
APPENDIX E

DETERMINATION OF P LAKE WATER RECHARGE RATES

Tributary Area & Runoff Calculations

Condition: 10 Year Return Period

Location: "P" Lake Catchment area (Cape Dorset)

Date: 14-Apr-05

P.O.C. P Lake

Area No.	Cover or Dev. State	Approx. Grade (%)	Area (m ²)	Area (ha)	R*	A X R	Comments:
1	Undeveloped	34	118507	11.85	0.85	10.0731	Steep, solid rock
2	Undeveloped	4	108010	10.80	0.50	5.4005	Flat. Silt-soil. Storage
3	Undeveloped	30	67303	6.73	0.80	5.3842	Steep. Channeled rock
4	Undeveloped	10	58242	5.82	0.70	4.0770	Moderate, small storage
Σ Areas=			352063	35.21	Total ΣAXR=	24.9348	

* R values were estimated using Table 2-26 "Watershed Characteristics for Determining Runoff Coefficient..." (U.S. Soil Conservation Service)

$$T_c = T_s + T_r \quad \text{where,}$$

T_s =Saturation Time (Inlet Time)

Tr=Running or system flow time

NOTE: For frozen or highly impervious surfaces, the value for T_s is near zero (0).

Method of Tr determination:

Overland Flow Nomograph

Drop from Remote Point to Outlet:

25 m (From Topographic Map)

Average Slope (%) = 5.2

Length of Overland Travel:

480 m (AutoCAD drawing - Figure 6)

Time Correction Factor:

1 (For Bare Earth)

Tr = 13 minutes (Overland Flow Nomograph)

Preliminary check: Velocity (average) = L/t 0.615 m/s

CALCULATED FLOW (Qc):

$$Q_c = (A \cdot R \cdot I) / 360 = (\text{Total AR} \cdot I) / 360$$

Return Period: 10 years

Drainage Area: 35.2 (AutoCAD drawing - Figure 6)

Total AR:	24.9	(See above)
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Running Time (Tr): 7 (Overland Flow Nomograph - attached)

Saturation time (T_s): 3 (near 0 for frozen/impervious surfaces)

Concentration Time (Tc): 10 (minutes)

Intensity: 18 (mm/hr) - IDF curves for Cape Dorset

$$Q_{10} = \frac{24.9 \times 18}{360} \quad Q_{10} = 1.2467 \text{ m}^3/\text{s}$$

DESIGN FLOW:

FOS 0.10

$$Q_d = Q_{10} \cdot (1+A\%)(1+R\%)(1+I\%)(FOS)$$

Where: $A\% = 0.05$

R%= 0.20

1% = 0.05

$$Q_d = 1.81 \text{ m}^3/\text{s}$$

Cape Dorset A, NU WATER BUDGET MEANS FOR THE PERIOD 1980-1993

P' LAKE CATCHMENT AREA CALCULATIONS

LAT ... 64.23 WATER HOLDING CAPACITY... 5 MM HEAT INDEX... 3.42
 LONG... 76.53 LOWER ZONE... 3 MM

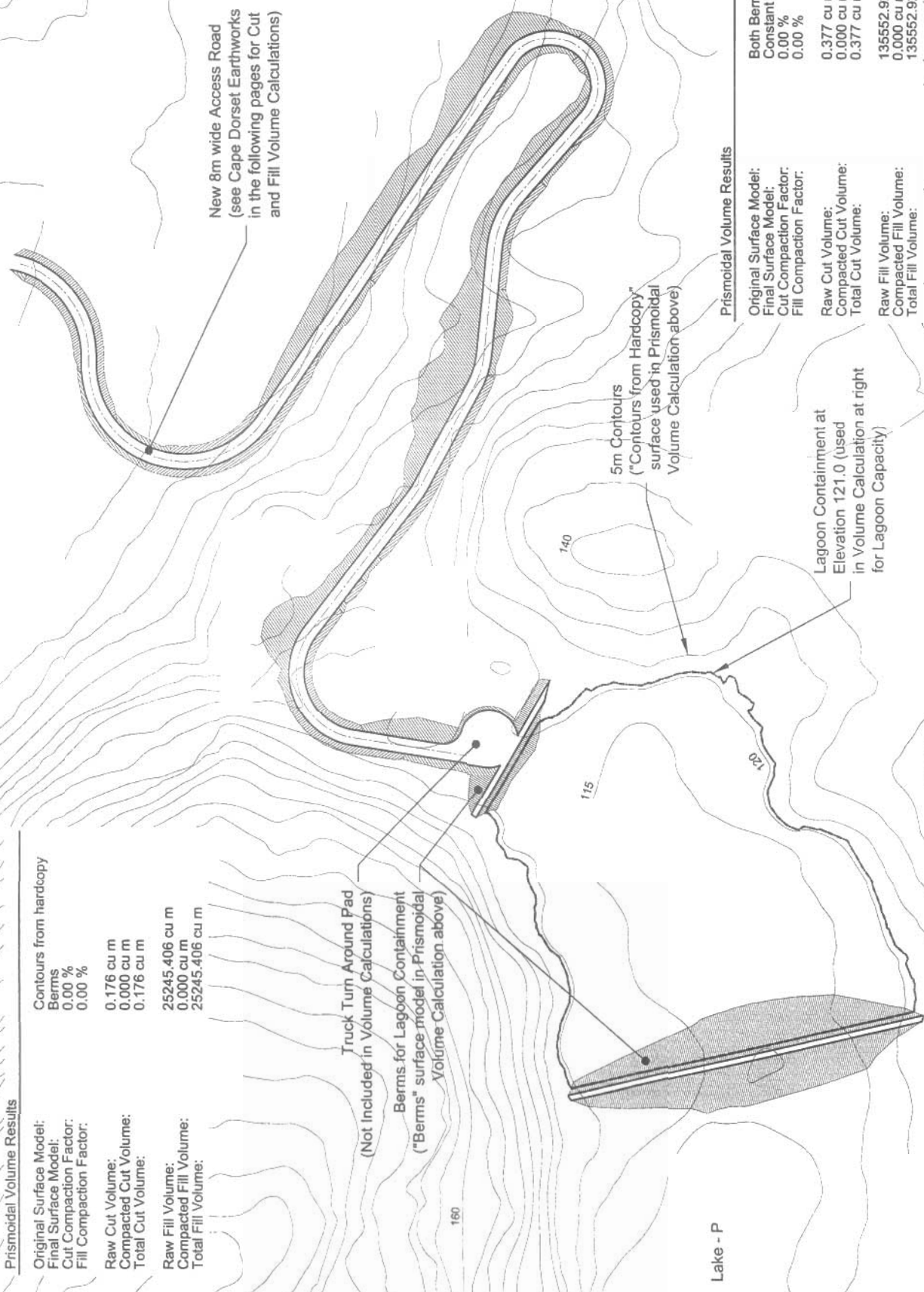
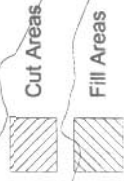
MONTH	TEMP °C	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P	AREA (m ²)	AREA (ha)	AVRG Q (m ³ /day)	AVRG Q (m ³ /hr)	AVRG Q (m ³ /sec)	AVRG Q (L/min)
01-Jan	-24	4	0	0	0	0	0	0	94	5	113	352063	35.21	0.00	0.00	0.00000	0.00
02-Jan	-24.9	5	0	0	0	0	0	0	99	5	117	352063	35.21	0.00	0.00	0.00000	0.00
03-Jan	-24.3	6	0	0	0	0	0	0	105	5	123	352063	35.21	0.00	0.00	0.00000	0.00
04-Jan	-25.4	3	0	0	0	0	0	0	109	5	127	352063	35.21	0.00	0.00	0.00000	0.00
01-Feb	-27.3	4	0	0	0	0	0	0	112	5	131	352063	35.21	0.00	0.00	0.00000	0.00
02-Feb	-26	2	0	0	0	0	0	0	114	5	133	352063	35.21	0.00	0.00	0.00000	0.00
03-Feb	-25.5	6	0	0	0	0	0	0	120	5	139	352063	35.21	0.00	0.00	0.00000	0.00
04-Feb	-24.5	5	0	0	0	0	0	0	125	5	144	352063	35.21	0.00	0.00	0.00000	0.00
01-Mar	-25.4	3	0	0	0	0	0	0	128	5	146	352063	35.21	0.00	0.00	0.00000	0.00
02-Mar	-23.6	6	0	0	0	0	0	0	134	5	153	352063	35.21	0.00	0.00	0.00000	0.00
03-Mar	-22.9	4	0	0	0	0	0	0	138	5	157	352063	35.21	0.00	0.00	0.00000	0.00
04-Mar	-20.4	5	0	0	0	0	0	0	143	5	161	352063	35.21	0.00	0.00	0.00000	0.00
01-Apr	-18.5	5	0	0	0	0	0	0	148	5	166	352063	35.21	0.00	0.00	0.00000	0.00
02-Apr	-18.4	5	0	0	0	0	0	0	153	5	171	352063	35.21	0.00	0.00	0.00000	0.00
03-Apr	-16.7	7	0	0	0	0	0	0	160	5	177	352063	35.21	0.00	0.00	0.00000	0.00
04-Apr	-13.9	8	0	0	0	0	0	0	168	5	184	352063	35.21	0.00	0.00	0.00000	0.00
05-Apr	-10.6	6	0	0	0	0	0	0	173	5	189	352063	35.21	0.00	0.00	0.00000	0.00
01-May	-8.9	8	0	0	0	0	0	0	182	5	197	352063	35.21	0.00	0.00	0.00000	0.00
02-May	-7.7	6	0	0	0	0	0	0	188	5	204	352063	35.21	0.00	0.00	0.00000	0.00
03-May	-5.6	4	0	4	1	1	0	3	188	5	209	352063	35.21	1056.19	150.88	6.29	0.0017
04-May	-3.7	8	1	6	2	2	0	5	189	5	217	352063	35.21	1760.31	251.47	10.48	0.0029
01-Jun	-1.3	8	2	18	4	4	0	15	177	5	224	352063	35.21	5280.94	754.42	31.43	0.0087
02-Jun	-0.1	7	5	14	5	5	0	15	164	5	231	352063	35.21	5280.94	754.42	31.43	0.0087
03-Jun	1.6	5	5	32	13	12	0	25	133	4	236	352063	35.21	8801.57	1257.37	52.39	0.0146
04-Jun	3.3	5	4	59	21	18	-4	46	75	4	242	352063	35.21	16194.89	2313.56	96.40	0.0268
01-Jul	5.7	3	3	59	29	18	-11	45	16	3	245	352063	35.21	15842.82	2263.26	94.30	0.0262
02-Jul	6.3	6	6	10	31	12	-19	6	6	1	251	352063	35.21	2112.38	301.77	12.57	0.0035
03-Jul	8.4	5	5	6	35	7	-28	5	0	0	257	352063	35.21	1760.31	251.47	10.48	0.0029
04-Jul	7.6	8	8	0	32	8	-25	0	0	0	265	352063	35.21	0.00	0.00	0.00000	0.00
05-Jul	7.8	11	11	0	32	11	-20	0	0	0	275	352063	35.21	0.00	0.00	0.00000	0.00
01-Aug	6.3	8	8	0	27	8	-19	0	0	0	283	352063	35.21	0.00	0.00	0.00000	0.00
02-Aug	6.3	14	14	0	26	13	-13	1	0	1	297	352063	35.21	352.06	50.29	2.10	0.0006
03-Aug	6	16	16	0	24	13	-11	3	0	1	314	352063	35.21	1056.19	150.88	6.29	0.0017
04-Aug	5.3	17	17	0	21	11	-10	6	0	2	331	352063	35.21	2112.38	301.77	12.57	0.0035
01-Sep	3.7	15	15	0	16	9	-7	6	0	2	347	352063	35.21	2112.38	301.77	12.57	0.0035
02-Sep	3.3	11	11	0	14	8	-7	3	0	2	358	352063	35.21	1056.19	150.88	6.29	0.0017
03-Sep	1.9	6	6	1	10	4	-5	2	0	2	365	352063	35.21	704.13	100.59	4.19	0.0012
04-Sep	0.7	17	16	0	6	5	-1	9	1	4	382	352063	35.21	3168.56	452.65	18.86	0.0052
05-Sep	-1.4	7	7	5	0	2	0	3	3	4	390	352063	35.21	1056.19	150.88	6.29	0.0017
01-Oct	-2.3	9	4	1	1	1	0	3	8	5	410	352063	35.21	1056.19	150.88	6.29	0.0017
02-Oct	-2.9	8	2	2	0	0	0	3	12	5	418	352063	35.21	1056.19	150.88	6.29	0.0017
03-Oct	-4.6	10	1	1	0	0	0	2	19	5	428	352063	35.21	704.13	100.59	4.19	0.0012
04-Oct	-5.8	10	2	2	0	0	0	3	26	5	439	352063	35.21	1056.19	150.88	6.29	0.0017
01-Nov	-8.4	7	0	0	0	0	0	0	33	5	46	352063	35.21	352.06	50.29	2.10	0.0006
02-Nov	-9.5	12	0	0	0	0	0	0	45	5	55	352063	35.21	0.00	0.00	0.00000	0.00
03-Nov	-13.7	10	0	0	0	0	0	0	54	5	68	352063	35.21	0.00	0.00	0.00000	0.00
04-Nov	-13.7	13	0	0	0	0	0	0	67	5	80	352063	35.21	0.00	0.00	0.00000	0.00
01-Dec	-14.8	7	0	0	0	0	0	0	74	5	87	352063	35.21	0.00	0.00	0.00000	0.00
02-Dec	-18.3	5	0	0	0	0	0	0	79	5	92	352063	35.21	0.00	0.00	0.00000	0.00
03-Dec	-20.2	6	0	0	0	0	0	0	86	5	99	352063	35.21	0.00	0.00	0.00000	0.00
04-Dec	-22.4	7	0	0	0	0	0	0	93	5	106	352063	35.21	0.00	0.00	0.00000	0.00
05-Dec	-24.2	6	0	0	0	0	0	0	99	5	112	352063	35.21	0.00	0.00	0.00000	0.00

APPENDIX F

EARTHWORKS CALCULATIONS



Scale 1:3000



Prismoidal Volume Results

Original Surface Model:	Contours from hardcopy
Final Surface Model:	Berms
Cut Compaction Factor:	0.00 %
Fill Compaction Factor:	0.00 %
Raw Cut Volume:	0.176 cu m
Compacted Cut Volume:	0.000 cu m
Total Cut Volume:	0.176 cu m
Raw Fill Volume:	25245.406 cu m
Compacted Fill Volume:	0.000 cu m
Total Fill Volume:	25245.406 cu m

Prismoidal Volume Results

Original Surface Model:	Both Berms and Contours
Final Surface Model:	Constant Elevation: 121
Cut Compaction Factor:	0.00 %
Fill Compaction Factor:	0.00 %
Raw Cut Volume:	0.377 cu m
Compacted Cut Volume:	0.000 cu m
Total Cut Volume:	0.377 cu m
Raw Fill Volume:	135552.927 cu m
Compacted Fill Volume:	0.000 cu m
Total Fill Volume:	135552.927 cu m

PROJECT	Cape Dorset Sewage Treatment System	PROJECT NUMBER	05-4319-2000
TITLE	Volume Calculations	DATE	May 05
		FIGURE NUMBER	Appendix F



User Name: 41tpw
Project: 054319 Cape Dorset Earthworks

Date: 05-24-05
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User Name: 41tpw
Project: 054319 Cape Dorset Earthworks
Subproject: Road Alignment, 001

Date: 05-30-05
Time: 15:56:33
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ROADCALC DESIGN EARTHWORK - RAW VOLUMES

STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+000.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+005.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+010.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+015.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+020.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+025.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+030.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+035.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+040.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+045.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+050.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+055.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+060.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+065.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+070.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00

User Name: 41tpw
 Project: 054319 Cape Dorset Earthworks
 Subproject: Road Alignment, 001

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ROADCALC DESIGN EARTHWORK - RAW VOLUMES

STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+075.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+080.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+085.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+090.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+095.00	Orig_Surface Total	0.00 0.00	0.00 0.00	0.00	0.00
0+100.00	Orig_Surface Total	3.16 3.16	8.93 8.93	5.17	12.46
0+105.00	Orig_Surface Total	7.97 7.97	30.51 30.51	1.05	14.93
0+110.00	Orig_Surface Total	12.38 12.38	53.63 53.63	0.00	2.47
0+115.00	Orig_Surface Total	13.72 13.72	67.18 67.18	0.00	0.00
0+120.00	Orig_Surface Total	13.90 13.90	70.72 70.72	0.00	0.00
0+125.00	Orig_Surface Total	13.78 13.78	70.80 70.80	0.00	0.00
0+130.00	Orig_Surface Total	13.88 13.88	70.63 70.63	0.00	0.00
0+135.00	Orig_Surface Total	13.88 13.88	70.85 70.85	0.00	0.00
0+140.00	Orig_Surface Total	13.90 13.90	71.02 71.02	0.00	0.00
0+145.00	Orig_Surface Total	13.59 13.59	70.49 70.49	0.00	0.00

User Name: 41tpw
 Project: 054319 Cape Dorset Earthworks
 Subproject: Road Alignment, 001

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STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+150.00	Orig_Surface Total	11.56 11.56	65.05 65.05	0.00	0.00
0+155.00	Orig_Surface Total	7.58 7.58	50.30 50.30	0.43	1.02
0+160.00	Orig_Surface Total	4.89 4.89	33.33 33.33	2.04	5.94
0+165.00	Orig_Surface Total	3.79 3.79	23.64 23.64	3.42	13.23
0+170.00	Orig_Surface Total	2.15 2.15	14.85 14.85	6.66	25.20
0+175.00	Orig_Surface Total	1.54 1.54	8.01 8.01	8.44	38.43
0+180.00	Orig_Surface Total	0.98 0.98	5.43 5.43	8.46	42.78
0+185.00	Orig_Surface Total	0.90 0.90	4.05 4.05	8.80	43.66
0+190.00	Orig_Surface Total	0.75 0.75	3.56 3.56	11.84	52.45
0+195.00	Orig_Surface Total	0.15 0.15	1.92 1.92	14.28	66.27
0+200.00	Orig_Surface Total	0.00 0.00	0.31 0.31	16.10	76.90
0+205.00	Orig_Surface Total	0.00 0.00	0.00 0.00	17.29	84.38
0+210.00	Orig_Surface Total	0.00 0.00	0.00 0.00	18.10	89.17
0+215.00	Orig_Surface Total	0.00 0.00	0.00 0.00	18.67	92.37
0+220.00	Orig_Surface Total	0.00 0.00	0.00 0.00	19.08	94.59

User Name: 41tpw
 Project: 054319 Cape Dorset Earthworks
 Subproject: Road Alignment, 001

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ROADCALC DESIGN EARTHWORK - RAW VOLUMES

STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+225.00	Orig_Surface	0.00	0.00		

	Total	0.00	0.00	19.39	96.19
0+230.00	Orig_Surface	0.14	0.40		
	Total	0.14	0.40	12.94	80.32
0+235.00	Orig_Surface	3.22	9.50		
	Total	3.22	9.50	5.31	44.60
0+240.00	Orig_Surface	8.85	33.39		
	Total	8.85	33.39	2.35	18.27
0+245.00	Orig_Surface	12.40	57.62		
	Total	12.40	57.62	0.81	7.44
0+250.00	Orig_Surface	15.84	75.23		
	Total	15.84	75.23	0.00	1.90
0+255.00	Orig_Surface	19.56	93.35		
	Total	19.56	93.35	0.00	0.00
0+260.00	Orig_Surface	22.33	110.17		
	Total	22.33	110.17	0.00	0.00
0+265.00	Orig_Surface	25.21	125.41		
	Total	25.21	125.41	0.00	0.00
0+270.00	Orig_Surface	28.06	141.09		
	Total	28.06	141.09	0.00	0.00
0+275.00	Orig_Surface	31.73	158.45		
	Total	31.73	158.45	0.00	0.00
0+280.00	Orig_Surface	30.46	164.99		
	Total	30.46	164.99	0.00	0.00
0+285.00	Orig_Surface	25.59	149.67		
	Total	25.59	149.67	0.00	0.00
0+290.00	Orig_Surface	21.80	128.06		
	Total	21.80	128.06	0.31	0.72
0+295.00	Orig_Surface	22.27	120.09		
	Total	22.27	120.09	0.16	1.09

User Name: 4ltpw
Project: 054319 Cape Dorset Earthworks
Subproject: Road Alignment, 001

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ROADCALC DESIGN EARTHWORK - RAW VOLUMES

STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+300.00	Orig_Surface	17.33	102.46		
	Total	17.33	102.46	1.44	3.87
0+305.00	Orig_Surface	10.82	70.39		
	Total	10.82	70.39	5.20	16.59

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0+310.00	Orig_Surface	5.81	41.57		
	Total	5.81	41.57	11.00	40.50
0+315.00	Orig_Surface	3.14	22.36		
	Total	3.14	22.36	17.98	72.45
0+320.00	Orig_Surface	0.60	9.33		
	Total	0.60	9.33	25.30	108.21
0+325.00	Orig_Surface	0.03	1.56		
	Total	0.03	1.56	34.63	149.82
0+330.00	Orig_Surface	0.04	0.16		
	Total	0.04	0.16	37.91	181.33
0+335.00	Orig_Surface	0.00	0.09		
	Total	0.00	0.09	40.83	196.83
0+340.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	43.76	211.47
0+345.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	46.58	225.86
0+350.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	49.30	239.70
0+355.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	51.91	253.01
0+360.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	54.51	266.03
0+365.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	58.90	283.50
0+370.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	64.53	308.56

User Name: 41tpw
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Subproject: Road Alignment, 001

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ROADCALC DESIGN EARTHWORK - RAW VOLUMES

STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+375.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	67.51	330.10
0+380.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	59.36	317.17
0+385.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	50.04	273.48
0+390.00	Orig_Surface	0.17	0.42		
	Total	0.17	0.42	45.83	239.65

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0+395.00	Orig_Surface	0.85	2.54		
	Total	0.85	2.54	39.62	213.61
0+400.00	Orig_Surface	1.38	5.58		
	Total	1.38	5.58	37.95	193.92
0+405.00	Orig_Surface	1.90	8.20		
	Total	1.90	8.20	38.28	190.58
0+410.00	Orig_Surface	2.45	10.86		
	Total	2.45	10.86	38.91	192.97
0+415.00	Orig_Surface	3.08	13.82		
	Total	3.08	13.82	39.46	195.93
0+420.00	Orig_Surface	3.78	17.14		
	Total	3.78	17.14	39.85	198.29
0+425.00	Orig_Surface	4.33	20.26		
	Total	4.33	20.26	39.95	199.52
0+430.00	Orig_Surface	4.75	22.70		
	Total	4.75	22.70	39.49	198.61
0+435.00	Orig_Surface	7.71	31.16		
	Total	7.71	31.16	38.20	194.23
0+440.00	Orig_Surface	11.98	49.24		
	Total	11.98	49.24	30.69	172.21
0+445.00	Orig_Surface	15.73	69.28		
	Total	15.73	69.28	19.71	125.99

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STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+450.00	Orig_Surface	15.73	78.65		
	Total	15.73	78.65	12.26	79.93
0+455.00	Orig_Surface	15.72	78.64		
	Total	15.72	78.64	9.10	53.39
0+460.00	Orig_Surface	15.10	77.06		
	Total	15.10	77.06	6.37	38.66
0+465.00	Orig_Surface	14.20	73.25		
	Total	14.20	73.25	4.98	28.38
0+470.00	Orig_Surface	12.93	67.81		
	Total	12.93	67.81	10.02	37.51
0+475.00	Orig_Surface	9.82	56.86		

	Total	9.82	56.86	14.88	62.24
0+480.00	Orig_Surface	5.45	38.17		
	Total	5.45	38.17	24.69	98.92
0+485.00	Orig_Surface	3.03	21.19		
	Total	3.03	21.19	35.01	149.26
0+490.00	Orig_Surface	0.90	9.83		
	Total	0.90	9.83	46.16	202.94
0+495.00	Orig_Surface	0.04	2.35		
	Total	0.04	2.35	57.00	257.90
0+500.00	Orig_Surface	0.00	0.09		
	Total	0.00	0.09	61.31	295.78
0+505.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	64.01	313.30
0+510.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	66.86	327.16
0+515.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	67.24	335.24
0+520.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	69.40	341.59

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STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+525.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	73.08	356.19
0+530.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	82.77	1401.51
0+535.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	80.01	406.94
0+540.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	68.27	370.70
0+545.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	50.98	298.12
0+550.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	35.74	216.81
0+555.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	24.77	151.29

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0+560.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	15.37	100.37
0+565.00	Orig_Surface	1.05	2.63		
	Total	1.05	2.63	7.66	57.58
0+570.00	Orig_Surface	4.56	14.02		
	Total	4.56	14.02	1.97	24.07
0+575.00	Orig_Surface	14.39	47.36		
	Total	14.39	47.36	0.19	5.40
0+580.00	Orig_Surface	17.74	80.30		
	Total	17.74	80.30	0.01	0.51
0+585.00	Orig_Surface	11.41	67.90		
	Total	11.41	67.90	0.60	1.60
0+590.00	Orig_Surface	16.29	61.22		
	Total	16.29	61.22	6.00	17.49
0+595.00	Orig_Surface	20.90	82.21		
	Total	20.90	82.21	7.34	35.74

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STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+600.00	Orig_Surface	21.39	94.13		
	Total	21.39	94.13	6.22	36.89
0+605.00	Orig_Surface	15.21	81.67		
	Total	15.21	81.67	5.19	31.35
0+610.00	Orig_Surface	5.71	46.42		
	Total	5.71	46.42	12.04	46.95
0+615.00	Orig_Surface	0.49	14.67		
	Total	0.49	14.67	15.81	71.60
0+620.00	Orig_Surface	0.00	1.22		
	Total	0.00	1.22	25.02	102.06
0+625.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	30.39	138.53
0+630.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	32.06	156.14
0+635.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	35.39	168.63
0+640.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	34.49	174.69

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0+645.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	32.23	166.80
0+650.00	Orig_Surface	0.08	0.20		
	Total	0.08	0.20	27.37	149.02
0+655.00	Orig_Surface	0.63	1.78		
	Total	0.63	1.78	22.47	124.61
0+660.00	Orig_Surface	1.37	5.01		
	Total	1.37	5.01	18.60	102.69
0+665.00	Orig_Surface	2.11	8.69		
	Total	2.11	8.69	18.16	91.92
0+670.00	Orig_Surface	2.47	12.52		
	Total	2.47	12.52	14.63	79.18

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STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+675.00	Orig_Surface	4.33	19.41		
	Total	4.33	19.41	12.55	63.69
0+680.00	Orig_Surface	5.55	28.17		
	Total	5.55	28.17	15.88	65.36
0+685.00	Orig_Surface	7.97	38.40		
	Total	7.97	38.40	13.73	67.22
0+690.00	Orig_Surface	10.15	46.22		
	Total	10.15	46.22	12.20	63.67
0+695.00	Orig_Surface	7.51	44.14		
	Total	7.51	44.14	12.88	62.71
0+700.00	Orig_Surface	5.16	31.67		
	Total	5.16	31.67	14.28	67.90
0+705.00	Orig_Surface	2.32	18.70		
	Total	2.32	18.70	16.74	77.55
0+710.00	Orig_Surface	0.08	6.01		
	Total	0.08	6.01	27.92	111.65
0+715.00	Orig_Surface	0.00	0.21		
	Total	0.00	0.21	43.96	179.68
0+720.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	66.15	275.25
0+725.00	Orig_Surface	0.00	0.00		

	Total	0.00	0.00	107.02	432.90
0+730.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	138.25	613.17
0+735.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	123.30	653.89
0+740.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	104.57	569.68
0+745.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	93.20	475.22

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ROADCALC DESIGN EARTHWORK - RAW VOLUMES

STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+750.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	85.64	405.63
0+755.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	76.73	391.53
0+760.00	Orig_Surface	3.36	8.40		
	Total	3.36	8.40	74.08	377.03
0+765.00	Orig_Surface	7.21	26.42		
	Total	7.21	26.42	80.28	385.90
0+770.00	Orig_Surface	7.46	36.67		
	Total	7.46	36.67	86.65	417.33
0+775.00	Orig_Surface	5.80	33.15		
	Total	5.80	33.15	91.95	446.49
0+780.00	Orig_Surface	4.81	26.53		
	Total	4.81	26.53	76.09	420.10
0+785.00	Orig_Surface	12.60	43.54		
	Total	12.60	43.54	61.55	344.11
0+790.00	Orig_Surface	18.48	77.71		
	Total	18.48	77.71	43.92	263.69
0+795.00	Orig_Surface	20.49	97.42		
	Total	20.49	97.42	40.23	210.39
0+800.00	Orig_Surface	16.85	93.34		
	Total	16.85	93.34	33.19	183.56
0+805.00	Orig_Surface	11.66	71.27		
	Total	11.66	71.27	23.17	140.91

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0+810.00	Orig_Surface	10.35	55.03		
	Total	10.35	55.03	22.25	113.57
0+815.00	Orig_Surface	8.27	46.56		
	Total	8.27	46.56	21.30	108.89
0+820.00	Orig_Surface	7.47	39.35		
	Total	7.47	39.35	21.22	106.30

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STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+825.00	Orig_Surface	7.48	37.39		
	Total	7.48	37.39	22.23	108.62
0+830.00	Orig_Surface	6.76	35.60		
	Total	6.76	35.60	14.02	90.62
0+835.00	Orig_Surface	6.80	33.90		
	Total	6.80	33.90	2.54	41.39
0+840.00	Orig_Surface	12.45	48.13		
	Total	12.45	48.13	1.90	11.09
0+845.00	Orig_Surface	11.47	51.49		
	Total	11.47	51.49	2.56	12.18
0+850.00	Orig_Surface	6.05	36.38		
	Total	6.05	36.38	9.23	32.37
0+855.00	Orig_Surface	2.54	17.46		
	Total	2.54	17.46	13.23	60.95
0+860.00	Orig_Surface	0.10	5.31		
	Total	0.10	5.31	20.69	89.30
0+865.00	Orig_Surface	0.02	0.22		
	Total	0.02	0.22	21.50	108.65
0+870.00	Orig_Surface	0.00	0.03		
	Total	0.00	0.03	20.25	106.56
0+875.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	18.90	100.18
0+880.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	19.24	98.75
0+885.00	Orig_Surface	0.17	0.34		
	Total	0.17	0.34	20.08	102.35
0+890.00	Orig_Surface	0.04	0.42		
	Total	0.04	0.42	21.24	107.77

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0+895.00	Orig_Surface	0.07	0.21		
	Total	0.07	0.21	25.06	121.42

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ROADCALC DESIGN EARTHWORK - RAW VOLUMES

STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+900.00	Orig_Surface	0.00	0.13		
	Total	0.00	0.13	25.22	131.82
0+905.00	Orig_Surface	0.01	0.01		
	Total	0.01	0.01	25.72	133.51
0+910.00	Orig_Surface	0.68	1.37		
	Total	0.68	1.37	32.81	155.86
0+915.00	Orig_Surface	1.50	4.65		
	Total	1.50	4.65	40.79	199.04
0+920.00	Orig_Surface	1.42	7.31		
	Total	1.42	7.31	60.88	254.18
0+925.00	Orig_Surface	1.76	7.97		
	Total	1.76	7.97	76.34	343.05
0+930.00	Orig_Surface	1.77	8.83		
	Total	1.77	8.83	71.87	370.53
0+935.00	Orig_Surface	4.55	15.80		
	Total	4.55	15.80	40.75	281.57
0+940.00	Orig_Surface	7.95	31.25		
	Total	7.95	31.25	11.15	129.76
0+945.00	Orig_Surface	12.95	52.24		
	Total	12.95	52.24	1.07	30.55
0+950.00	Orig_Surface	13.69	66.61		
	Total	13.69	66.61	2.95	10.04
0+955.00	Orig_Surface	11.33	62.56		
	Total	11.33	62.56	6.47	23.54
0+960.00	Orig_Surface	11.61	57.35		
	Total	11.61	57.35	6.44	32.26
0+965.00	Orig_Surface	17.38	72.47		
	Total	17.38	72.47	2.44	22.18
0+970.00	Orig_Surface	26.32	109.25		
	Total	26.32	109.25	0.01	6.11

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STATION	MATERIAL	CUT AREA (m^2)	CUT VOLUME (m^3)	FILL AREA (m^2)	FILL VOLUME (m^3)
0+975.00	Orig_Surface Total	34.69 34.69	152.51 152.51	0.00	0.02
0+980.00	Orig_Surface Total	37.97 37.97	181.65 181.65	0.00	0.00
0+985.00	Orig_Surface Total	33.37 33.37	178.34 178.34	0.00	0.00
0+990.00	Orig_Surface Total	20.06 20.06	133.56 133.56	0.00	0.00
0+995.00	Orig_Surface Total	8.78 8.78	72.10 72.10	3.82	9.56
1+000.00	Orig_Surface Total	3.69 3.69	31.17 31.17	14.23	45.12
1+005.00	Orig_Surface Total	1.80 1.80	13.72 13.72	25.20	98.57
1+010.00	Orig_Surface Total	0.68 0.68	6.21 6.21	35.68	152.21
1+015.00	Orig_Surface Total	0.04 0.04	1.79 1.79	51.79	218.67
1+020.00	Orig_Surface Total	0.00 0.00	0.09 0.09	57.90	274.21
1+025.00	Orig_Surface Total	0.00 0.00	0.00 0.00	63.81	304.27
1+030.00	Orig_Surface Total	0.00 0.00	0.00 0.00	70.48	335.73
1+035.00	Orig_Surface Total	0.00 0.00	0.00 0.00	67.90	345.96
1+040.00	Orig_Surface Total	0.00 0.00	0.00 0.00	64.71	331.53
1+045.00	Orig_Surface Total	0.00 0.00	0.00 0.00	64.47	322.94

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STATION	MATERIAL	CUT AREA (m ²)	CUT VOLUME (m ³)	FILL AREA (m ²)	FILL VOLUME (m ³)
1+050.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	56.66	302.81
1+055.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	53.60	275.65
1+060.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	47.32	252.31
1+065.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	36.95	210.68
1+070.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	26.18	157.83
1+075.00	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	16.90	107.72
1+077.63	Orig_Surface	0.00	0.00		
	Total	0.00	0.00	12.33	38.48
Total	Orig_Surface	1232.31	6211.76		
	Total	1232.31	6211.76	5752.25	29703.85