Pool ___	Flat 30% Rapid ___ Other ___
Substrate (%): Bedrock ___	Lg. Boulder ___	Sm. Boulder 2%	Rubble 3% Cobble 7% Aqu. veg Pebble 37% Gravel 18% Sand/silt/clay ___ Detritus 33%
Cover (%): Instream ___	Overhanging ___	Canopy ___	
Riparian Vegetation (%): Shrub ___ (includes alder/willow)		Conif. Tree ___	Decid. Tree ___ Grasses/Sedges ___ Other ___

Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n):	45 % Station:
		Bank Stability (G/F/P):	Good to poor
Number of Small Pools:		Pool/Riffle Ratio:	

ELECTROFISHING INFORMATION:

Estimate Type: Removal: ✓ Mark/Recapture:_____ Multiple Mark/Recapture:_____ Index (300sec):_____	Barrier nets (y/n) [y circled]	Timer (y/n) [y circled]
	Equipment: Electrofisher 15-D	
	Pulse Width: J	Frequency: 8
Sweep 1 4 misses; Sweep 2 Ø "; Sweep 3 Ø "; Sweep 4 Ø "; sweep 5 Ø misses	Voltage: 400-600	Output: Standard Pulse

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	Ø	Ø	Ø	Ø	Ø				
Timer (end):	815	596	612	565	604				

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										

Field Fish Data Collection Sheets

River Name: T-3					Station: Quantitative Stn. #1					
Date(s): June 25/07					Responsibility:					
No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
79	1	BT		85	6.2					
80	1	BT		102	13.1					
81	1	BT		**120**	**20.6**					
82	1	BT		118	17.3					
83	1	BT		128	22.8					
84	1	BT		155	39.1					
85	2	BT		36	0.5					
86	2	BT		95	8.8					
87	2	BT		96	10.4					
88	2	BT		105	13.1					
89	3	BT		28	------					
90	4	BT		81	6.5					Wind throwing off scales
-----	5	-----		-----	-----					No fish caught

Index 3

Electrofishing - Field Data Collection

SITE DESCRIPTION: Southern Head.			
River Name: —		River Code: T5	
WGS 84 Latitude: 5300299 N		Longitude: 719092 E	
Station Identifier: Index (T5)		Map Reference:	
Date:	Start: June 28/07	Time:	Start: ~ 11:30
	End: June 28/07		End: 12:35
Field Crew: Matthew Crosse, Zach Bartlett & Suzanne Glouveia			
Description: Outflow of Pond 4			
Station/Habitat Information: Riffle, down near North Harbour.			
Length (m):	1 74m 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Width (m):	1 0.38 2 0.23 3 0.464 ___ 5 ___ 6 ___ Mean: 0.36
Station Area (m^2): 26.64 m^2		No. Of Units (100 m^2): 0.27	
Depth (cm):	Top: 1. 2.0 2. 3.0 3. 2.5 Mid: 1. — 2. 7.5 3. Btm: 1. 6.0 2. 9.5 3. 8.0	Velocity (m/s): Type: Hockey ball	Top: 1. — 2. 0.12 3. — Mid: 1. 2. 0.121 3. Btm: 1. — 2. Ø 3. —
photographs (y/n): y Roll #: digital Exposures:			Water Samples (y/(n)): NO
Water Temp (°C):	Start:	Air Temp (°C):	Start:
	End:		End:
Weather: Sunny			
Detailed Habitat Collected (y/n): Y — (If no complete below)			
Habitat type (%): Riffle 65 Run 30 Pool 5 Flat ___ Rapid ___ Other ___			
Substrate (%): Bedrock ___ Lg. Boulder ___ Sm. Boulder 25 Rubble 12.5 Cobble 45 Aqu. Veg 10 Pebble ___ Gravel 30 Sand/silt/clay ___ Detritus ___			
Cover (%): Instream 10% Overhanging ___ Canopy ___			
Riparian Vegetation (%): Shrub ___ (includes alder/willow) Conif. Tree ___ Decid. Tree ___ Grasses/Sedges ___ Other ___			
Ice Scour Height (m):	1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ Mean ___	Undercut Banks (y/n): y % Station: 5	
		Bank Stability (G/F/P): Good-poor	
Number of Small Pools:		Pool/Riffle Ratio:	

Ø miss Ø catch

ELECTROFISHING INFORMATION:		
Estimate Type: Removal:____ Mark/Recapture:_____ Multiple Mark/Recapture:_____ Index (300sec): ✓	Barrier nets (y/(n))	Timer ((y)/n)
	Equipment: Electrofisher 15-D	
	Pulse Width: J	Frequency: 8
	Voltage: 600	Output: Standard Pulse

Sweep No.	1	2	3	4	5	6	7	8	
Timer (start):	Ø								
Timer (end):	305								

ELECTROFISHING RESULTS (Summary):

Species	Age Class	1	2	3	4	5	6	7	8	Total
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
	0+									
	1+									
	2+									
	>2+									
	Total									
Eels:										
Sticklebacks										

Field Fish Data Collection Sheets

River Name: TS	**Station:** INDEX
Date(s): JUNE 28th, 07	**Responsibility:**

No.	Sweep	Species	Age	Length (mm)	Weight (grams)	Marked (y/n)	Recap. (Y/n)	Index Sample (y/n)	Aging Sample (y/n)	Remarks
			No Fish caught							

APPENDIX
D
(Water Quality Results)

Date sampled: Nov. 2, '06
UTM coordinates: No point taken, but was taken near the boundry into the rest of the pond.
Pond Name: Pond 1
Pond Code

Secchi Disc	UP	DOWN	AVG
	0.64	0.61	0.63

Photo numbers:

Water Profile

Water Depth m	Temperature celcius	pH units	Conductivity	DO ppm	DO % saturation	Actual Depth
0	8.96	5.62	27.5	11.01	97.0	0.6
1	8.96	5.55	27.5	10.65	93.5	1.1
2	8.97	5.51	27.5	10.32	90.8	1.2

Date sampled: Oct 31, '06
UTM coordinates: 719866 E, 5299430 N
Pond Name: Pond 2
Pond Code P 2

Secchi Disc (m)	UP	DOWN	AVG
	1.0	1.1	1.05

Photo numbers:

Water Profile

Water Depth m	Temperature celcius	pH units	Conductivity	DO ppm	DO % saturation	Actual Depth
0	7.01	5.65	24.9	11.56	96.9	0.4
1	7.01	5.57	25.1	11.14	93.1	1.3
2	7.02	5.52	25.1	10.86	90.7	2.0
3	6.99	5.57	25.1	10.71	89.2	3.2
4	6.98	5.60	24.9	10.49	87.4	4.3
5	6.97	5.60	25.1	10.64	88.6	5.2
6	6.97	5.60	25.3	10.61	88.4	5.6

Date sampled: Oct 31, '06
UTM coordinates: 719777E 5299925N
Pond Name: Pond 3
Pond Code

Secchi Disc (m)	UP	DOWN	AVG
	0.8	0.9	0.85

Note: Can see at bottom

Photo numbers:

Water Profile

Water Depth m	Temperature celcius	pH units	Conductivity	DO ppm	DO % saturation	Actual Depth
0	7.01	5.51	22.1	11.46	95.6	0.4
1	7.01	5.43	22.1	11.15	93.6	0.8
2	7.01	5.43	22.2	10.79	90.0	0.9

Client:	AMEC Earth and Environmental a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	June 22, 2007 June 14, 2007 1 of 6
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-0989
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

General Chemistry + Metals

Lab Number **Sample ID** **Date Collected**				**S2007-07921** **Pond 1** **11-May-07**	**S2007-07922** **Pond 4** **24-May-07**	**S2007-07923** **Pond 5a** **24-May-07**	**S2007-07924** **Pond 6** **01-Jun-07**
General Chemistry	**Unit**	**CCME** (FAL) (ug/L)**	**MDL (ug/L)**				
Ammonia as N	(µg/L)	19	10	20	20	40	50
Bicarbonate	(µg/L)	-	6000	7120	<6000	<6000	<6000
Carbonate	(µg/L)	-	3000	<3000	<3000	<3000	<3000
Chloride	(µg/L)	-	100	8500	8410	7100	8340
Colour	(TCU)	Narrative	5	19	22	46	77
Conductivity	(uS/cm)	-	5	38	33	32	41
Dissolved Organic Carbon	(µg/L)	-	500	5580	3410	3470	6600
Hardness as CaCO3	(µg/L)	-	300	7300	4600	3300	3700
Nitrate as N	(µg/L)	13000 [hh]	50	<50	<50	<50	<50
Nitrite as N	(µg/L)	60[ff]	50	<50	<50	<50	<50
pH		6.5-9.0[n]	-	6.29	5.53	4.89	4.45
Reactive Silica (as SiO2)	(µg/L)	-	10	167	243	212	227
Sulphate	(µg/L)	-	100	2080	1770	1870	2270
Total Alkalinity (CaCO3)	(µg/L)	-	5000	5840	<5000	<5000	<5000
Total Dissolved Solids (Theo)	(µg/L)	-	10000	25000	21700	20700	26400
Total Phosphorous	(µg/L)	-	10	<10	30	47	11
Total Suspended Solids	(µg/L)	Narrative	2000	<2000	<2000	4000	2000
Turbidity	(NTU)	Narrative	0.1	0.8	1.0	1.8	1.5
Metals							
Calcium	(µg/L)	-	500	1830	867	503	484
Magnesium	(µg/L)	-	20	670	602	505	610
Potassium	(µg/L)	-	20	324	268	111	291
Sodium	(µg/L)	-	500	4910	4670	3930	4730
Ion Balance							
Cation Sum	(meq)	-	-	0.37	0.30	0.24	0.29
Anion Sum	(meq)	-	-	0.40	0.35	0.29	0.28
Ion Balance	%	-	-	-4.34	-7.67	-9.41	0.98

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth and Environmental a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	June 22, 2007 June 14, 2007 2 of 6
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-0989
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

General Chemistry + Metals

Lab Number				**S2007-07925**	**S2007-07925**	**S2007-07926**	**S2007-07926**
Sample ID				**Pond 7**	**Pond 7**	**Pond 8**	**Pond 8**
Date Collected				**31-May-07**	**31-May-07**	**15-May-07**	**15-May-07**
General Chemistry	**Unit**	**CCME** (FAL) (ug/L)**	**MDL (ug/L)**		**(Replicate)**		**(Replicate)**
Ammonia as N	(µg/L)	19	10	30	NR	<10	NR
Bicarbonate	(µg/L)	-	6000	9120	NR	6940	NR
Carbonate	(µg/L)	-	3000	<3000	NR	<3000	NR
Chloride	(µg/L)	-	100	9970	NR	6740	6710
Colour	(TCU)	Narrative	5	46	NR	36	NR
Conductivity	(uS/cm)	-	5	50	NR	33	NR
Dissolved Organic Carbon	(µg/L)	-	500	7550	NR	4800	NR
Hardness as CaCO3	(µg/L)	-	300	10800	NR	7300	NR
Nitrate as N	(µg/L)	13000 [hh]	50	<50	NR	<50	<50
Nitrite as N	(µg/L)	60[ff]	50	<50	NR	<50	<50
pH		6.5-9.0[n]	-	6.22	NR	6.15	NR
Reactive Silica (as SiO2)	(µg/L)	-	10	186	NR	154	NR
Sulphate	(µg/L)	-	100	2530	NR	1560	1640
Total Alkalinity (CaCO3)	(µg/L)	-	5000	7480	NR	5680	NR
Total Dissolved Solids (Theo)	(µg/L)	-	10000	32600	NR	21700	NR
Total Phosphorous	(µg/L)	-	10	<10	NR	<10	NR
Total Suspended Solids	(µg/L)	Narrative	2000	2000	NR	<2000	NR
Turbidity	(NTU)	Narrative	0.1	1.2	1.3	0.6	NR
Metals							
Calcium	(µg/L)	-	500	2950	1980	1980	NR
Magnesium	(µg/L)	-	20	845	577	577	NR
Potassium	(µg/L)	-	20	382	225	225	NR
Sodium	(µg/L)	-	500	5920	4020	4020	NR
Ion Balance							
Cation Sum	(meq)		-	0.48	0.33	0.33	NR
Anion Sum	(meq)		-	0.48	0.34	0.34	NR
Ion Balance	%		-	0.06	-1.33	-1.33	NR

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth and Environmental a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date:	June 22, 2007 June 14, 2007
		Page:	3 of 6
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-0989
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

General Chemistry + Metals

Lab Number **Sample ID** **Date Collected**				**S2007-07927** **Pond 9** **31-May-07**	**S2007-07928** **Pond 10** **01-Jun-07**	**S2007-07929** **Replicate 1** **NP**	**S2007-07929** **Replicate 1** **NP**
General Chemistry	**Unit**	**CCME** (FAL) (ug/L)**	**MDL (ug/L)**				**(Replicate)**
Ammonia as N	(µg/L)	19	10	<10	<10	30	NR
Bicarbonate	(µg/L)	-	6000	<6000	16200	<6000	<6000
Carbonate	(µg/L)	-	3000	<3000	<3000	<3000	<3000
Chloride	(µg/L)	-	100	6370	7860	8120	NR
Colour	(TCU)	Narrative	5	34	72	36	36
Conductivity	(uS/cm)	-	5	28	52	34	34
Dissolved Organic Carbon	(µg/L)	-	500	7340	8000	4740	5300
Hardness as CaCO3	(µg/L)	-	300	5200	15700	4800	NR
Nitrate as N	(µg/L)	13000 [hh]	50	<50	<50	<50	NR
Nitrite as N	(µg/L)	60[ff]	50	<50	<50	<50	NR
pH		6.5-9.0[n]	-	5.33	6.44	5.31	5.53
Reactive Silica (as SiO2)	(µg/L)	-	10	94	505	244	NR
Sulphate	(µg/L)	-	100	1310	1770	1800	NR
Total Alkalinity (CaCO3)	(µg/L)	-	5000	<5000	13300	<5000	<5000
Total Dissolved Solids (Theo)	(µg/L)	-	10000	18400	33800	21800	22200
Total Phosphorous	(µg/L)	-	10	<10	26	14	NR
Total Suspended Solids	(µg/L)	Narrative	2000	<2000	11000	<2000	NR
Turbidity	(NTU)	Narrative	0.1	0.7	3.4	0.5	NR
Metals							
Calcium	(µg/L)	-	500	1250	4520	924	NR
Magnesium	(µg/L)	-	20	505	1080	606	NR
Potassium	(µg/L)	-	20	153	283	245	NR
Sodium	(µg/L)	-	500	3740	5230	4610	NR
Ion Balance							
Cation Sum	(meq)		-	0.27	0.55	0.30	NR
Anion Sum	(meq)		-	0.28	0.53	0.34	NR
Ion Balance	%		-	-1.88	2.15	-5.57	NR

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario,
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth and Environmental a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	June 22, 2007 June 14, 2007 4 of 6
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-0989
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

General Chemistry + Metals

				Lab Blank	Q.C. Standard Actual	Q.C. Standard Expected
Parameters	**Unit**	**CCME** (FAL) (ug/L)**	**MDL (ug/L)**			
Ammonia as N	(mg/L)	19	10	<10	380	400
Bicarbonate	(µg/L)	-	6000	<6000	-	-
Carbonate	(µg/L)	-	3000	<3000	-	-
Chloride	(µg/L)	-	100	<100	4130	4200
Colour	(TCU)	Narrative	5	<5	31	32.5
Conductivity	(uS/cm)	-	5	<5	103	100
Dissolved Organic Carbon	(µg/L)	-	500	<500	14500	15000
Hardness as CaCO3	(µg/L)	-	300	<300	-	-
Nitrate as N	(µg/L)	13000 [hh]	50	<50	4010	4200
Nitrite as N	(µg/L)	60[ff]	50	<50	530	500
pH		6.5-9.0[n]		8.00	6.04	6.00
Reactive Silica (as SiO2)	(µg/L)	-	10	<10	983	1000
Sulphate	(µg/L)	-	100	<100	23700	24000
Total Alkalinity (CaCO3)	(µg/L)	-	5000	<5000	99500	100000
Total Dissolved Solids (Theo)	(µg/L)	-	10000	<10000	67000	65000
Total Phosphorous	(µg/L)	-	10	<10	508	500
Total Suspended Solids	(µg/L)	Narrative	2000	<2000	96000	100000
Turbidity	(NTU)	Narrative	0.1	<0.1	9.5	10.0
Metals						
Calcium	(µg/L)	-	500	<500	10600	10000
Magnesium	(µg/L)	-	20	<20	4010	4000
Potassium	(µg/L)	-	20	<20	18900	20000
Sodium	(µg/L)	-	500	<500	21400	20000

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth and Environmental a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date:	June 22, 2007 June 14, 2007
		Page:	5 of 6
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2006-0831
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

General Chemistry + Metals

				Date of Analysis	Method References
Parameters	**Unit**	**CCME** (FAL) (ug/L)**	**MDL (ug/L)**		
Ammonia as N	(mg/L)	19	10	15-Jun-07	US EPA 1688, Skalar 155-318
Bicarbonate	(µg/L)	-	6000	15-Jun-07	APHA 2320, 2510, 4500 H^+
Carbonate	(µg/L)	-	3000	15-Jun-07	APHA 2320, 2510, 4500 H^+
Chloride	(µg/L)	-	100	15-Jun-07	APHA 4110 C
Colour	(TCU)	Narrative	5	15-Jun-07	APHA 2120 B
Conductivity	(uS/cm)	-	5	15-Jun-07	APHA 2320, 2510, 4500 H^+
Dissolved Organic Carbon	(µg/L)	-	500	15-Jun-07	APHA 5310 C
Hardness as CaCO3	(µg/L)	-	300.	-	-
Nitrate as N	(µg/L)	13000 [hh]	50	15-Jun-07	APHA 4110 C
Nitrite as N	(µg/L)	60[ff]	50	15-Jun-07	APHA 4110 C
pH		6.5-9.0[n]		15-Jun-07	APHA 2320, 2510, 4500 H^+
Reactive Silica (as SiO2)	(µg/L)	-	10	18-Jun-07	APHA 3120, 3030 E
Sulphate	(µg/L)	-	100	15-Jun-07	APHA 4110 C
Total Alkalinity (CaCO3)	(µg/L)	-	5000	15-Jun-07	APHA 2320, 2510, 4500 H^+
Total Dissolved Solids (Theo)	(µg/L)	-	10000	15-Jun-07	APHA 2320, 2510, 4500 H^+
Total Phosphorous	(µg/L)	-	10	21-Jun-07	APHA 4500, P,B,E
Total Suspended Solids	(µg/L)	Narrative	2000	21-Jun-07	APHA 2540 D
Turbidity	(NTU)	Narrative	0.1	22-Jun-07	APHA 2130 B
Metals					
Calcium	(µg/L)	-	500	18-Jun-07	APHA 3120, 3030 E
Magnesium	(µg/L)	-	20	18-Jun-07	APHA 3120, 3030 E
Potassium	(µg/L)	-	20	18-Jun-07	APHA 3120, 3030 E
Sodium	(µg/L)	-	500	18-Jun-07	APHA 3120, 3030 E

****** - **Canadian Environmental Quality Guidelines**
(FAL) - Freshwater Aquatic Life
hh - For protection from direct toxic effects; the guidelines do not consider indirect effects due to eutrophication.

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

/gb

Cynthia Ridge, C. Chem.
Q.A/Q.C. Officer

Suman Puhani, C. Chem.
Laboratory Manager

ASSOCIATION OF THE CHEMICAL PROFESSION CHARTERED Suman Puhani CHEM

~ GENERAL COMMENTS ~

MDL	Method Detection Limit
RDL	Reporting Detection Limit
ANR	Analysis not required
NA	Analysis not applicable
NP	Not Provided
NR	No Lab Replicate
	Result in (brackets) represents Lab Replicate
	Results relate to only to the items tested.

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth and Environmental, a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date:	June 22, 2007 June 14, 2007
		Page:	1 of 5
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-0989
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

ICP Metals + Hydrides

Lab Number **Sample ID** **Date Collected**				**S2007-07921** **Pond 1** **11-May-07**	**S2007-07922** **Pond 4** **24-May-07**	**S2007-07923** **Pond 5a** **24-May-07**	**S2007-07924** **Pond 6** **01-Jun-07**	**S2007-07925** **Pond 7** **31-May-07**
Parameters	**Unit**	**CCME** (FAL)**	**MDL**					
Aluminum	(µg/L)	5-100	1	86	90	41	71	66
Antimony	(µg/L)	-	1	<1	<1	<1	<1	<1
Arsenic	(µg/L)	5.0	1	<1	<1	<1	<1	<1
Barium	(µg/L)	-	0.5	2.7	2.6	0.6	1.3	2.0
Beryllium	(µg/L)	-	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	(µg/L)	-	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	(µg/L)	-	2	17	16	14	18	12
Cadmium	(µg/L)	0.017	0.015	<0.015	0.038	0.028	0.023	0.026
Calcium	(µg/L)	-	500	1830	867	503	484	2950
Chromium	(µg/L)	-	1	<1	1	1	<1	1
Cobalt	(µg/L)	-	1	<1	<1	<1	<1	<1
Copper	(µg/L)	2-4 [ii]	1	<1	1	<1	<1	1
Iron	(µg/L)	300 [ii]	1	258	162	164	187	328
Lead	(µg/L)	1-7 [ii]	1	<1	1	<1	<1	<1
Magnesium	(µg/L)	-	20	670	602	505	610	845
Manganese	(µg/L)	-	1	10	13	6	7	14
Mercury	(µg/L)	0.026 [pp]	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Molybdenum	(µg/L)	73	2	<2	<2	<2	<2	<2
Nickel	(µg/L)	25-150 [ii]	1	<1	<1	<1	<1	<1
Potassium	(µg/L)	-	20	324	268	111	291	382
Selenium	(µg/L)	1.0 [ii]	1	<1	<1	<1	<1	<1
Silver	(µg/L)	0.1 [ii]	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	(µg/L)	-	500	4910	4670	3930	4730	5920
Strontium	(µg/L)	-	1	8	7	5	5	9
Thallium	(µg/L)	0.8	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tin	(µg/L)	-	2	<2	<2	<2	<2	<2
Titanium	(µg/L)	-	2	2	<2	<2	<2	<2
Uranium	(µg/L)	10 [ii]	1	<1	<1	<1	<1	<1
Vanadium	(µg/L)	-	2	<2	<2	<2	<2	<2
Zinc	(µg/L)	30	1	2	11	3	5	2

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth and Environmental, a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date:	June 21, 2007 June 14, 2007
		Page:	2 of 5
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-0989
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

ICP Metals + Hydrides

Lab Number Sample ID Date Collected				S2007-07926 Pond 8 15-May-07	S2007-07927 Pond 9 31-May-07	S2007-07928 Pond 10 01-Jun-07	S2007-07929 Replicate 1 NP
Parameters	**Unit**	**CCME** (FAL)**	**MDL**				
Aluminum	(µg/L)	5-100	1	49	49	212	95
Antimony	(µg/L)	-	1	<1	<1	<1	<1 (<1)
Arsenic	(µg/L)	5.0	1	<1	<1	<1	<1 (<1)
Barium	(µg/L)	-	0.5	4.9	3.8	16.1	2.8
Beryllium	(µg/L)	-	0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	(µg/L)	-	0.5	<0.5	<0.5	<0.5	<0.5
Boron	(µg/L)	-	2	16	15	11	14
Cadmium	(µg/L)	0.017	0.015	<0.015	0.021	<0.015	0.041
Calcium	(µg/L)	-	500	1980	1250	4520	924
Chromium	(µg/L)	8.9	1	1	1	1	1
Cobalt	(µg/L)	-	1	<1	<1	<1	<1
Copper	(µg/L)	2-4 [ff]	1	1	<1	<1	1
Iron	(µg/L)	300 [ii]	1	152	253	1160	173
Lead	(µg/L)	1-7 [ff]	1	<1	<1	<1	<1
Magnesium	(µg/L)	-	20	577	505	1080	606
Manganese	(µg/L)	-	1	7	16	314	14
Mercury	(µg/L)	0.026 [gg]	0.02	<0.02	<0.02	<0.02	<0.02
Molybdenum	(µg/L)	73	2	<2	<2	<2	<2
Nickel	(µg/L)	25-150 [ff]	1	<1	<1	<1	1
Potassium	(µg/L)	-	20	225	153	283	245
Selenium	(µg/L)	1.0 [ff]	1	<1	<1	<1	<1 (<1)
Silver	(µg/L)	0.1 [ff]	0.1	<0.1	<0.1	<0.1	<0.1
Sodium	(µg/L)	-	500	4020	3740	5230	4610
Strontium	(µg/L)	-	1	9	7	19	8
Thallium	(µg/L)	0.8	0.5	<0.5	<0.5	<0.5	<0.5
Tin	(µg/L)	-	2	<2	<2	<2	<2
Titanium	(µg/L)	-	2	<2	<2	3	<2
Uranium	(µg/L)	10 [ff]	1	<1	<1	1	<1
Vanadium	(µg/L)	-	2	<2	<2	<2	<2
Zinc	(µg/L)	30	1	4	2	3	5

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth and Environmental, a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date:	June 22, 2007 June 14, 2007
		Page:	3 of 5
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-0989
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

ICP Metals + Hydrides

				Lab Blank	Q.C. Standards Actual	Q.C. Standards Expected
Parameters	**Unit**	**CCME** (FAL)**	**MDL**			
Aluminum	(µg/L)	5-100	1	<1	1050	1000
Antimony	(µg/L)	-	1	<1	3	3
Arsenic	(µg/L)	5.0	1	<1	3	3
Barium	(µg/L)	-	0.5	<0.5	530	500
Beryllium	(µg/L)	-	0.1	<0.1	521	500
Bismuth	(µg/L)	-	0.5	<0.5	1030	1000
Boron	(µg/L)	-	2	<2	986	1000
Cadmium	(µg/L)	0.017	0.015	<0.015	523	500
Calcium	(µg/L)	-	500	<500	10600	10000
Chromium	(µg/L)	8.9	1	<1	523	500
Cobalt	(µg/L)	-	1	<1	520	500
Copper	(µg/L)	2-4 [ff]	1	<1	1020	1000
Iron	(µg/L)	300 [ff]	1	<1	1070	1000
Lead	(µg/L)	1-7 [ff]	1	<1	1040	1000
Magnesium	(µg/L)	-	20	<20	4000	4000
Manganese	(µg/L)	-	1	<1	519	500
Mercury	(µg/L)	0.026 [gg]	0.02	<0.02	109 %	75-125 %
Molybdenum	(µg/L)	73	2	<2	1030	1000
Nickel	(µg/L)	25-150 [ff]	1	<1	1050	1000
Potassium	(µg/L)	-	20	<20	18900	20000
Selenium	(µg/L)	1.0 [ff]	1	<1	3	3
Silver	(µg/L)	0.1 [ff]	0.1	<0.1	1050	1000
Sodium	(µg/L)	-	500	<500	21400	20000
Strontium	(µg/L)	-	1	<1	1120	1000
Thallium	(µg/L)	0.8	0.5	<0.5	1020	1000
Tin	(µg/L)	-	2	<2	1030	1000
Titanium	(µg/L)	-	2	<2	1050	1000
Uranium	(µg/L)	10 [ff]	1	<1	102	100
Vanadium	(µg/L)	-	2	<2	522	500
Zinc	(µg/L)	30	1	<1	528	500

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth and Environmental, a division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date:	June 22, 2007 June 14, 2007
		Page:	4 of 5
Project Name:	Southern Head Proposed Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-0989
Contact:	Jim McCarthy/Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

ICP Metals + Hydrides

				Date of Analysis	Method References
Parameters	**Unit**	**CCME** (FAL)**	**MDL**		
Aluminum	(µg/L)	5-100	1	05-Jun-06	APHA 3120, 3030 E
Antimony	(µg/L)	-	1	20-Jun-07	APHA 3114 C, VGA
Arsenic	(µg/L)	5.0	1	19/20-Jun-07	APHA 3114 C, VGA
Barium	(µg/L)	-	0.5	05-Jun-06	APHA 3120, 3030 E
Beryllium	(µg/L)	-	0.1	05-Jun-06	APHA 3120, 3030 E
Bismuth	(µg/L)	-	0.5	05-Jun-06	APHA 3120, 3030 E
Boron	(µg/L)	-	2	05-Jun-06	APHA 3120, 3030 E
Cadmium	(µg/L)	0.017	0.015	05-Jun-06	APHA 3120, 3030 E
Calcium	(µg/L)	-	500	02/05-Jun-06	APHA 3120, 3030 E
Chromium	(µg/L)	8.9	1	05-Jun-06	APHA 3120, 3030 E
Cobalt	(µg/L)	-	1	05-Jun-06	APHA 3120, 3030 E
Copper	(µg/L)	2-4 [ff]	1	05-Jun-06	APHA 3120, 3030 E
Iron	(µg/L)	300 [ff]	1	05-Jun-06	APHA 3120, 3030 E
Lead	(µg/L)	1-7 [ff]	1	05-Jun-06	APHA 3120, 3030 E
Magnesium	(µg/L)	-	20	02/05-Jun-06	APHA 3120, 3030 E
Manganese	(µg/L)	-	1	05-Jun-06	APHA 3120, 3030 E
Mercury	(µg/L)	0.026[gg]	0.1	20-Jun-07	EPA 7470
Molybdenum	(µg/L)	73	2	05-Jun-06	APHA 3120, 3030 E
Nickel	(µg/L)	25-150 [ff]	1	05-Jun-06	APHA 3120, 3030 E
Potassium	(µg/L)	-	20	02/05-Jun-06	APHA 3120, 3030 E
Selenium	(µg/L)	1.0[ff]	1	18/19-Jun-07	APHA 3114 C, VGA
Silver	(µg/L)	0.1 [ff]	0.1	05-Jun-06	APHA 3120, 3030 E
Sodium	(µg/L)	-	500	02/05-Jun-06	APHA 3120, 3030 E
Strontium	(µg/L)	-	1	05-Jun-06	APHA 3120, 3030 E
Thallium	(µg/L)	0.8	0.5	05-Jun-06	APHA 3120, 3030 E
Tin	(µg/L)	-	2	05-Jun-06	APHA 3120, 3030 E
Titanium	(µg/L)	-	2	05-Jun-06	APHA 3120, 3030 E
Uranium	(µg/L)	10[ff]	1	05-Jun-06	APHA 3120, 3030 E
Vanadium	(µg/L)	-	2	05-Jun-06	APHA 3120, 3030 E
Zinc	(µg/L)	30	1	05-Jun-06	APHA 3120, 3030 E

Mercury anlysis performed by Maxxam Analytics Inc.

**** - Canadian Environmental Quality Guidelines, December 2003**

FAL - Freshwater Aquatic Life

ff - No fact sheet created. For more information on this guideline , please refer to Canadian Water Quality Guidelines (CCREM 1987), available electronically on the accompanying CEQG CD.

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Cynthia Ridge, C. Chem.
Q.A./Q.C. Officer

Suman Punani, C. Chem.
Laboratory Manager

/gb

~ GENERAL COMMENTS ~

MDL	Method Detection Limit
RDL	Reporting Detection Limit
ANR	Analysis not required
NA	Analysis not applicable
NP	Not Provided
NR	No Lab Replicate
	Result in (brackets) represents Lab Replicate
	Results relate to only to the items tested.

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth & Environmental, A Division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	July 09, 2007 July 04, 2007 1 of 4
Project Name:	Southern Head Proposed Oil Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-1156
Contact:	Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

BTEX, TPH (RBCA Method)

Lab Number Sample ID Date Collected Unit		S2007-09109 Pond 1 23-Jun-07 (ug/L)	S2007-09110 North Harbour River above Bridge 27-Jun-07 (ug/L)	S2007-09110 North Harbour River above Bridge 27-Jun-07 (ug/L)	S2007-09111 Pond 2 25-Jun-07 (ug/L)	S2007-09112 Watson's Brook 29-Jun-07 (ug/L)	S2007-09113 Come By Chance River 28-Jun-07 (ug/L)
Parameters	**MDL (µg/L)**			**(Replicate)**			
Benzene	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
m+p-Xylene	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
o-Xylene	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TPH (C6-C10)	50	<50	<50	<50	<50	<50	<50
TPH (C6-C10) less BTEX	50	<50	<50	<50	<50	<50	<50
TPH (>C10-C21)	50	72	<50	NR	<50	76	58
TPH (>C21-<C32)	50	<50	<50	NR	<50	<50	<50
Modified TPH (Tier 1)	150	<172	<150	-	<150	<176	<158
Hydrocarbon Identification		Too low to identify	-	-	-	Too low to identify	Too low to identify
BTEX, TPH Purgeable							
Surrogate Recovery							
1,4-Difluorobenzene (%)		92	95	96	95	93	93
4-Bromofluorobenzene (%)		96	100	99	92	93	97
TPH Extractable							
Surrogate Recovery							
O-Terphenyl (%)		78	88	NR	83	95	73

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth & Environmental, A Division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	July 09, 2007 July 04, 2007 2 of 4
Project Name:	Southern Head Proposed Oil Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-1156
Contact:	Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

BTEX, TPH (RBCA Method)

Lab Number **Sample ID** **Date Collected** **Unit**		**S2007-09114** **Pond 4** **28-Jun-07** **(ug/L)**
Parameters	**MDL (µg/L)**	
Benzene	0.2	<0.2
Toluene	0.2	<0.2
Ethylbenzene	0.2	<0.2
m+p-Xylene	0.4	<0.4
o-Xylene	0.2	<0.2
TPH (C6-C10)	50	<50
TPH (C6-C10) less BTEX	50	<50
TPH (>C10-C21)	50	<50
TPH (>C21-<C32)	50	<50
Modified TPH (Tier 1)	150	<150
Hydrocarbon Identification		-
BTEX, TPH Purgeable		
Surrogate Recovery		
1,4-Difluorobenzene (%)		101
4-Bromofluorobenzene (%)		98
TPH Extractable		
Surrogate Recovery		
O-Terphenyl (%)		89

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth & Environmental, A Division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date:	July 09, 2007 July 04, 2007
		Page:	3 of 4
Project Name:	Southern Head Proposed Oil Refinery	Sample Type:	Water
Project Number:	TF 6116544	Lab Ref.:	F2007-1156
Contact:	Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

BTEX, TPH (RBCA Method)

Parameters	MDL (µg/L)	Lab Blank (µg/L)	Blank Spike (µg/L)	Blank Spike Recovery (%)	Date of Analysis
Benzene	0.2	<0.2	51.7	103	05-Jul-07
Toluene	0.2	<0.2	54.1	108	
Ethylbenzene	0.2	<0.2	53.5	107	
m+p-Xylene	0.4	<0.4	55.3	111	
o-Xylene	0.2	<0.2	56.9	114	
TPH (C6-C10)	50	<50	1160	116	
TPH (C6-C10) less BTEX	50	<50	885	112	
TPH (>C10-C21)	50	<50	10400	83	07-Jul-07
TPH (>C21-<C32)	50	<50			
Modified TPH (Tier 1)	150	-	-	-	-
BTEX, TPH Purgeable					
Surrogate Recovery					
1,4-Difluorobenzene (%)		100	99	99	05-Jul-07
4-Bromofluorobenzene (%)		99	106	106	
TPH Extractable					
Surrogate Recovery					
O-Terphenyl (%)		106	110	110	07-Jul-07
Method Reference		Atlantic RBCA Tier I			

Modified TPH is the total of TPH Purgeable and Extractable.
Total hydrocarbons quantified as Toluene/Diesel.
All values in ppb (ug/L) unless otherwise stated.

Analysts: J. Evans, B. Sc.
M. Mak, C. Chem.

Cynthia Ridge, C. Chem.
Q.A./Q.C. Officer

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Suman Punani
CHEMIST

Suman Punani, C. Chem.
Laboratory Manager

/bpj AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

~ GENERAL COMMENTS ~

MDL	Method Detection Limit
RDL	Reporting Detection Limit
ANR	Analysis not required
NA	Analysis not applicable
NP	Not Provided
NR	No Lab Replicate
	Result in (brackets) represents Lab Replicate.
	Results relate only to the items tested.

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

APPENDIX
E
(Sediment Quality Results)

Client:	AMEC Earth & Environmental, A Division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	July 11, 2007 June 14, 2007 1 of 5
Project Name:	Southern Head Proposed Refinery	Sample Type:	Soil
Project Number:	TF 6116544	Lab Ref.:	F2007-0988
Contact:	Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

ICP Metals + Hydrides

Lab Number		S2007-07906	S2007-07907	S2007-07908	S2007-07908	S2007-07909	S2007-07910
Sample ID		P1 0-5	P1 5-10	P4 0-5	P4 0-5	P4 5-10	P5a 0-5
Date Collected		11-May-07	11-May-07	24-May-07	24-May-07	24-May-07	24-May-07
Unit		(ug/g)	(ug/g)	(ug/g)	(ug/g)	(ug/g)	(ug/g)
Parameters	**MDL (µg/g)**				**(Replicate)**		
Aluminum	5	21900	23100	14300	15200	15400	1910
Antimony	0.5	0.9	0.6	<0.5	<0.5	<0.5	<0.5
Arsenic	0.5	4.9	6.0	16.6	17.4	15.9	1.9
Barium	0.5	108	99.5	64.7	66.4	65.5	21.2
Beryllium	0.2	0.4	0.5	<0.2	0.2	<0.2	<0.2
Bismuth	0.2	0.4	0.3	<0.2	<0.2	<0.2	<0.2
Cadmium	0.5	0.6	0.5	<0.5	<0.5	<0.5	<0.5
Calcium	25	4320	3700	3780	3900	3620	4930
Chromium	1	17	18	21	21	21	3
Cobalt	1	18	19	5	5	5	<1
Copper	1	11	11	8	8	8	6
Iron	5	37000	34500	14900	15700	15200	2860
Lead	5	26	19	23	24	19	15
Magnesium	10	2500	2560	2460	2540	2350	1010
Manganese	1	3550	2330	193	198	175	37
Mercury	0.01	0.02	0.03	0.02	NR	0.02	0.02
Molybdenum	2	2	2	2	2	2	<2
Nickel	5	12	13	11	12	11	<5
Potassium	10	546	539	550	553	528	138
Selenium	0.1	0.9	0.9	0.7	0.7	0.6	1.4
Silver	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Sodium	25	305	309	388	384	367	359
Strontium	2	24	21	31	32	30	48
Thallium	0.5	1.0	0.5	<0.5	<0.5	<0.5	<0.5
Tin	2	<2	<2	<2	<2	<2	2
Vanadium	5	79	81	48	49	45	10
Zinc	2	85	83	34	35	33	10

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth & Environmental, A Division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	July 11, 2007 June 14, 2007 2 of 5
Project Name:	Southern Head Proposed Refinery	Sample Type:	Soil
Project Number:	TF 6116544	Lab Ref.:	F2007-0988
Contact:	Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

ICP Metals + Hydrides

Lab Number		S2007-07911	S2007-07912	S2007-07913	S2007-07914	S2007-07915	S2007-07916
Sample ID		P5a 5-10	P6 0-5	P6 5-10	P7 0-5	P7 5-10	P8 0-5
Date Collected		24-May-07	01-Jun-07	01-Jun-07	31-May-07	31-May-07	15-May-07
Unit		(ug/g)	(ug/g)	(ug/g)	(ug/g)	(ug/g)	(ug/g)
Parameters	**MDL (µg/g)**						
Aluminum	5	2120	2540	2390	25300	29900	21300
Antimony	0.5	<0.5	<0.5	<0.5	0.8	1.0	1.3
Arsenic	0.5	1.5	1.1	1.2	8.4	8.1	4.8
Barium	0.5	21.3	25.3	24.1	73.9	53.4	177
Beryllium	0.2	<0.2	<0.2	<0.2	0.6	0.7	0.3
Bismuth	0.2	<0.2	<0.2	<0.2	0.6	0.3	0.6
Cadmium	0.5	<0.5	<0.5	<0.5	0.8	0.5	0.5
Calcium	25	4680	3230	3200	7940	8160	4960
Chromium	1	3	2	2	14	15	22
Cobalt	1	1	1	1	18	12	15
Copper	1	6	8	8	10	11	8
Iron	5	2740	1970	1920	43700	35300	47800
Lead	5	12	13	14	25	10	25
Magnesium	10	1170	663	666	1470	1450	5280
Manganese	1	42	37	15	1940	821	1870
Mercury	0.01	0.02	0.03	0.03	0.03	0.04	0.04
Molybdenum	2	<2	<2	<2	2	2	2
Nickel	5	<5	<5	<5	12	11	14
Potassium	10	110	126	105	424	394	635
Selenium	0.1	1.4	2.1	0.7	1.6	1.5	1.8
Silver	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Sodium	25	356	360	354	377	360	297
Strontium	2	47	39	39	26	24	27
Thallium	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Tin	2	2	2	2	2	<2	2
Vanadium	5	9	9	10	74	69	63
Zinc	2	10	9	8	124	103	98

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth & Environmental, A Division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	July 11, 2007 June 14, 2007 3 of 5
Project Name:	Southern Head Proposed Refinery	Sample Type:	Soil
Project Number:	TF 6116544	Lab Ref.:	F2007-0988
Contact:	Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

ICP Metals + Hydrides

Lab Number		S2007-07917	S2007-07918	S2007-07919	S2007-07920	S2007-07920
Sample ID		P8 5-10	P9 0-5	P10 0-5	P10 5-10	P10 5-10
Date Collected		15-May-07	31-May-07	01-Jun-07	01-Jun-07	01-Jun-07
Unit		(ug/g)	(ug/g)	(ug/g)	(ug/g)	(ug/g)
Parameters	**MDL (µg/g)**					**(Replicate)**
Aluminum	5	22300	5730	17900	21500	22400
Antimony	0.5	0.7	1.3	1.9	1.7	1.3
Arsenic	0.5	2.3	9.2	2.8	2.1	2.2
Barium	0.5	215	141	253	149	157
Beryllium	0.2	0.3	<0.2	0.3	0.3	0.3
Bismuth	0.2	0.2	1.7	1.9	1.1	0.9
Cadmium	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Calcium	25	5990	4740	4060	3890	4140
Chromium	1	21	8	16	16	17
Cobalt	1	11	7	18	16	18
Copper	1	10	9	6	7	8
Iron	5	20200	67900	83000	64400	68100
Lead	5	5	41	14	6	6
Magnesium	10	5950	824	3920	3170	3360
Manganese	1	665	1590	7530	1510	1600
Mercury	0.01	0.03	0.03	0.04	0.03	0.03
Molybdenum	2	2	2	2	2	2
Nickel	5	13	6	12	10	10
Potassium	10	491	651	693	702	712
Selenium	0.1	0.9	1.9	0.7	0.7	0.7
Silver	0.25	<0.25	<0.25	0.37	<0.25	<0.25
Sodium	25	280	730	263	231	234
Strontium	2	29	37	30	26	26
Thallium	0.5	<0.5	<0.5	3.6	<0.5	<0.5
Tin	2	<2	2	2	<2	<2
Vanadium	5	55	61	52	47	52
Zinc	2	62	30	103	90	95

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Client:	AMEC Earth & Environmental, A Division of AMEC Americas Limited 133 Crosbie Road, Suite 202, P.O. Box 13216 St. John's, Newfoundland A1B 4A5	Report Date: Received Date: Page:	July 11, 2007 June 14, 2007 4 of 5
Project Name:	Southern Head Proposed Refinery	Sample Type:	Soil
Project Number:	TF 6116544	Lab Ref.:	F2007-0988
Contact:	Suzanne Gouveia		Final

CERTIFICATE OF ANALYSIS

ICP Metals + Hydrides

Parameters	MDL (µg/g)	Lab Blank (ug/g)	Q.C. Standards Actual (mg/L)	Q.C. Standards Expected (mg/L)	Date of Analysis
Aluminum	5	<5	1.02	1.00	20-Jun-07
Antimony	0.5	<0.5	1.02	1.00	20-Jun-07
Arsenic	0.5	<0.5	1.06	1.00	20-Jun-07
Barium	0.5	<0.5	0.52	0.50	20-Jun-07
Beryllium	0.2	<0.2	0.51	0.50	20-Jun-07
Bismuth	0.2	<0.2	1.00	1.00	20-Jun-07
Cadmium	0.5	<0.5	0.51	0.50	20-Jun-07
Calcium	25	<25	10.1	10.0	20-Jun-07
Chromium	1	<1	0.50	0.50	20-Jun-07
Cobalt	1	<1	0.51	0.50	20-Jun-07
Copper	1	<1	1.02	1.00	20-Jun-07
Iron	5	<5	1.02	1.00	20-Jun-07
Lead	5	<5	1.00	1.00	20-Jun-07
Magnesium	10	<10	3.88	4.00	20-Jun-07
Manganese	1	<1	0.52	0.50	20-Jun-07
Mercury	0.01	<0.01	0.002	0.002	29-Jun-07
Molybdenum	2	<2	1.00	1.00	20-Jun-07
Nickel	5	<5	1.01	1.00	20-Jun-07
Phosphorus	5	<5	1.95	2.00	20-Jun-07
Potassium	10	<10	18.9	20.0	20-Jun-07
Selenium	0.1	<0.1	0.003	0.003	18/19-Jun-07
Silver	0.25	<0.25	1.05	1.00	20-Jun-07
Sodium	25	<25	21.4	20.0	20-Jun-07
Vanadium	5	<5	0.50	0.50	20-Jun-07
Zinc	2	<2	0.51	0.50	20-Jun-07

Method References:	
ICP Metals, Antimony, Arsenic	Sw 846, 3050, 6010 C
Mercury	SW 846, 7741, 1994
Selenium	SW 846, 3050, 7061

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
Suman Punani
CHEMIST

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
/bpj Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

Cynthia Ridge, C. Chem.
Q.A./Q.C. Officer

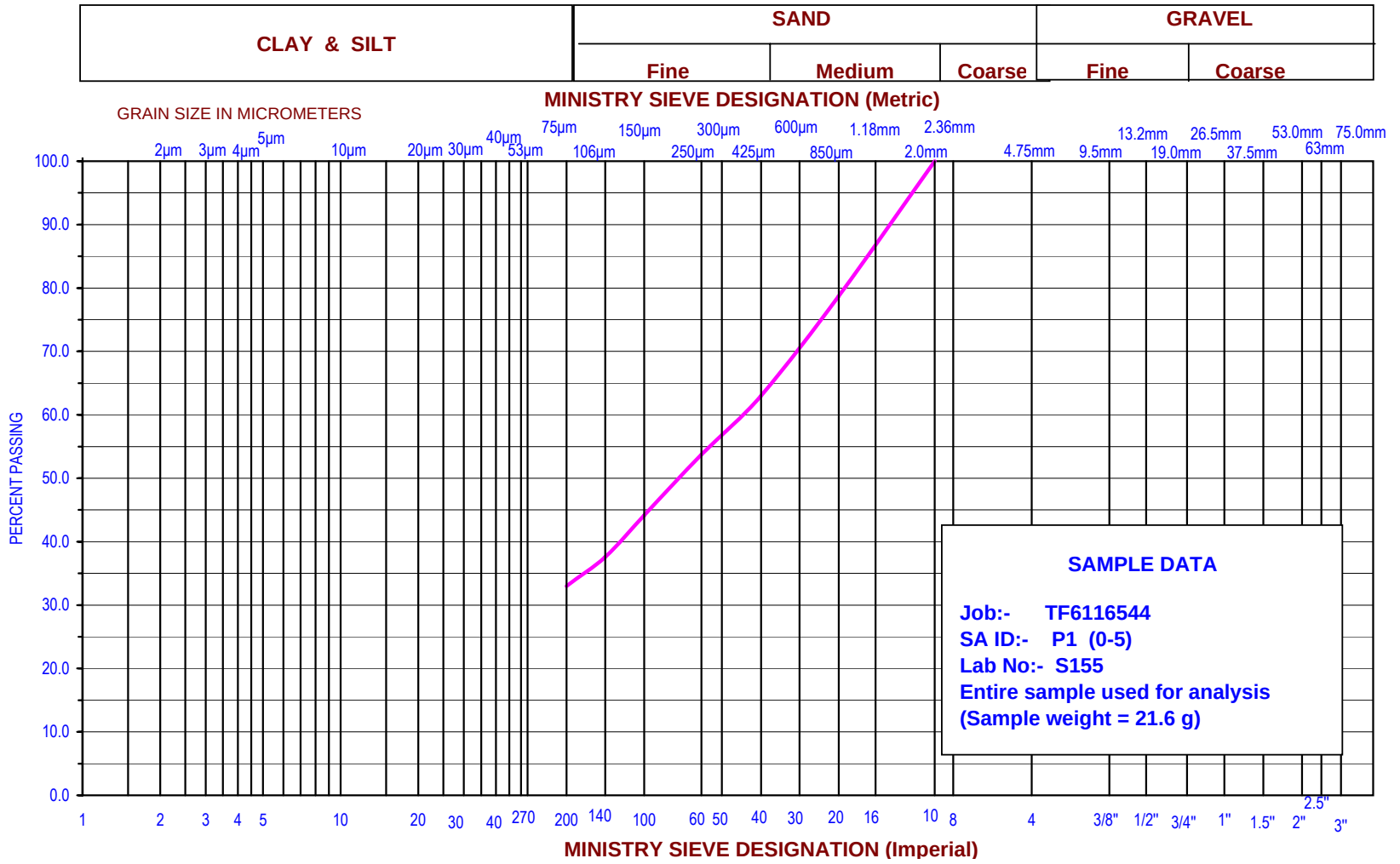
Suman Punani, C. Chem.
Laboratory Manager

~ GENERAL COMMENTS ~

MDL	Method Detection Limit
RDL	Reporting Detection Limit
ANR	Analysis not required
NA	Analysis not applicable
NP	Not Provided
NR	No Lab Replicate
	Result in (brackets) represents Lab Replicate.
	Results relate only to the items tested.

AMEC Earth & Environmental,
a division of AMEC Americas Limited
160 Traders Blvd East Unit 4
Mississauga Ontario
Canada L4Z 3K7
Tel +1 (905) 890-0785
Tel +1 (905) 568-2929
Fax +1 (905) 890-1141
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	**Client :- Bae Newplan Group Limited**
	Project:- Fish Habitat Field Program
Sample contains only organics	**Location:- Southern Head, Placentia, NL.**
	Sample# :- P1 (0-5) / **Date :- 19 Jun 2007**

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A

Sample# :- P1 (0-5)

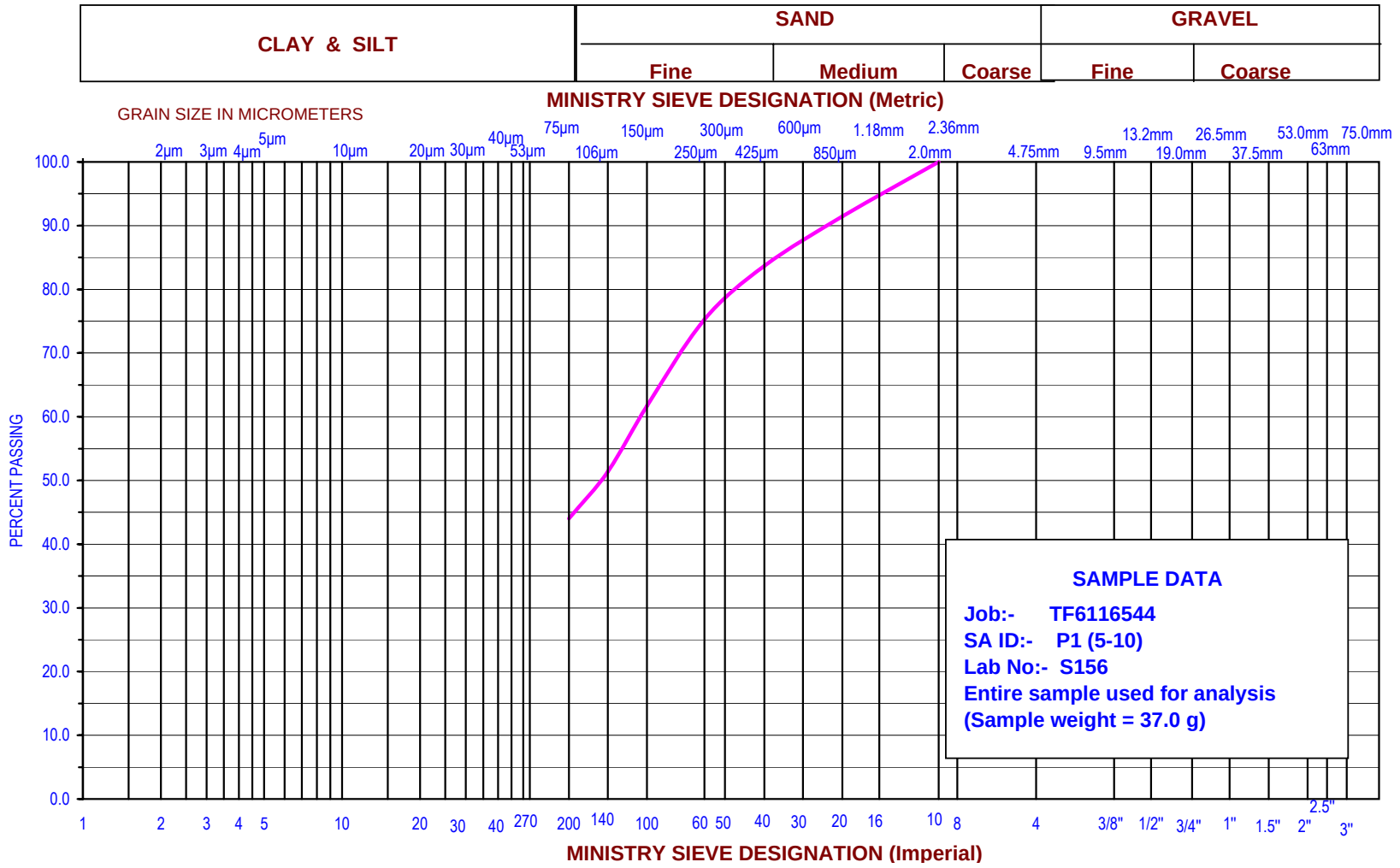
Lab No. :- S155
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	4.6	78.8
0.425	8.01	63.0
0.250	10.02	53.7
0.150	12.09	44.2
0.106	13.51	37.6
0.075	14.51	33.0
Pan	18.33	15.3

Total Wt (g)	21.65

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	**Client :- Bae Newplan Group Limited**
	Project:- Fish Habitat Field Program
Sample contains only organics	**Location:- Southern Head, Placentia, NL.**
	Sample# :- P1 (5 - 10) / **Date :- 19 Jun 2007**

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P1 (5 - 10)

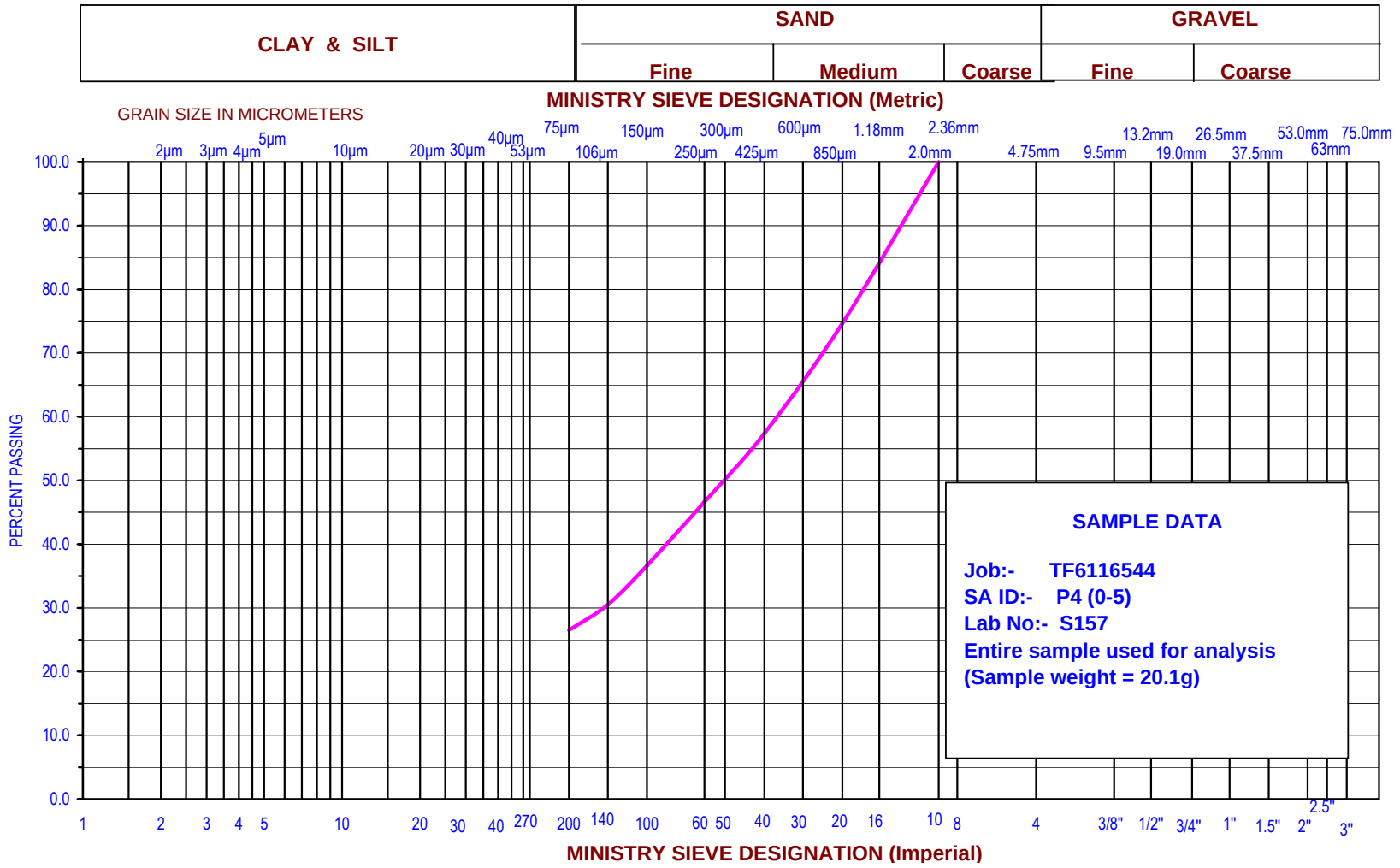
Lab No. :- S156
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	3.17	91.4
0.425	6.05	83.7
0.250	9.17	75.3
0.150	14.2	61.7
0.106	18.03	51.4
0.075	20.75	44.0
Pan	21.79	41.2

Total Wt (g)	37.07

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited
	Project:- Fish Habitat Field Program
Sample contains only organics	Location:- Southern Head, Placentia, NL.
	Sample# :- P4 (0 - 5) / Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P4 (0 - 5)

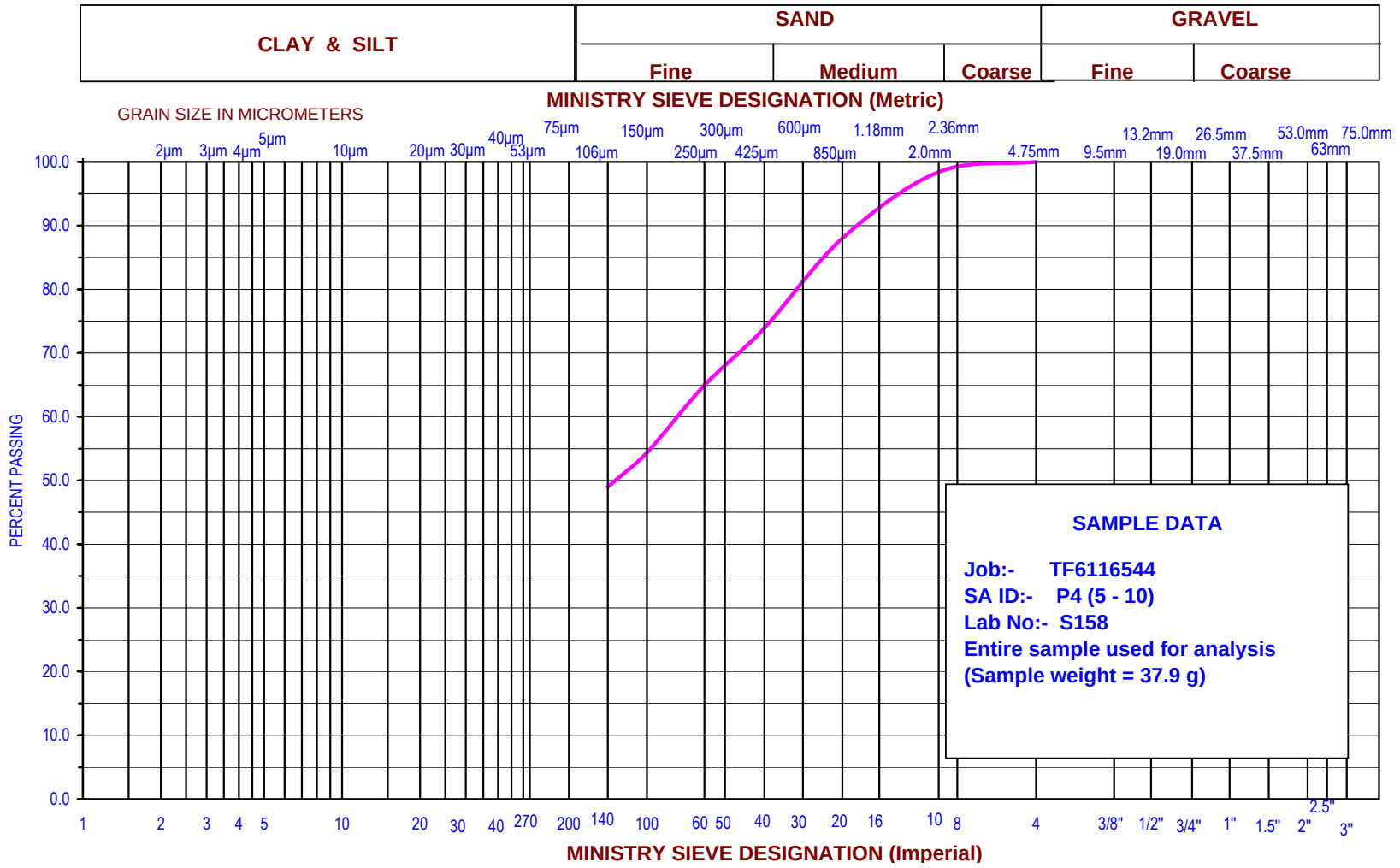
Lab No. :- S157
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	5.08	74.7
0.425	8.55	57.4
0.250	10.7	46.7
0.150	12.71	36.6
0.106	13.94	30.5
0.075	14.74	26.5
Pan	19.09	4.8

Total Wt (g)	20.06

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited
	Project:- Fish Habitat Field Program
Sample contains only organics	Location:- Southern Head, Placentia, NL.
	Sample # :- P4 (5 - 10) / Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample # :- P4 (5 - 10)

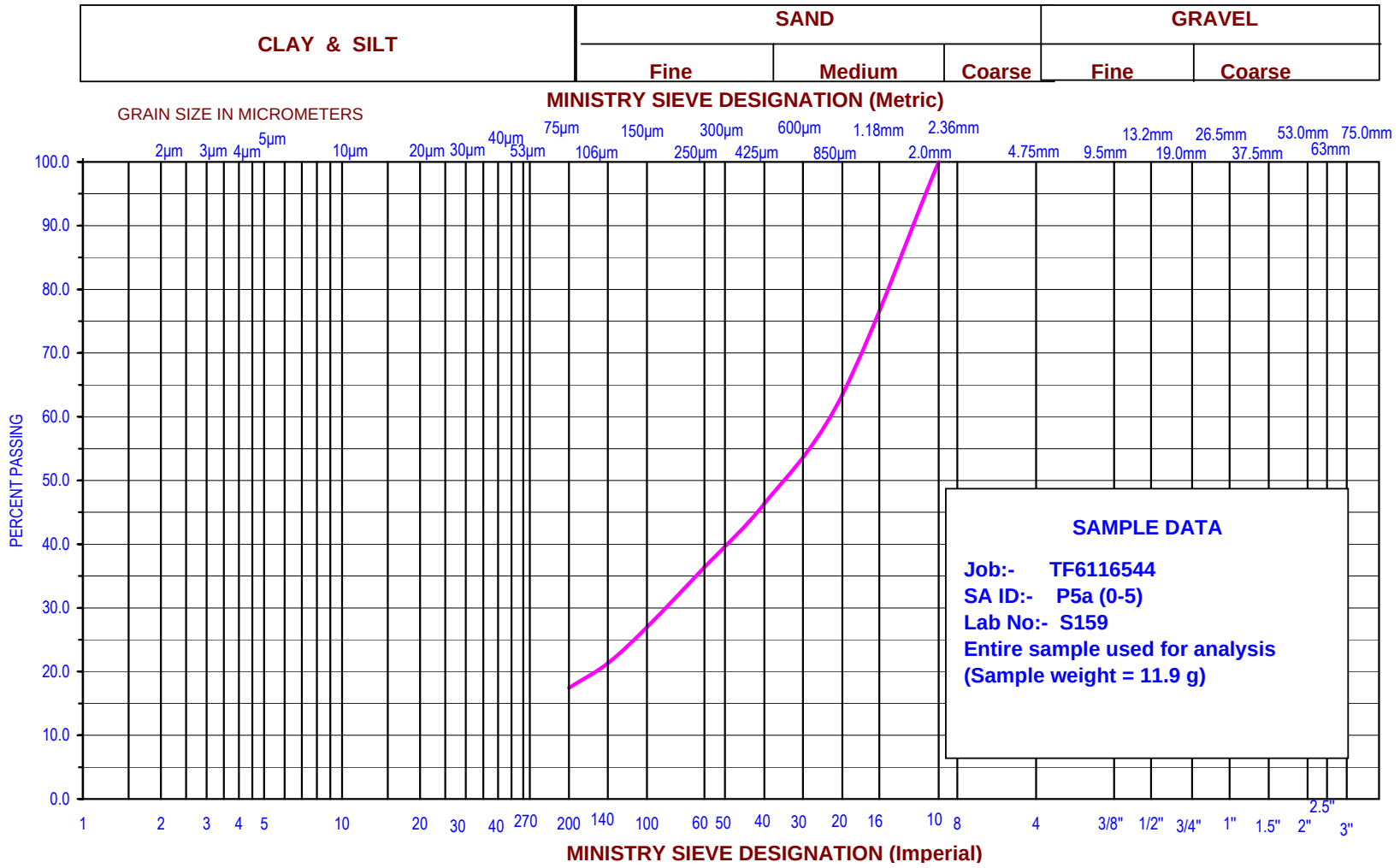
Lab No. :- S158
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
4.75	0	100.0
2.00	0.6	98.4
0.85	4.54	88.0
0.425	9.88	73.9
0.250	13.29	64.9
0.150	17.29	54.4
0.106	19.32	49.0
0.075	20.58	45.7
Pan	25.96	31.5

Total Wt (g)	37.9

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited
	Project:- Fish Habitat Field Program
Sample contains only organics	Location:- Southern Head, Placentia, NL.
	Sample # :- P5a (0 - 5) / Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample # :- P5a (0 - 5)

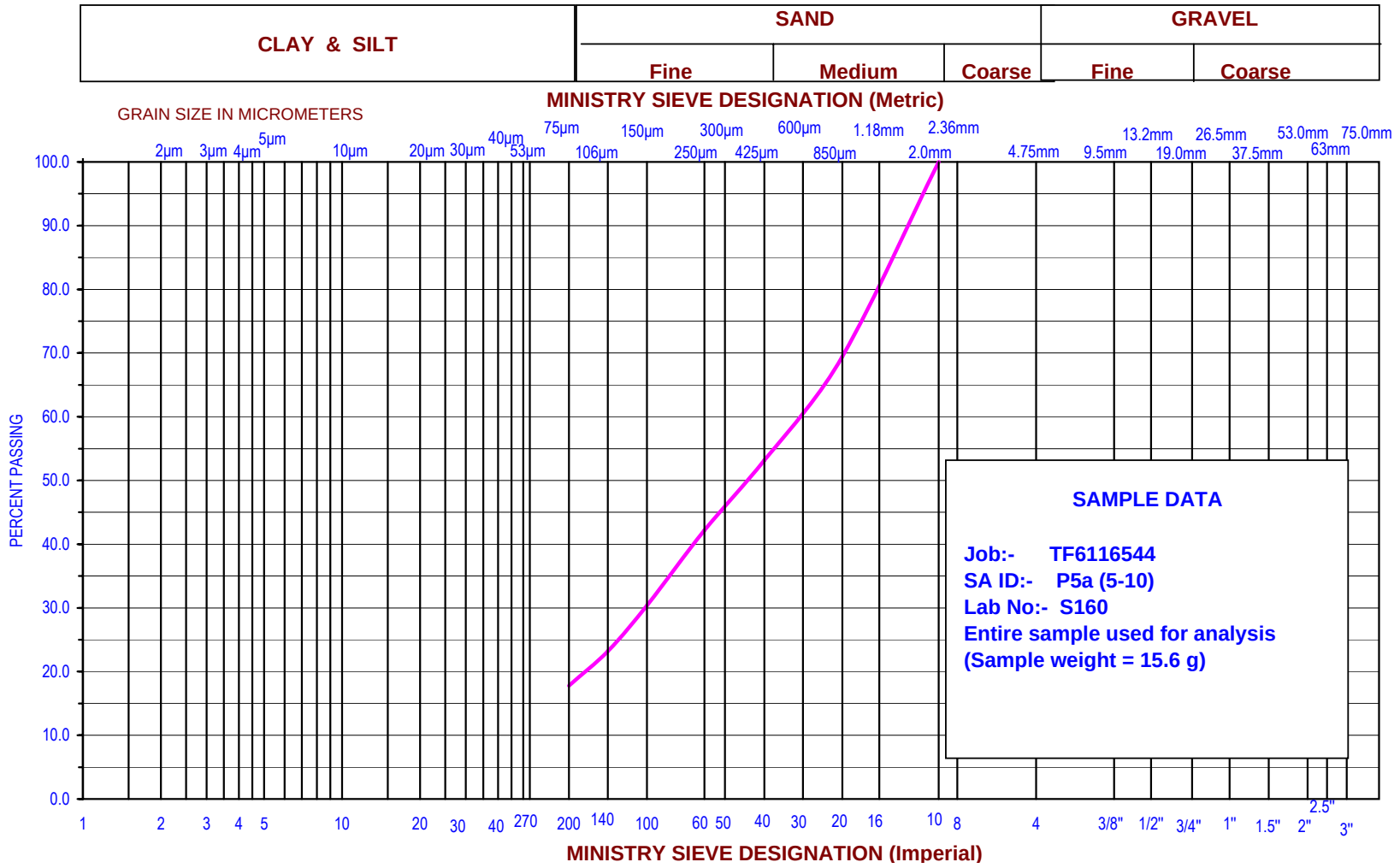
Lab No. :- S159
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	4.36	63.5
0.425	6.4	46.4
0.250	7.59	36.4
0.150	8.71	27.0
0.106	9.39	21.3
0.075	9.85	17.4
Pan	11.15	6.5

Total Wt (g)	11.93

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited
	Project:- Fish Habitat Field Program
Sample contains only organics	Location:- Southern Head, Placentia, NL.
	Sample# :- P5a (5 - 10) / Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P5a (5 - 10)

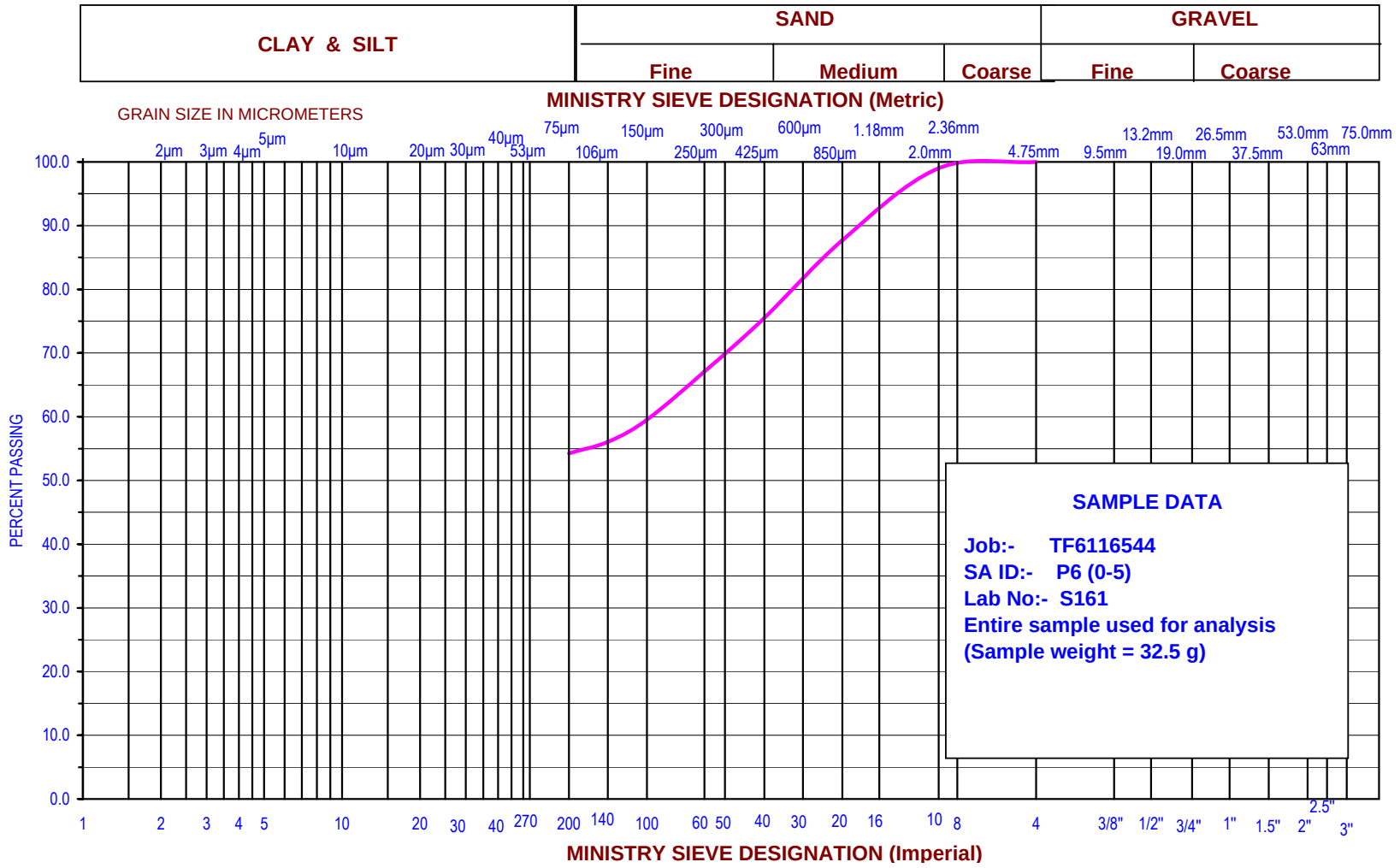
Lab No. :- S160
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	4.78	69.5
0.425	7.33	53.2
0.250	9.05	42.2
0.150	10.9	30.4
0.106	12.02	23.2
0.075	12.87	17.8
Pan	14.81	5.4

Total Wt (g)	15.65

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited
	Project:- Fish Habitat Field Program
Sample contains only organics	Location:- Southern Head, Placentia, NL.
	Sample # :- P6 (0 - 5) / Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample # :- P6 (0 - 5)

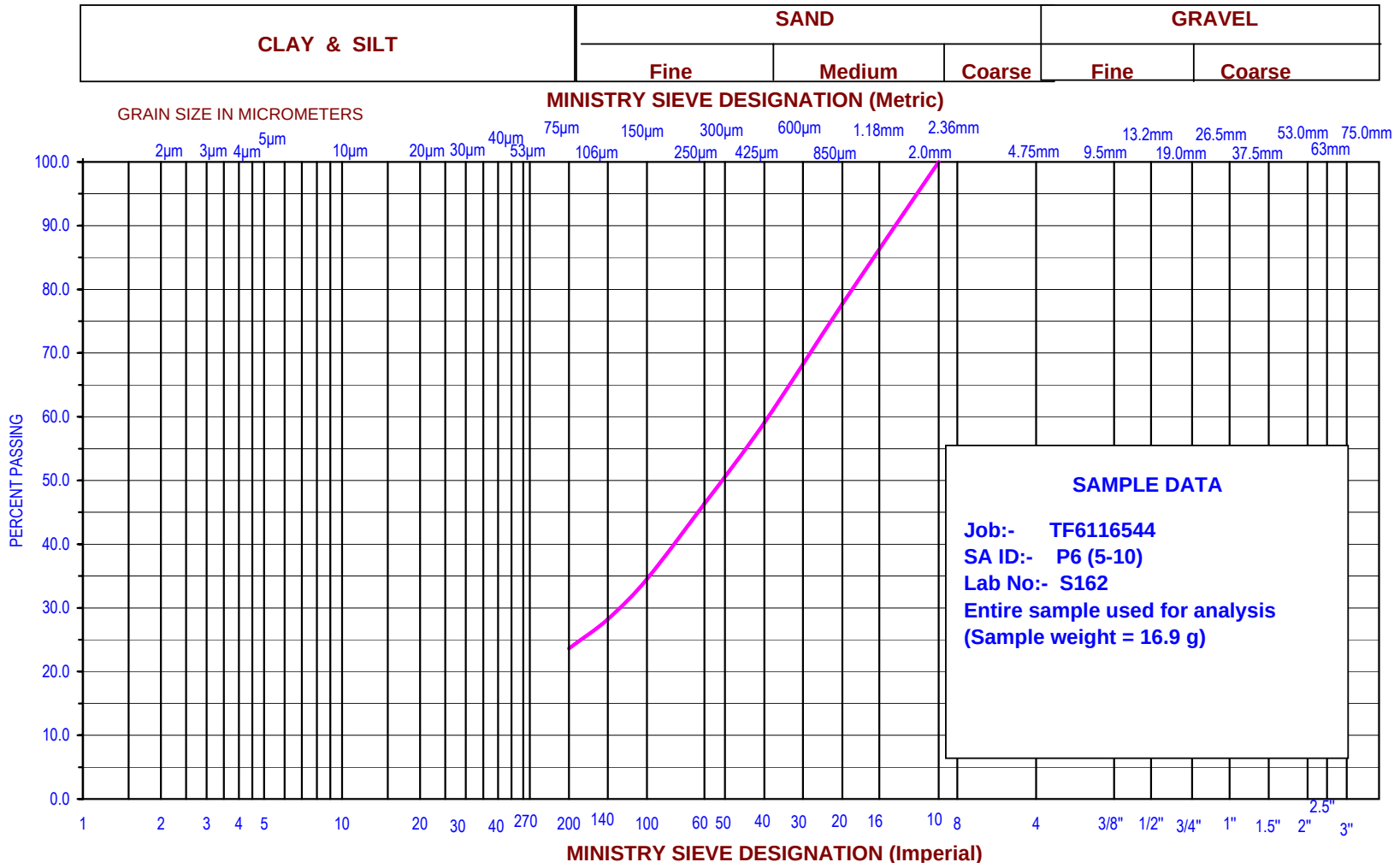
Lab No. :- S161
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
4.75	0	100.0
2.00	0.32	99.0
0.85	3.99	87.7
0.425	7.95	75.5
0.250	10.69	67.1
0.150	13.14	59.6
0.106	14.28	56.0
0.075	14.86	54.3
Pan	15.57	52.1

Total Wt (g)	32.49

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited
	Project:- Fish Habitat Field Program
Sample contains only organics	Location:- Southern Head, Placentia, NL.
	Sample# :- P6 (5 - 10) / Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P6 (5 - 10)

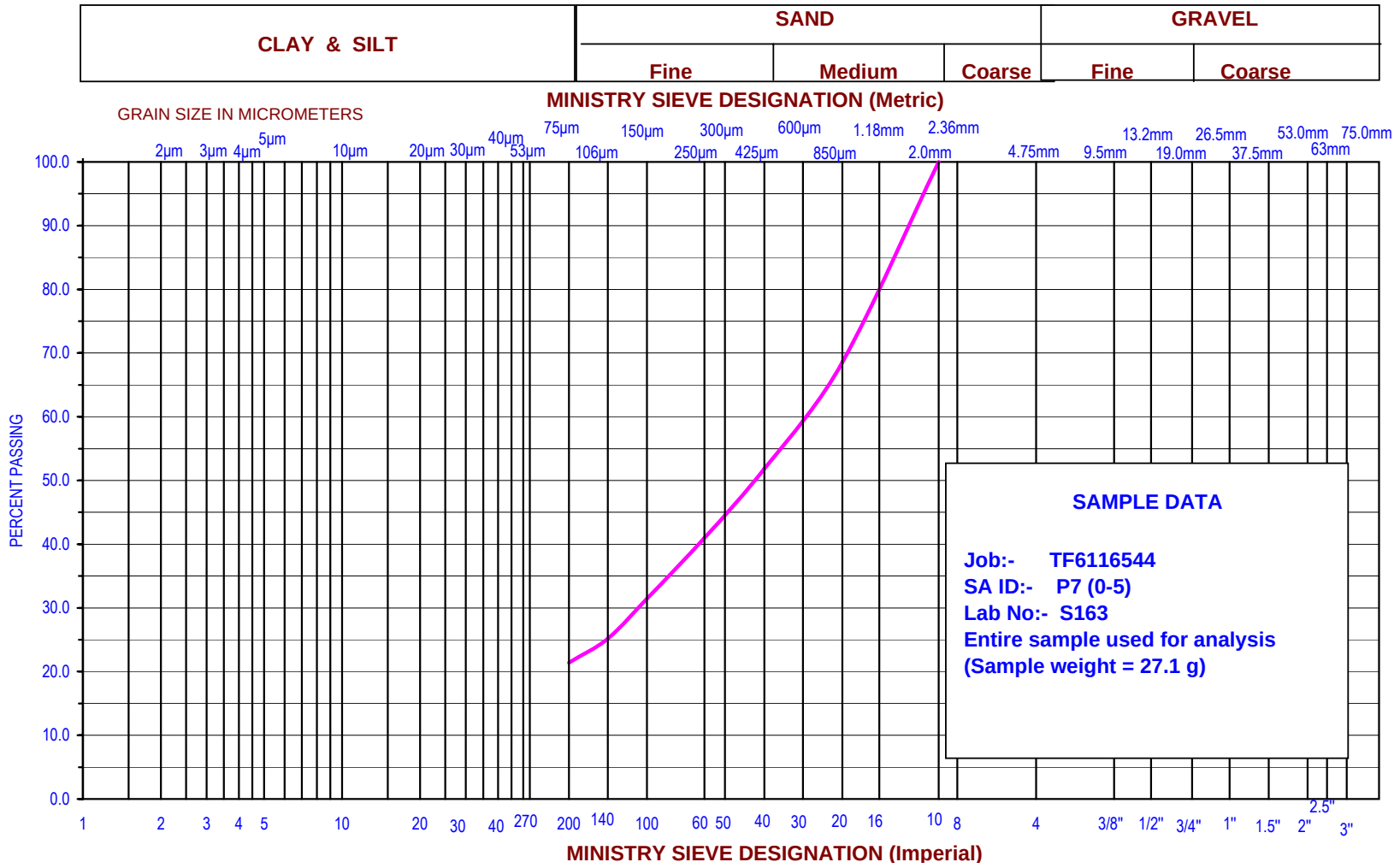
Lab No. :- S162
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	3.77	77.7
0.425	6.92	59.1
0.250	9.07	46.3
0.150	11.06	34.6
0.106	12.13	28.2
0.075	12.91	23.6
Pan	14.6	13.6

Total Wt (g)	16.9

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION

Sample contains only organics

Client :- Bae Newplan Group Limited

Project:- Fish Habitat Field Program

Location:- Southern Head, Placentia, NL.

Sample# :- P7 (0 - 5)

Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P7 (0 - 5)

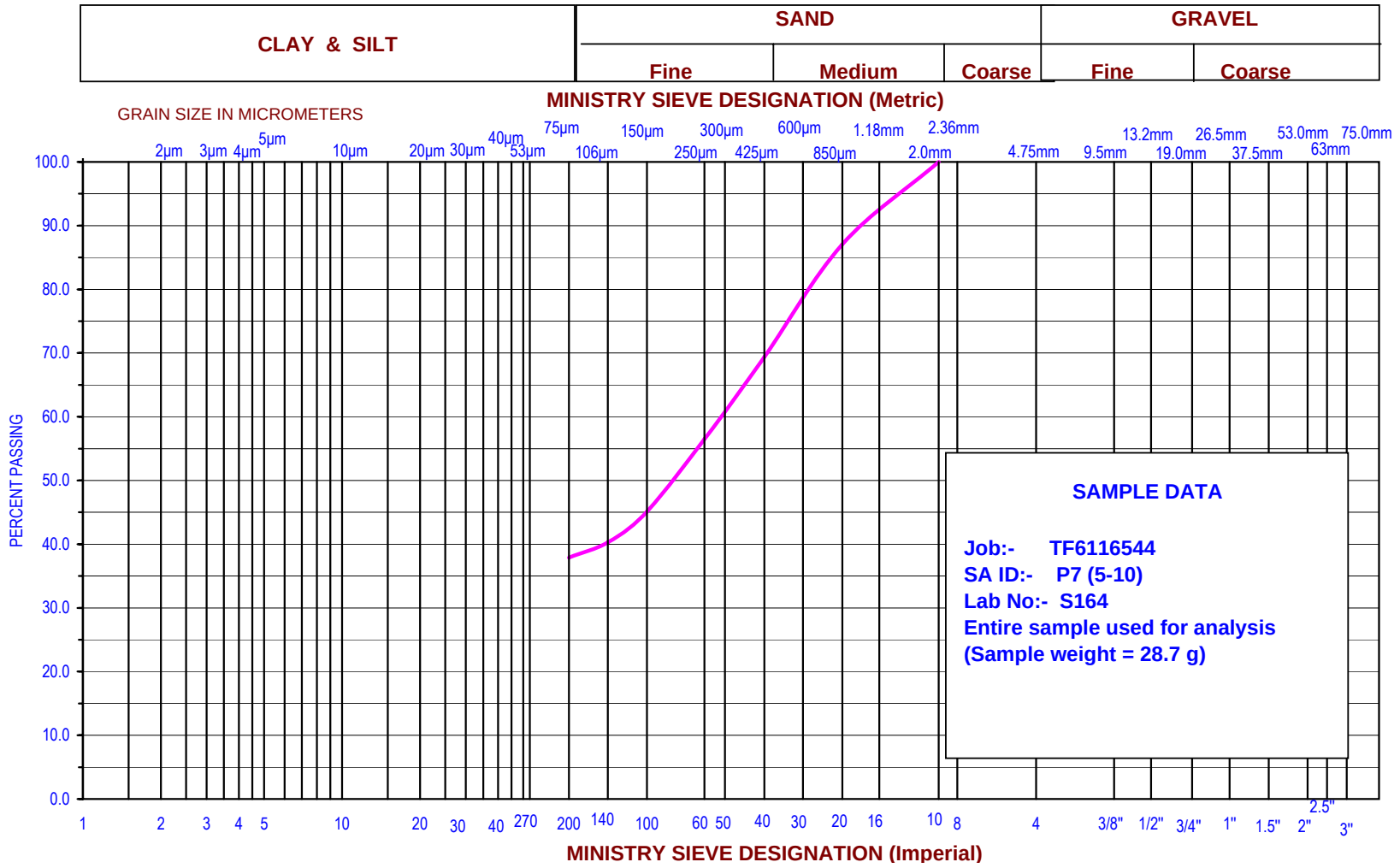
Lab No. :- S163
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	8.52	68.6
0.425	13.05	51.8
0.250	15.99	41.0
0.150	18.58	31.4
0.106	20.28	25.2
0.075	21.30	21.4
Pan	25.26	6.8

Total Wt (g)	27.1

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited	
	Project:- Fish Habitat Field Program	
Sample contains only organics	Location:- Southern Head, Placentia, NL.	
	Sample# :- P7 (5 - 10)	Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P7 (5 - 10)

Lab No. :- S164
Checked By :- SB

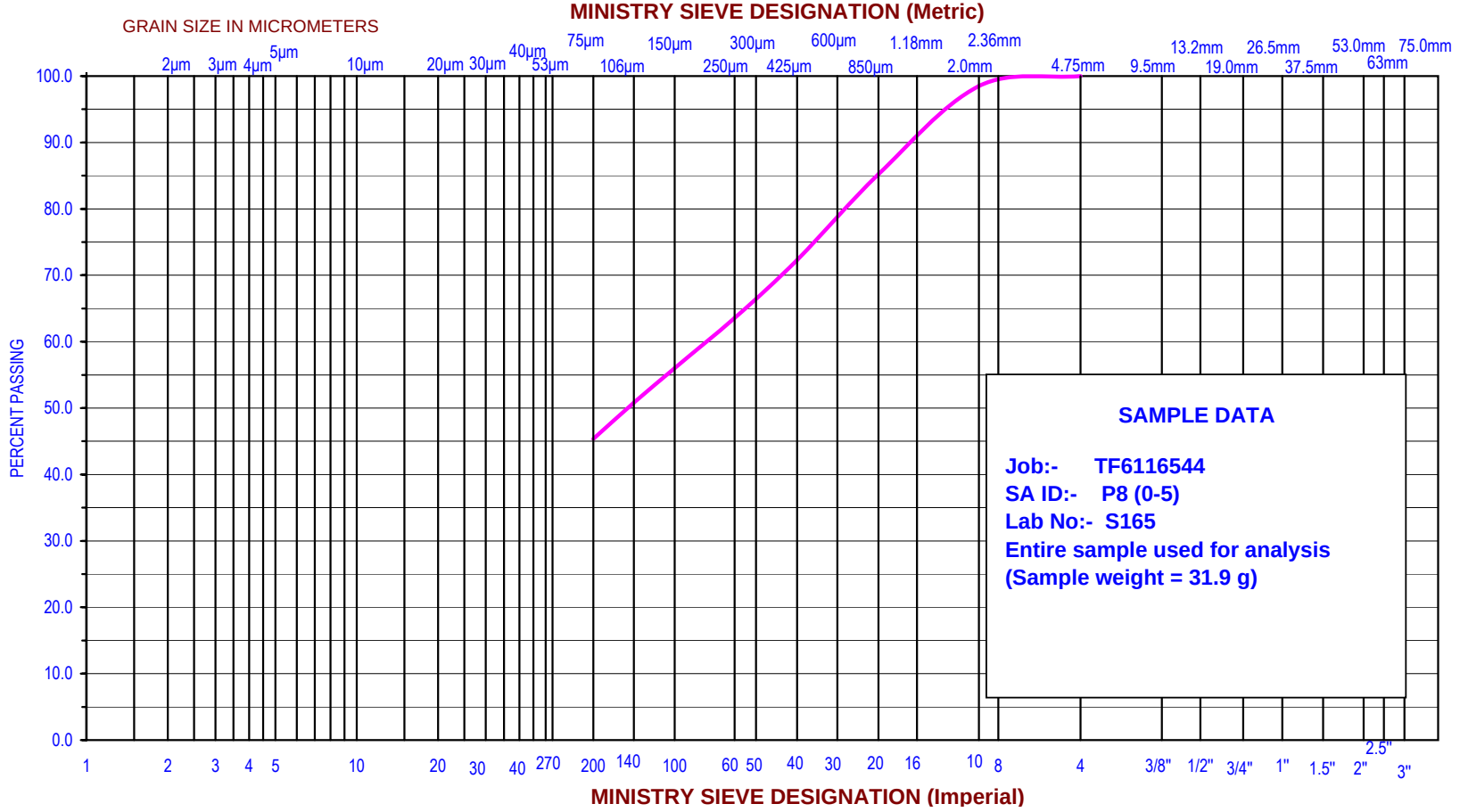
Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	3.71	87.1
0.425	8.79	69.4
0.250	12.49	56.5
0.150	15.76	45.1
0.106	17.14	40.3
0.075	17.83	37.9
Pan	18.32	36.2

Total Wt (g)	28.71

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY & SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



AMEC Earth & Environmental, A division of AMEC Americas Limited 104 Crockford Blvd., Scarborough, Ontario Canada, M1R 3C3 Tel +1 (416) 751 6565, Fax +1 (416) 751 7592	**GRAIN SIZE DISTRIBUTION**	**Client :- Bae Newplan Group Limited**
		Project:- Fish Habitat Field Program
	Sample contains only organics	**Location:- Southern Head, Placentia, NL.**
		Sample# :- P8 (0 - 5) / **Date :- 19 Jun 2007**

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P8 (0 - 5)

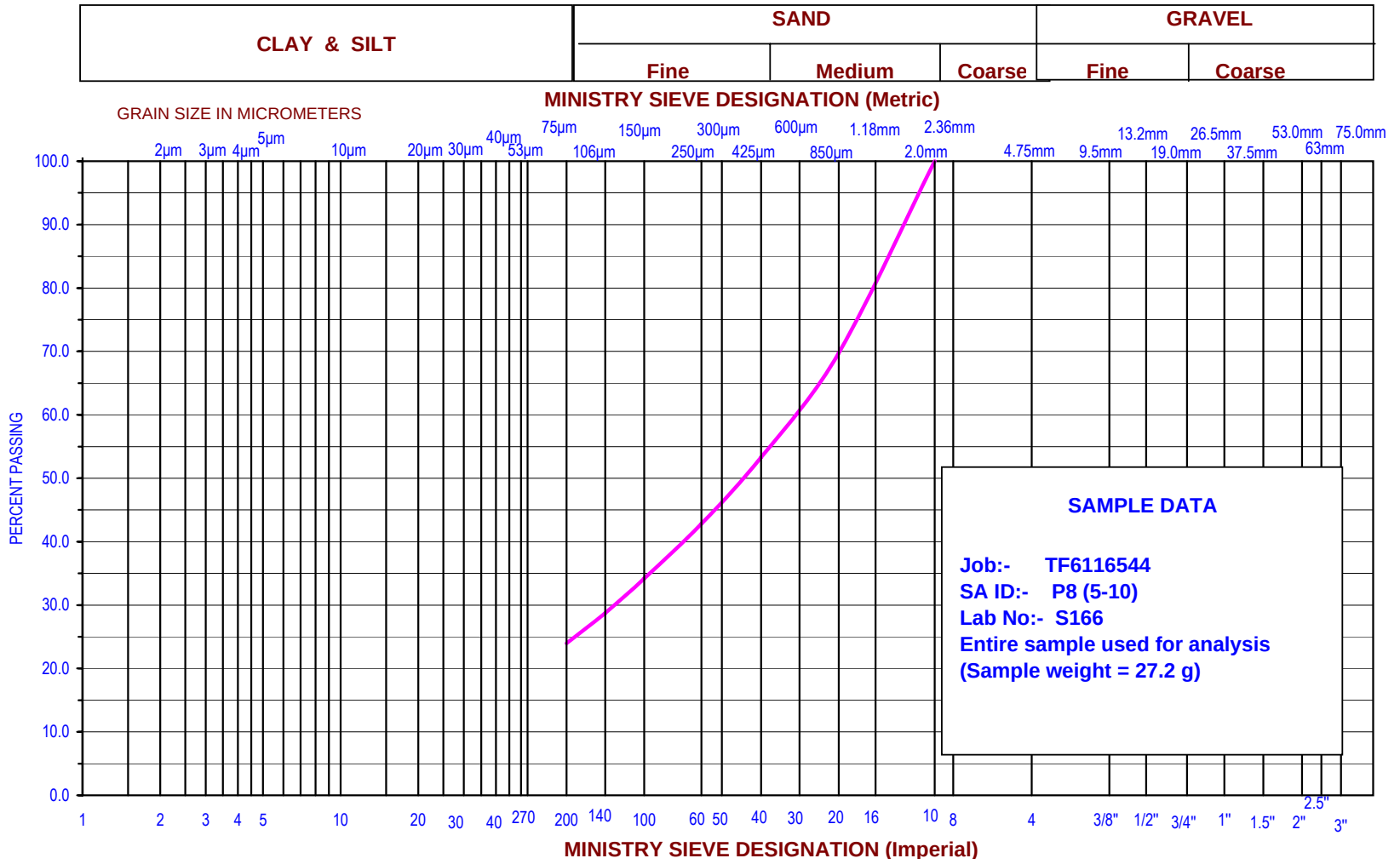
Lab No. :- S165
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
4.75	0	100.0
2.00	0.48	98.5
0.85	4.71	85.2
0.425	8.84	72.3
0.250	11.61	63.6
0.150	14.03	56.0
0.106	15.69	50.8
0.075	17.42	45.4
Pan	22.07	30.8

Total Wt (g)	31.89

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited
	Project:- Fish Habitat Field Program
Sample contains only organics	Location:- Southern Head, Placentia, NL.
	Sample# :- P8 (5 - 10) / Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P8 (5 - 10)

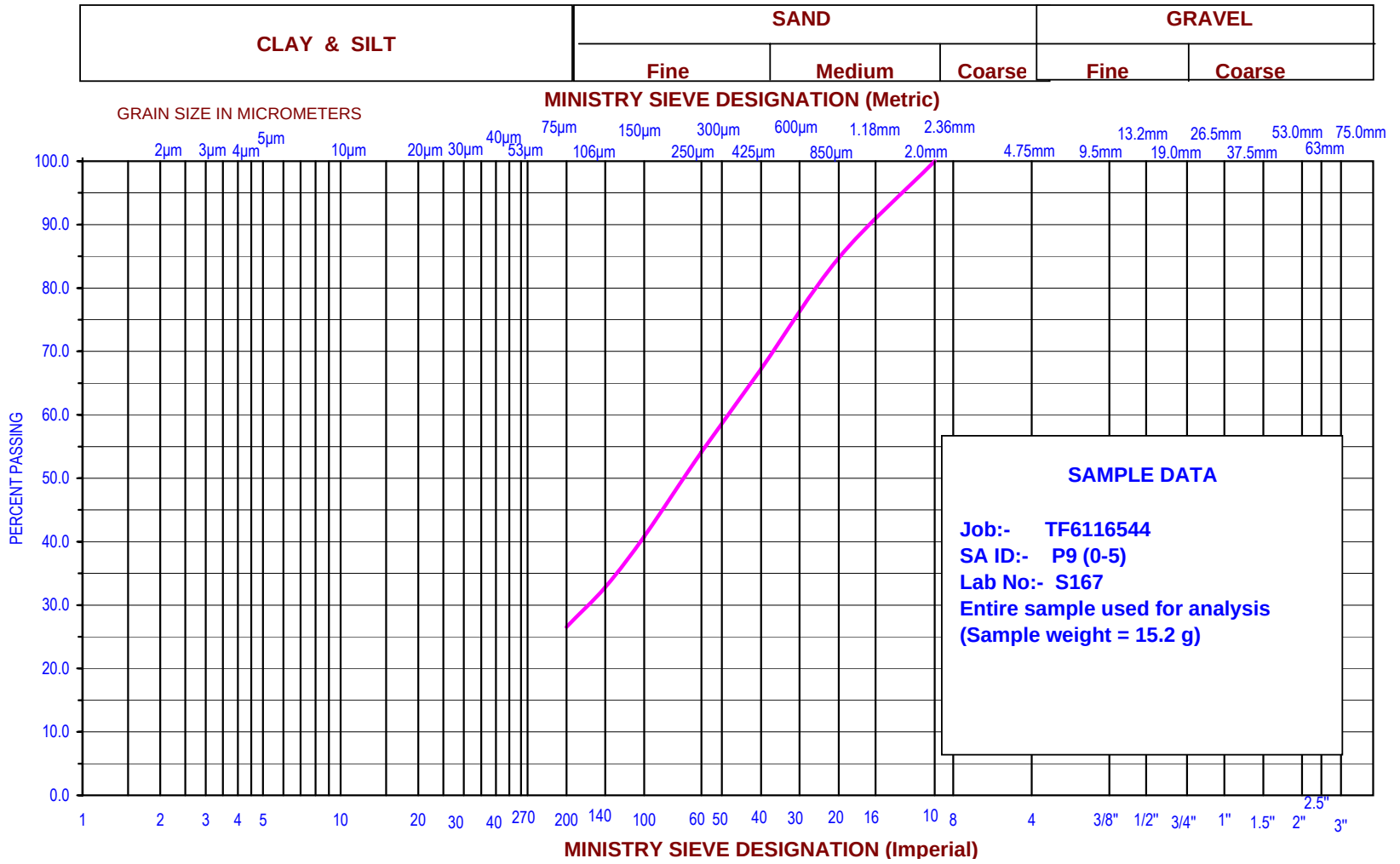
Lab No. :- S166
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	8.23	69.8
0.425	12.7	53.3
0.250	15.56	42.8
0.150	17.91	34.2
0.106	19.39	28.7
0.075	20.69	24.0
Pan	25.88	4.9

Total Wt (g)	27.21

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	Client :- Bae Newplan Group Limited
	Project:- Fish Habitat Field Program
Sample contains only organics	Location:- Southern Head, Placentia, NL.
	Sample # :- P9 (0 - 5) / Date :- 19 Jun 2007

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample # :- P9 (0 - 5)

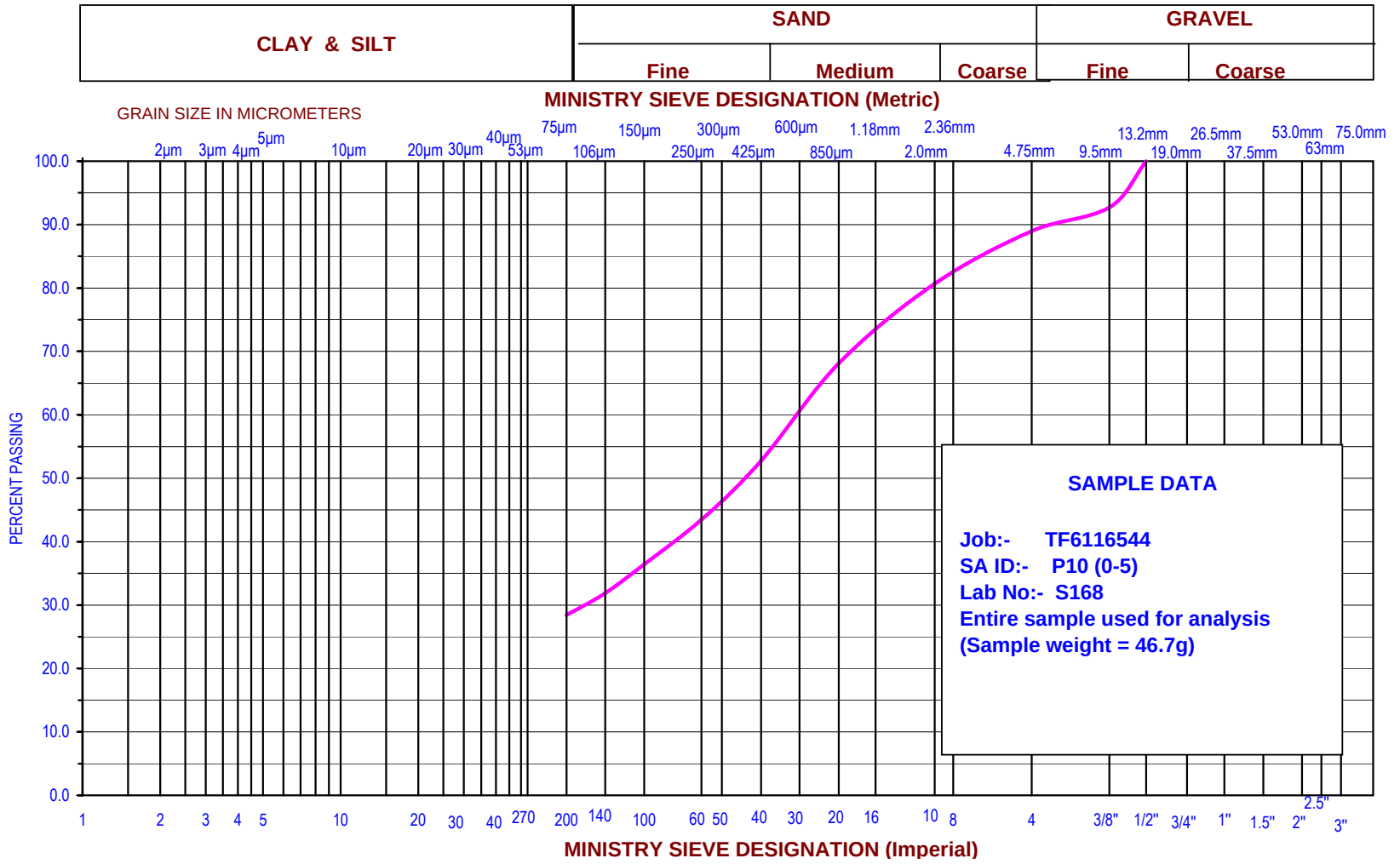
Lab No. :- S167
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
2.00	0	100.0
0.85	2.33	84.7
0.425	5.00	67.2
0.250	7.00	54.1
0.150	9.03	40.8
0.106	10.25	32.8
0.075	11.21	26.5
Pan	14.78	3.1

Total Wt (g)	15.26

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592

GRAIN SIZE DISTRIBUTION	**Client :- Bae Newplan Group Limited**
	Project:- Fish Habitat Field Program
Sample contains only organics	**Location:- Southern Head, Placentia, NL.**
	Sample# :- P10 (0 - 5) / **Date :- 19 Jun 2007**

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Borehole # :- N/A
Depth :- N/A
Sample# :- P10 (0 - 5)

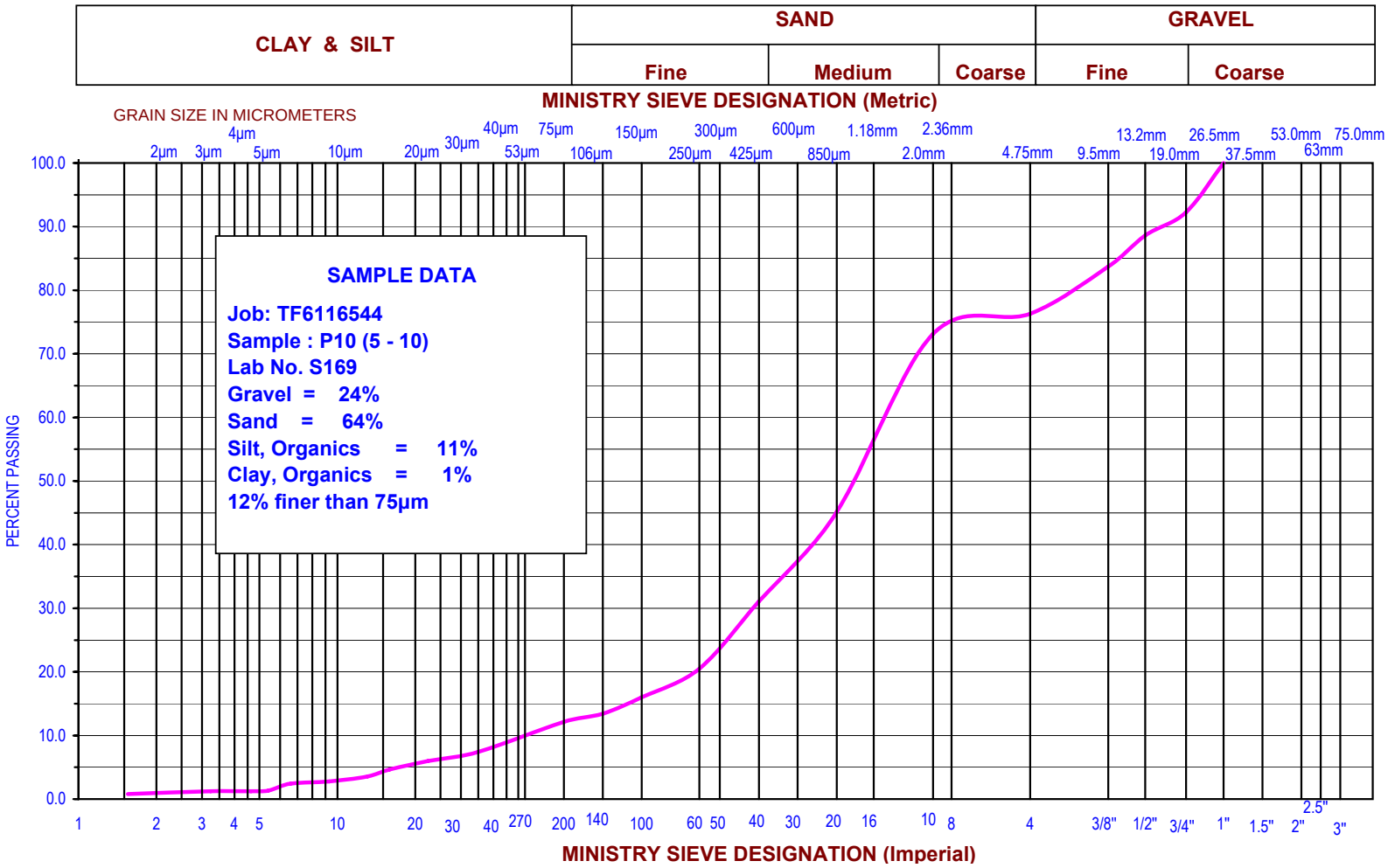
Lab No. :- S168
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
13.2	0	100.0
9.5	3.42	92.7
4.75	5.16	89.0
2.00	9.03	80.7
0.85	14.9	68.1
0.425	22.09	52.7
0.250	26.43	43.5
0.150	29.71	36.4
0.106	31.84	31.9
0.075	33.44	28.5
Pan	36.46	22.0

Total Wt (g)	46.74

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

UNIFIED SOIL CLASSIFICATION SYSTEM



AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com

GRAIN SIZE DISTRIBUTION	**Client :- Bae Newplan Group Limited**
	Project:- Fish Habitat Field Program
GRAVELLY SAND	**Location:- Southern Head, Placentia, NL.**
some organics, trace silt and clay	**Lab No. :- S169** / **Date :- 19 Jun 2007**

Grain Size Analysis

Project:- Fish Habitat Field Program
Client :- Bae Newplan Group Limited
Job# :- TF6116544

Location:- Southern Head, Placentia, NL.
Date :- 19-Jun-07
Tested By :- AS

Ref No.:-
Lab No. :- S169

Sample # :- P10 (5 - 10)
Checked By :- SB

Sieve size (mm)	Cumm. Wt. Retained (g)	%passing
26.5	0.00	100.0
19.0	10.93	92.3
13.2	16.10	88.6
9.5	23.01	83.7
4.75	33.49	76.3
2.00	37.98	73.1
0.85		45.2
0.425		31.1
0.250		20.5
0.150		16.0
0.106		13.4
0.075		12.2
0.0351		7.4
0.0224		6.0
0.0159		4.7
0.0131		3.5
0.0093		2.8
0.0066		2.4
0.0054		1.3
0.0046		1.2
0.0032		1.2
0.0015		0.8

Total Wt (g)	142.81	
Wt used for Hydrometer (g)		
68.13		
Pass 2mm Retained 0.075mm		
0.850	14.80	0.783
0.425	27.81	0.592
0.250	40.37	0.407
0.150	49.82	0.269
0.106	53.85	0.210
0.075	56.17	0.176
Pan	57.28	0.159

AMEC Earth & Environmental,
A division of AMEC Americas Limited
104 Crockford Blvd., Scarborough, Ontario
Canada, M1R 3C3
Tel +1 (416) 751 6565, Fax +1 (416) 751 7592
www.amec.com