

Project Name **BOWERS WIND** BA=Buffer Adjacent to Small Imp RB=Roadside buffer BRS=Roadside Buffer with Rock Sandwich  
 Project Number **72380E** BL=Buffer w/level spreader DB=Detention basin  
 Date **5/19/2011** DT=Buffer w/ditch turnout WP=Wet pond  
 Done by **JAO** USF=Underdrain Soil Filter INF=Infiltration

**QUALITY CALCULATIONS FOR LINEAR PORTION-SHAW LAKE**

**SHAW LAKE (Carroll Plantation)**

Phosphorous Requirement

Watershed per acre phosphorus budget (Appendix C): P 0.055 # P/acre/year Total ac of devel. parcel: TA 39.21 acres  
 Small Watershed Threshold (Appendix C) SWT 85 acres NWI wetland acreage: WA 0 acres  
 Allowable increase in Town's share of annual phos (App C) FC 18.87 lbs P/year Steep slope acreage: SA 0 acres  
 Area avail. For development (App C) AAD 2271 acres Existing imp area (Pre 1980) EIA<sub>B</sub> 0 acres  
 Project acreage: A = TA - (WA + SA + EIA<sub>B</sub> + EIA<sub>A</sub>) A 39.21 acres Existing imp area (post 1980) EIA<sub>A</sub> 0 acres  
 A/AAD R 0.017

Project Phos Budget: PPB = P x A **PPB 2.157 lbs P/year**  
 Project Phos Budget with small watershed adjustment: **PPB N/A lbs P/year**

Total Post Development Phos Export (lbs P/yr)= **1.8332** <= **2.1566** Access rd width(Const)= 20 Crane path width(Const)= 35  
 % of Project Treated for Shaw Lake WS= **91.33%** >= 75% Access rd width(Perm)= 20 Crane path width(Perm)= 35  
 Total Impervious Area for Shaw Lake WS= 2.32 Acres Turbine pad imp area(Perm)= 18540 sq ft

**South Peak**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station	% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
SP	Crane	300200 300400	100%	RB45	RIGHT	Forest	0.1607	0.4	1.75	0.2812	0.1125
SP	Crane	300400 300600	100%	BL49	RIGHT	Forest	0.1607	0.4	1.75	0.2812	0.1125
SP	Crane	300600 300800	100%	BL16	RIGHT	Forest	0.1607	0.4	1.75	0.2812	0.1125
T16	Turbine		100%	B16		Forest	0.4256	0.4	1.75	0.7448	0.2979
SP	Crane	302325 302650	100%	BL19	RIGHT	Forest	0.2611	0.4	1.75	0.4570	0.1828
SP	Crane	302650 302900	100%	BL20	RIGHT	Forest	0.2009	0.4	1.75	0.3515	0.1406
SP	Crane	302900 303300	100%	RB26	RIGHT	Forest	0.3214	0.4	1.75	0.5624	0.2250
SP	Crane	303300 303550	100%	NONE	RIGHT		0.2009	1	1.75	0.3515	0.3515
T17	Turbine		100%	B17		Forest	0.4256	0.4	1.75	0.7448	0.2979

Total Impervious **2.318** acres Total Pre Tx Phos **4.0558** lbs P/year Total Post Tx Phos **1.8332** lbs P/year

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**QUALITY CALCULATIONS FOR LINEAR PORTION-Pleasant Lake**

**Pleasant Lake (Carroll Plantation)**

Phosphorous Requirement

Watershed per acre phosphorus budget (Appendix C): P 0.063 # P/acre/year Total ac of devel. parcel: TA 271.51 acres  
 Small Watershed Threshold (Appendix C) SWT 68 acres NWI wetland acreage: WA 0 acres  
 Allowable increase in Town's share of annual phos (App C) FC 17.18 lbs P/year Steep slope acreage: SA 0 acres  
 Area avail. For development (App C) AAD 1808 acres Existing imp area (Pre 1980) EIA<sub>B</sub> 0 acres  
 Project acreage: A = TA - (WA + SA + EIA<sub>B</sub> + EIA<sub>A</sub>) A 271.51 acres Existing imp area (post 1980) EIA<sub>A</sub> 0 acres  
 A/AAD R 0.150

Project Phos Budget: PPB = P x A **PPB N/A lbs P/year**  
 Project Phos Budget with small watershed adjustment: **PPB 5.5850 lbs P/year**

Total Post Development Phos Export (lbs P/yr)= **5.5807** <= **5.5850** Access rd width(Const)= 20 Crane path width(Const)= 35  
 % of Project Treated for Pleasant Lake (CP) WS= **95.10%** >= 75% Access rd width(Perm)= 20 Crane path width(Perm)= 35  
 Total Impervious Area for Pleasant Lake (CP) WS= 9.54 Acres Turbine pad imp area(Perm)= 18540 sq ft

**Bowers Mountain**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station	% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
BM	Crane	105625 105850	100%	NONE	LEFT	forest	0.1808	1	1.75	0.3164	0.3164
BM	Crane	105850 106175	100%	BL2	LEFT	Forest	0.2611	0.3	1.75	0.4570	0.1371
BM	Crane	107450 107500	100%	RB6	LEFT	Forest	0.0402	0.3	1.75	0.0703	0.0211
BM	Crane	107500 107750	100%	BL37	LEFT	Forest	0.2009	0.3	1.75	0.3515	0.1055
BM	Crane	107750 108050	100%	BL4	LEFT	Forest	0.2410	0.3	1.75	0.4218	0.1265
BM	Crane	109300 109600	100%	BL6	LEFT	Forest	0.2410	0.3	1.75	0.4218	0.1265
BM10	Crane	180400 181250	100%	RB10	RIGHT	Forest	0.6830	0.3	1.75	1.1952	0.3586
T10	Turbine		50%	B10			0.2128	0.3	1.75	0.3724	0.1117
BM	Crane	114100 114725	100%	RB13	RIGHT	Forest	0.5022	0.3	1.75	0.8788	0.2636
BM	Crane	114725 115050	100%	BL11	RIGHT	Forest	0.2611	0.3	1.75	0.4570	0.1371
BM	Crane	115050 115250	100%	BL12	RIGHT	Meadow	0.1607	0.3	1.75	0.2812	0.0844
BM	Crane	115250 115500	100%	BL111	RIGHT	Forest	0.2009	0.3	1.75	0.3515	0.1055
BM10	Crane	181250 181550	100%	BL52	RIGHT	Forest	0.2410	0.3	1.75	0.4218	0.1265
BM10	Crane	181550 181725	100%	BL53	RIGHT	Forest	0.1406	0.3	1.75	0.2461	0.0738

T9	Turbine			100%	RB10			0.4256	0.3	1.75	0.7448	0.2235
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Total Impervious **3.993** acres Total Pre Tx Phos **6.9877** lbs P/year Total Post Tx Phos **2.3178** lbs P/year

**Dill Hill**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
T19	Turbine			100%	B19			0.4256	0.3	1.75	0.7448	0.2235
T18	Turbine			100%	B18			0.4256	0.3	1.75	0.7448	0.2235
DH	Crane	10200	10675	100%	RB35	LEFT	Forest	0.3817	0.3	1.75	0.6679	0.2004
DH	Crane	10675	10900	100%	NONE	LEFT		0.1808	1	1.75	0.3164	0.3164

Total Impervious **1.414** acres Total Pre Tx Phos **2.4739** lbs P/year Total Post Tx Phos **0.9636** lbs P/year

**South Peak**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
SP	Access	200050	200100	100%	BL6	LEFT	Forest	0.0230	0.3	1.75	0.0402	0.0121
SP	Access	200100	201100	100%	RB18	LEFT	Forest	0.4591	0.3	1.75	0.8035	0.2410
SP	Access	201100	201650	100%	RB19	LEFT	Forest	0.2525	0.3	1.75	0.4419	0.1326
SP	Access	201650	202150	100%	RB20	LEFT	Forest	0.2296	0.3	1.75	0.4017	0.1205
SP	Access	202150	202650	100%	BL14	LEFT	Forest	0.2296	0.3	1.75	0.4017	0.1205
SP	Access	202650	202800	100%	RB106	LEFT	Forest	0.0689	0.3	1.75	0.1205	0.0362
SP	Access	202800	202900	100%	NONE	LEFT		0.0459	1	1.75	0.0803	0.0803
SP	Access	202900	203700	100%	RB22	LEFT	Forest	0.3673	0.3	1.75	0.6428	0.1928
SP	Access	204275	205100	100%	RB23	LEFT	Forest	0.3788	0.3	1.75	0.6629	0.1989
SP	Access	205100	205250	100%	DT6	LEFT	Forest	0.0689	0.3	1.75	0.1205	0.0362
SP	Access	205250	205500	100%	RB24	LEFT	Forest	0.1148	0.3	1.75	0.2009	0.0603
SP	Access	205500	205750	100%	DT7	LEFT	Forest	0.1148	0.3	1.75	0.2009	0.0603
SP	Access	205750	206868	100%	RB25	LEFT	Forest	0.5133	0.3	1.75	0.8983	0.2695
SP	Crane	300800	301125	100%	BL17	LEFT	Forest	0.2611	0.3	1.75	0.4570	0.1371
SP	Crane	301125	301200	100%	NONE	LEFT		0.0603	1	1.75	0.1055	0.1055
SP	Crane	301200	301550	100%	BL18	LEFT	Forest	0.2812	0.3	1.75	0.4921	0.1476
SP	Crane	301550	301800	100%	RB27	LEFT	Meadow	0.2009	0.3	1.75	0.3515	0.1055
SP	Crane	301800	301950	100%	BL22	RIGHT	Forest	0.1205	0.3	1.75	0.2109	0.0633
SP	Crane	301950	302325	100%	RB27	LEFT	Forest	0.3013	0.3	1.75	0.5273	0.1582
SP	Crane	303550	303600	100%	B17	LEFT		0.0402	0.3	1.75	0.0703	0.0211

Total Impervious **4.132** acres      Total Pre Tx Phos **7.2308** lbs P/year      Total Post Tx Phos **2.2993** lbs P/year

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**QUALITY CALCULATIONS FOR LINEAR PORTION-Pleasant Lake**

**Pleasant Lake (Kossuth Township)**

Phosphorous Requirement

Watershed per acre phosphorus budget (Appendix C):	P	0.065	# P/acre/year	Total ac of devel. parcel:	TA	49.94	acres
Small Watershed Threshold (Appendix C)	SWT	212	acres	NWI wetland acreage:	WA	0	acres
Allowable increase in Town's share of annual phos (App C)	FC	55.35	lbs P/year	Steep slope acreage:	SA	0	acres
Area avail. For development (App C)	AAD	5666	acres	Existing imp area (Pre 1980)	EIA <sub>B</sub>	0	acres
Project acreage: A = TA - (WA + SA + EIA <sub>B</sub> + EIA <sub>A</sub> )	A	49.94	acres	Existing imp area (post 1980)	EIA <sub>A</sub>	0	acres
A/AAD	R	0.009					
				Project Phos Budget: PPB = P x A	PPB	3.246	lbs P/year
				Project Phos Budget with small watershed adjustment:	PPB	N/A	lbs P/year

Total Post Development Phos Export (lbs P/yr)=	3.1548	<=	3.2461	Access rd width(Const)=	20	Crane path width(Const)=	35
% of Project Treated for Pleasant Lake (KT) WS=	67.61%	>=	75%	Access rd width(Perm)=	20	Crane path width(Perm)=	35
Total Impervious Area for Pleasant Lake (KT) WS=	3.42	Acres		Turbine pad imp area(Perm)=	18540	sq ft	

**Dill Hill**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station	% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year	
DH	Crane	11550	12250	100%	BL29	RIGHT	Forest	0.5624	0.3	1.75	0.9843	0.2953
DH	Crane	12250	12500	100%	BL31	RIGHT	Forest	0.2009	0.3	1.75	0.3515	0.1055
DH	Crane	12500	13000	100%	BL32	RIGHT	Forest	0.4017	0.3	1.75	0.7031	0.2109
DH	Crane	13000	13350	100%	NONE			0.2812	1	1.75	0.4921	0.4921
DH	Crane	13350	13550	100%	NONE	RIGHT		0.1607	1	1.75	0.2812	0.2812
DH	Crane	13550	13800	100%	RB37	RIGHT	Forest	0.2009	0.3	1.75	0.3515	0.1055
DH23	Crane	9000	9200	100%	RB44	LEFT	Forest	0.1607	0.3	1.75	0.2812	0.0844
T24	Turbine			100%	NONE			0.4256	1	1.75	0.7448	0.7448
DH23	Crane	8650	9000	100%	DT9	RIGHT	Forest	0.2812	0.3	1.75	0.4921	0.1476
DH23	Crane	8350	8650	100%	NONE	RIGHT		0.2410	1	1.75	0.4218	0.4218
DH23	Crane	8250	8350	100%	B23	RIGHT	Forest	0.0803	0.3	1.75	0.1406	0.0422
T23	Turbine			100%	B23		Forest	0.4256	0.3	1.75	0.7448	0.2235

Total Imperviou **3.422** acres Total Pre Tx Phos **5.9892** lbs P/year Total Post Tx Phos **3.1548** lbs P/year

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**QUALITY CALCULATIONS FOR LINEAR PORTION-MILL PRIVILEGE POND**

**Mill Privilege Pond (Carroll Plantation)**

Phosphorous Requirement

Watershed per acre phosphorus budget (Appendix C): P 0.049 # P/acre/year Total ac of devel. parcel: TA 117.77 acres  
 Small Watershed Threshold (Appendix C) SWT 87 acres NWI wetland acreage: WA 0 acres  
 Allowable increase in Town's share of annual phos (App C) FC 17.08 lbs P/year Steep slope acreage: SA 0 acres  
 Area avail. For development (App C) AAD 2314 acres Existing imp area (Pre 1980) EIA<sub>B</sub> 0 acres  
 Project acreage: A = TA - (WA + SA + EIA<sub>B</sub> + EIA<sub>A</sub>) A 117.77 acres Existing imp area (post 1980) EIA<sub>A</sub> 0 acres  
 A/AAD R 0.051

Project Phos Budget: PPB = P x A **PPB N/A lbs P/year**  
 Project Phos Budget with small watershed adjustment: **PPB 4.7046 lbs P/year**

Total Post Development Phos Export (lbs P/yr)= **4.7039** <= **4.7046** Access rd width(Const)= 20 Crane path width(Const)= 35  
 % of Project Treated for Mill Privilege Pond WS= **84.45%** >= 75% Access rd width(Perm)= 20 Crane path width(Perm)= 35  
 Total Impervious Area for Mill Privilege Pond WS= 6.57 Acres Turbine pad imp area(Perm)= 18540 sq ft

**Bowers Mountain**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station	% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
T1	Turbine		100%	B1			0.4256	0.3	1.75	0.7448	0.2235
BM	Crane	100150	101550	100%	RB1	LEFT	1.1249	0.3	1.75	1.9685	0.5906
T2	Turbine		100%	B2			0.4256	0.3	1.75	0.7448	0.2235
BM	Crane	101550	101725	100%	BL60	TRANS	0.1406	0.3	1.75	0.2461	0.0738
BM	Crane	101725	102000	100%	RB2	RIGHT	0.2210	0.3	1.75	0.3867	0.1160
BM	Crane	102000	102175	100%	NONE	TRANS	0.1406	1	1.75	0.2461	0.2461
BM	Crane	102175	102700	100%	BL61	RIGHT	0.4218	0.3	1.75	0.7382	0.2215
T3	Turbine		100%	B3			0.4256	0.3	1.75	0.7448	0.2235
BM	Crane	102700	103150	100%	RB3	RIGHT	0.3616	0.3	1.75	0.6327	0.1898
T4	Turbine		100%				0.4256	1	1.75	0.7448	0.7448
BM	Crane	103150	103300	100%	RB3	RIGHT	0.1205	0.3	1.75	0.2109	0.0633
BM	Crane	103300	104025	100%	RB4	RIGHT	0.5825	0.3	1.75	1.0194	0.3058
BM	Crane	104025	104175	50%	BL112	RIGHT	0.0603	0.3	1.75	0.1055	0.0316
T5	Turbine		100%	B5			0.4256	0.3	1.75	0.7448	0.2235

BM	Crane	104900	105200	100%	RB103	RIGHT	Meadow	0.2410	0.3	1.75	0.4218	0.1265
BM	Crane	105200	105625	100%	NONE	TRANS		0.3415	1	1.75	0.5976	0.5976

Total Impervious **5.884** acres      Total Pre Tx Phos **10.2977** lbs P/year      Total Post Tx Phos **4.2013** lbs P/year

**South Peak**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station	% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
SP	Access	203700	203950	100%	NONE	TRANS	0.1148	1	1.75	0.2009	0.2009
SP	Access	203950	204275	100%	BL15	RIGHT	0.1492	0.3	1.75	0.2611	0.0783
T15	Turbine			100%	B15		0.4256	0.3	1.75	0.7448	0.2235

Total Impervious **0.690** acres      Total Pre Tx Phos **1.2068** lbs P/year      Total Post Tx Phos **0.5027** lbs P/year

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**QUALITY CALCULATIONS FOR LINEAR PORTION-DIPPER POND**

**DIPPER POND (Carroll Plantation)**

Phosphorous Requirement 51.38

Watershed per acre phosphorus budget (Appendix C):	P	0.052	# P/acre/year	Total ac of devel. parcel:	TA	51.38	acres
Small Watershed Threshold (Appendix C)	SWT	2	acres	NWI wetland acreage:	WA	0	acres
Allowable increase in Town's share of annual phos (App C)	FC	0.44	lbs P/year	Steep slope acreage:	SA	0	acres
Area avail. For development (App C)	AAD	56	acres	Existing imp area (Pre 1980)	EIA <sub>B</sub>	0	acres
Project acreage: A = TA - (WA + SA + EIA <sub>B</sub> + EIA <sub>A</sub> )	A	51.38	acres	Existing imp area (post 1980)	EIA <sub>A</sub>	0	acres
	A/AAD	R	0.918				

Project Phos Budget: PPB = P x A **PPB N/A lbs P/year**  
 Project Phos Budget with small watershed adjustment: **PPB 0.4037 lbs P/year**

Total Post Development Phos Export (lbs P/yr)=	<b>0.4031</b>	<=	<b>0.4037</b>	Access rd width(Const)=	16	Crane path width(Const)=	35
% of Project Treated for Dipper Pond WS=	<b>87.68%</b>	>=	75%	Access rd width(Perm)=	16	Crane path width(Perm)=	35
Total Impervious Area for Dipper Pond WS=	0.60	Acres		Turbine pad imp area(Perm)=	18540	sq ft	

**Dill Hill**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
DHA	Access	5350	5775	100%	BL28	RIGHT	Forest	0.1561	0.3	1.75	0.2732	0.0820
DHA	Access	5775	5975	100%	NONE	TRANS		0.0735	1	1.75	0.1286	0.1286
DHA	Access	5975	6500	100%	RB32	LEFT	Forest	0.1928	0.3	1.75	0.3375	0.1012
DHA	Access	6500	6700	100%	DT8	LEFT	Forest	0.0735	0.3	1.75	0.1286	0.0386
DH	Crane	10900	11025	100%	RB36	LEFT	Forest	0.1004	0.3	1.75	0.1758	0.0527

Total Impervious **0.596** acres      Total Pre Tx Phos **1.0435** lbs P/year      Total Post Tx Phos **0.4031** lbs P/year



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**QUALITY CALCULATIONS FOR LINEAR PORTION-BASKAHEGAN LAKE**

**Baskahegan Lake (Carroll Plantation)**

Phosphorous Requirement

Watershed per acre phosphorus budget (Appendix C): P 0.078 # P/acre/year Total ac of devel. parcel: TA 211.52 acres  
 Small Watershed Threshold (Appendix C) SWT 301 acres NWI wetland acreage: WA 0 acres  
 Allowable increase in Town's share of annual phos (App C) FC 94.3 lbs P/year Steep slope acreage: SA 0 acres  
 Area avail. For development (App C) AAD 8039 acres Existing imp area (Pre 1980) EIA<sub>B</sub> 0 acres  
 Project acreage: A = TA - (WA + SA + EIA<sub>B</sub> + EIA<sub>A</sub>) A 211.52 acres Existing imp area (post 1980) EIA<sub>A</sub> 0 acres  
 A/AAD R 0.026

Project Phos Budget: PPB = P x A **PPB 16.499 lbs P/year**  
 Project Phos Budget with small watershed adjustment: **PPB N/A lbs P/year**

Total Post Development Phos Export (lbs P/yr)= **16.4900** <= **16.4986** Access rd width(Const)= 20 Crane path width(Const)= 35  
 % of Project Treated for Baskahegan Lake (CP) WS= **83.14%** >= 75% Access rd width(Perm)= 20 Crane path width(Perm)= 35  
 Total Impervious Area for Baskahegan Lake (CP) WS= 19.81 Acres Turbine pad imp area(Perm)= 18540 sq ft

**Bowers Mountain**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station	% of area	BMP No. (or none)	Revegetate R, L, B (crowned or T (transition))	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/Year
BM	Crane	104025 104175	50%	BL1	LEFT	Forest	0.0603	0.3	1.75	0.1055	0.0316
BM	Crane	104175 104400	100%	BL1	LEFT	Forest	0.1808	0.3	1.75	0.3164	0.0949
BM	Crane	104400 104475	100%	NONE	TRANS		0.0603	1	1.75	0.1055	0.1055
BM	Crane	104475 104900	100%	RB5	LEFT	Forest	0.3415	0.3	1.75	0.5976	0.1793
BM6	Crane	150000 150300	100%	RB5	LEFT	Forest	0.2410	0.3	1.75	0.4218	0.1265
BM6	Crane	150300 150550	100%	NONE	TRANS		0.2009	1	1.75	0.3515	0.3515
T6	Turbine		100%	B6		Forest	0.4256	0.3	1.75	0.7448	0.2235
BM	Crane	106175 106575	100%	BL3	LEFT	Forest	0.3214	0.3	1.75	0.5624	0.1687
BM	Crane	106575 107450	100%	RB6	LEFT	Forest	0.7031	0.3	1.75	1.2303	0.3691
T7	Turbine		100%	NONE			0.4256	1	1.75	0.7448	0.7448
BM	Crane	108050 108125	100%	DT3	LEFT	Forest	0.0603	0.3	1.75	0.1055	0.0316
BM	Crane	108125 108400	100%	B8	LEFT	Forest	0.2210	0.3	1.75	0.3867	0.1160
BM	Crane	108400 108700	100%	RB7	LEFT	Meadow	0.2410	0.3	1.75	0.4218	0.1265
BM	Crane	108700 108900	100%	BL5	LEFT	Forest	0.1607	0.3	1.75	0.2812	0.0844
BM	Crane	108900 109000	100%	BL21	LEFT	Forest	0.0803	0.3	1.75	0.1406	0.0422
PMT8	MET	0 344	100%	BL21	LEFT	Forest	0.0948	0.3	1.75	0.1658	0.0498
BM	Crane	109000 109300	100%	NONE	LEFT		0.2410	1	1.75	0.4218	0.4218
BM	Crane	109600 109725	100%	NONE	LEFT		0.1004	1	1.75	0.1758	0.1758
BM	Crane	109725 110100	100%	RB8	LEFT	Forest	0.3013	0.3	1.75	0.5273	0.1582
BM	Crane	110100 110375	100%	DT4	LEFT	Forest	0.2210	0.3	1.75	0.3867	0.1160
BM	Crane	110375 111100	100%	RB9	LEFT	Forest	0.5825	0.3	1.75	1.0194	0.3058
T8	Turbine		100%	B8		Forest	0.4256	0.3	1.75	0.7448	0.2235

BM10	Crane	180100	180400	100%	NONE	RIGHT	Forest	0.2410	1	1.75	0.4218	0.4218
BM	Crane	111150	111300	100%	BL9	LEFT	Forest	0.1205	0.3	1.75	0.2109	0.0633
BM	Crane	111300	113000	100%	RB11	LEFT	Forest	1.3659	0.3	1.75	2.3904	0.7171
BM	Crane	113000	113450	100%	RB12	LEFT	Forest	0.3616	0.3	1.75	0.6327	0.1898
BM	Crane	113450	113800	100%	NONE	LEFT		0.2812	1	1.75	0.4921	0.4921
BM	Crane	113800	114100	100%	BL10	LEFT	Forest	0.2410	0.3	1.75	0.4218	0.1265
T11	Turbine			100%	BL36		Forest	0.4256	0.3	1.75	0.7448	0.2235
T12	Turbine			100%	B12			0.4256	0.3	1.75	0.7448	0.2235
BM	Crane	115500	116000	100%	RB14	RIGHT	Forest	0.4017	0.3	1.75	0.7031	0.2109
BM	Crane	116000	116400	100%	RB15	LEFT	Forest	0.3214	0.3	1.75	0.5624	0.1687
BM	Crane	116400	116500	100%	NONE	LEFT		0.0803	1	1.75	0.1406	0.1406
BM	Crane	116500	116900	100%	RB16	LEFT	Forest	0.3214	0.3	1.75	0.5624	0.1687
T13	Turbine			100%	B13			0.4256	0.4	1.75	0.7448	0.2979
T14	Turbine			100%	B14			0.4256	0.4	1.75	0.7448	0.2979
BM	Crane	116900	117200	100%	NONE	LEFT		0.2410	1	1.75	0.4218	0.4218
BM	Crane	117200	117700	100%	RB17	LEFT	Forest	0.4017	0.4	1.75	0.7031	0.2812
BM	Access	117700	117800	100%	BL13	LEFT	Forest	0.0459	0.4	1.75	0.0803	0.0321
BM	Access	117800	118250	100%	BL13	RIGHT	Forest	0.2066	0.4	1.75	0.3616	0.1446
T10	Turbine			50%	B10		Forest	0.2128	0.4	1.75	0.3724	0.1490

Total Impervious **12.237** acres      Total Pre Tx Phos **21.4151** lbs P/year      Total Post Tx Phos **9.0183** lbs P/year

**Dill Hill**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station	% of area	BMP No. (or none)	Revegetate R, L, B (crowned or T (transition))	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year	
DHA	Access	6700	6850	100%	RB33	LEFT	Forest	0.0689	0.4	1.75	0.1205	0.0482
DHA	Access	6850	7300	100%	NONE	LEFT		0.2066	1	1.75	0.3616	0.3616
DHA	Access	7300	7400	100%	RB34	LEFT	Forest	0.0459	0.4	1.75	0.0803	0.0321
DH	Crane	11025	11400	100%	RB36	LEFT	Forest	0.3013	0.4	1.75	0.5273	0.2109
DHA	Access	5100	5350	100%	BL27	LEFT	Forest	0.1148	0.4	1.75	0.2009	0.0803

Total Impervious **0.737** acres      Total Pre Tx Phos **1.2906** lbs P/year      Total Post Tx Phos **0.7332** lbs P/year

**Dipper Pond**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned or T (transition))	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
DP	Access	1000	1075	100%	NONE	LEFT		0.0344	1	1.75	0.0603	0.0603
DP	Access	1075	1400	100%	BL23	LEFT	Forest	0.1492	0.4	1.75	0.2611	0.1045
DP	Access	1400	2075	100%	RB29	LEFT	Meadow	0.3099	0.4	1.75	0.5424	0.2169
DP	Access	2075	2125	100%	NONE	LEFT		0.0230	1	1.75	0.0402	0.0402
DP	Access	2125	2350	100%	BL25	LEFT	Forest	0.1033	0.3	1.75	0.1808	0.0542
DP	Access	2350	2575	100%	BL13	LEFT	Forest	0.1033	0.4	1.75	0.1808	0.0723
DP	Access	2575	2700	100%	NONE	LEFT		0.0574	1	1.75	0.1004	0.1004
DP	Access	2700	3400	100%	RB31	LEFT	Forest	0.3214	0.3	1.75	0.5624	0.1687
DP	Access	3400	3850	100%	NONE	TRANS		0.2066	1	1.75	0.3616	0.3616
DP	Access	3850	3900	100%	BL27	RIGHT	Forest	0.0230	0.4	1.75	0.0402	0.0161
PMT14	MET	0	700	100%	BL30	TRANS	Forest	0.1928	0.4	1.75	0.3375	0.1350
PMT15	MET	700	992	100%	BL35	TRANS	Forest	0.0804	0.4	1.75	0.1408	0.0563

Total Impervious **1.605** acres Total Pre Tx Phos **2.8084** lbs P/year Total Post Tx Phos **1.3865** lbs P/year

**Baskahegan Access Road**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned or T (transition))	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
BHA	Access	1300	1500	100%	BL103	TRANS	Forest	0.0918	0.4	1.75	0.1607	0.0643
BHA	Access	1500	1800	100%	BL104	RIGHT	Forest	0.1377	0.4	1.75	0.2410	0.0964
BHA	Access	1800	2225	100%	BL105	RIGHT	Forest	0.1951	0.4	1.75	0.3415	0.1366
BHA	Access	2225	2650	100%	RB101	RIGHT	Forest	0.1951	0.4	1.75	0.3415	0.1366
BHA	Access	2650	2950	100%	BL106	RIGHT	Forest	0.1377	0.4	1.75	0.2410	0.0964
BHA	Access	2950	3450	100%	RB102	RIGHT	Forest	0.2296	0.4	1.75	0.4017	0.1607

Total Impervious **0.895** acres Total Pre Tx Phos **1.5668** lbs P/year Total Post Tx Phos **0.6910** lbs P/year

**Moose Road "T8 Spur"**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned or T (transition))	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
T8 SPUR	SPUR	91600	92250	100%	BL110	TRANS	Forest	0.1492	0.4	1.75	0.2611	0.1045
T8 SPUR	SPUR	92250	92660	100%	BL109	TRANS	Forest	0.0941	0.4	1.75	0.1647	0.0659

Total Impervious **0.094** acres Total Pre Tx Phos **0.1647** lbs P/year Total Post Tx Phos **0.1703** lbs P/year

**Substation Site**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned or T (transition))	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
SUBRD	Access	25	1550	100%	NONE	TRANS		0.7002	1	1.75	1.2253	1.2253
SUBRD	SITE			100%	BPAD			2.1000	0.4	1.75	3.6750	1.4700

Total Impervious **2.100** acres      Total Pre Tx Phos **3.6750** lbs P/year      Total Post Tx Phos **2.6953** lbs P/year

**O&M Site**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned or T (transition))	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
OMRD	Access	25	150	100%	NONE	TRANS		0.0574	1	1.75	0.1004	0.1004
OMRD	Access	150	1200	100%	RB104	RIGHT	Forest	0.4821	0.4	1.75	0.8437	0.3375
OMRD	Access	1200	1600	100%	NONE	TRANS		0.1837	1	1.75	0.3214	0.3214
OMRD	SITE			100%	BO&M		Meadow	1.4800	0.4	1.75	2.5900	1.0360

Total Impervious **2.146** acres      Total Pre Tx Phos **3.7551** lbs P/year      Total Post Tx Phos **1.7953** lbs P/year

Project Name **BOWERS WIND** BA=Buffer Adjacent to Small Imp RB=Roadside buffer BRS=Roadside Buffer with Rock Sandwich  
 Project Number **72380E** BL=Buffer w/level spreader DB=Detention basin  
 Date **5/19/2011** DT=Buffer w/ditch turnout WP=Wet pond  
 Done by **JAO** USF=Underdrain Soil Filter INF=Infiltration

**QUALITY CALCULATIONS FOR LINEAR PORTION-BASKAHEGAN LAKE**

**Baskahegan Lake (Kossuth Township)**

Phosphorous Requirement

Watershed per acre phosphorus budget (Appendix C):	P	0.095	# P/acre/year	Total ac of devel. parcel:	TA	111.85	acres
Small Watershed Threshold (Appendix C)	SWT	631	acres	NWI wetland acreage:	WA	0	acres
Allowable increase in Town's share of annual phos (App C)	FC	239.08	lbs P/year	Steep slope acreage:	SA	0	acres
Area avail. For development (App C)	AAD	16831	acres	Existing imp area (Pre 1980)	EIA <sub>B</sub>	0	acres
Project acreage: A = TA - (WA + SA + EIA <sub>B</sub> + EIA <sub>A</sub> )	A	111.85	acres	Existing imp area (post 1980)	EIA <sub>A</sub>	0	acres
	A/AAD	R	0.007				
				Project Phos Budget: PPB = P x A	PPB	10.626	lbs P/year
				Project Phos Budget with small watershed adjustment:	PPB	N/A	lbs P/year

Total Post Development Phos Export (lbs P/yr)=	<b>10.1408</b>	<=	<b>10.6258</b>	Access rd width(Const)=	20	Crane path width(Const)=	35
% of Project Treated for Baskahegan Lake (KT) WS=	<b>81.70%</b>	>=	75%	Access rd width(Perm)=	20	Crane path width(Perm)=	35
Total Impervious Area for Baskahegan Lake (KT) WS=	11.37	Acres		Turbine pad imp area(Perm)=	18540	sq ft	

**Dill Hill**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
DHA	Access	7400	7675	100%	RB34	LEFT	Forest	0.1263	0.4	1.75	0.2210	0.0884
DHA	Access	7675	8000	100%	BL29	LEFT	Forest	0.1492	0.4	1.75	0.2611	0.1045
DH	Crane	11400	11550	100%	RB36	LEFT	Forest	0.1205	0.4	1.75	0.2109	0.0844
DH	Crane	13800	13950	100%	RB37	RIGHT	Forest	0.1205	0.4	1.75	0.2109	0.0844
PMT 21-22	MET	0	100	100%	NONE	TRANS		0.0275	1	1.75	0.0482	0.0482
PMT 21-22	MET	100	568	100%	BL107	TRANS	Forest	0.1289	0.4	1.75	0.2256	0.0902
T21	Turbine			100%	B21			0.4256	0.4	1.75	0.7448	0.2979
T22	Turbine			100%	RB38		Forest	0.4256	0.4	1.75	0.7448	0.2979
T20	Turbine			100%	B20			0.4256	0.4	1.75	0.7448	0.2979
DH	Crane	13950	14100	100%	RB38	LEFT	Forest	0.1205	0.4	1.75	0.2109	0.0844
DH	Crane	14100	14200	100%	NONE	LEFT		0.0803	1	1.75	0.1406	0.1406
DH	Crane	14200	14900	100%	RB39	LEFT	Meadow	0.5624	0.4	1.75	0.9843	0.3937
DH	Crane	14900	15200	100%	BL34	LEFT	Forest	0.2410	0.4	1.75	0.4218	0.1687
DH	Crane	15200	16250	100%	RB40	LEFT	Forest	0.8437	0.4	1.75	1.4764	0.5906
DH	Crane	16250	17075	100%	RB41	LEFT	Forest	0.6629	0.4	1.75	1.1600	0.4640
DH	Crane	17075	17125	100%	NONE			0.0402	1	1.75	0.0703	0.0703
DH	Crane	17125	17375	100%	RB41	LEFT	Forest	0.2009	0.4	1.75	0.3515	0.1406

DH	Crane	17375	18100	100%	NONE	LEFT		0.5825	1	1.75	1.0194	1.0194
DH	Crane	18100	18500	100%	BL39	LEFT	Forest	0.3214	0.4	1.75	0.5624	0.2250
T25	Turbine			100%	NONE			0.4256	1	1.75	0.7448	0.7448
T26	Turbine			100%	B26		Forest	0.4256	0.4	1.75	0.7448	0.2979
PMT 25-26	MET	50	800	100%	BL108	TRANS	Forest	0.2066	0.4	1.75	0.3616	0.1446
DH	Crane	18500	18800	100%	NONE	LEFT		0.2410	1	1.75	0.4218	0.4218
DH	Crane	18800	19050	100%	RB42	LEFT	Forest	0.2009	0.4	1.75	0.3515	0.1406
DH	Crane	19050	19525	100%	BL40	LEFT	Forest	0.3817	0.4	1.75	0.6679	0.2672
DH	Crane	19525	20000	100%	BL41	LEFT	Forest	0.3817	0.4	1.75	0.6679	0.2672
DH	Crane	20000	20300	100%	BL42	LEFT	Forest	0.2410	0.4	1.75	0.4218	0.1687
DH	Crane	20300	20600	100%	RB105	LEFT	Forest	0.2410	0.4	1.75	0.4218	0.1687
DH	Crane	20600	20825	100%	BL43	TRANS	Forest	0.1808	0.4	1.75	0.3164	0.1265
DH	Access	20825	21200	100%	BL50	RIGHT	Forest	0.1722	0.4	1.75	0.3013	0.1205
T27	Turbine			100%	B27		Forest	0.4256	0.4	1.75	0.7448	0.2979
DH	Access	21200	21500	100%	BL44	RIGHT	Forest	0.1377	0.4	1.75	0.2410	0.0964
DH	Access	21500	21900	100%	BL45	RIGHT	Forest	0.1837	0.4	1.75	0.3214	0.1286
DH	Access	21900	22350	100%	BL51	RIGHT	Forest	0.2066	0.4	1.75	0.3616	0.1446
DH	Access	22350	22700	100%	BL46	RIGHT	Forest	0.1607	0.4	1.75	0.2812	0.1125
DH	Access	22700	23050	100%	NONE	RIGHT		0.1607	1	1.75	0.2812	0.2812
DH	Access	23050	23225	100%	NONE	RIGHT		0.0803	1	1.75	0.1406	0.1406
PMT 25	MET	0	500	100%	BL38	TRANS	Forest	0.1377	0.4	1.75	0.2410	0.0964
PMT 25	MET	500	1058	100%	BL109	TRANS	Forest	0.1537	0.4	1.75	0.2690	0.1076
DH23	Crane	9200	9400	100%	RB44	LEFT	Forest	0.1607	0.4	1.75	0.2812	0.1125
DH23	Crane	9400	9850	100%	NONE	LEFT	Forest	0.3616	1	1.75	0.6327	0.6327

Total Impervious **10.873** acres      Total Pre Tx Phos **19.0277** lbs P/year      Total Post Tx Phos **9.7110** lbs P/year

**Baskahegan Access Road**

Roadway Alignment or Turbine Site	Access Crane Turbine	Station to Station		% of area	BMP No. (or none)	Revegetate R, L, B (crowned) or T (transition)	BMP cover Forest Meadow	Imp. Area (acres)	Treatment Factor	Export Coefficient	Pre-Treatment lbs P/Year	Post Treatment lbs P/year
BHA	Access	225	400	100%	NONE	TRANS		0.0803	1	1.75	0.1406	0.1406
BHA	Access	400	600	100%	BL100	TRANS	Forest	0.0918	0.4	1.75	0.1607	0.0643
BHA	Access	600	800	100%	RB100	LEFT	Forest	0.0918	0.4	1.75	0.1607	0.0643
BHA	Access	800	1025	100%	BL101	LEFT	Forest	0.1033	0.4	1.75	0.1808	0.0723
BHA	Access	1025	1300	100%	BL102	LEFT	Forest	0.1263	0.4	1.75	0.2210	0.0884

Total Impervious **0.494** acres      Total Pre Tx Phos **0.8638** lbs P/year      Total Post Tx Phos **0.4299** lbs P/year

Project Name **BOWERS WIND**  
 Project Number **72380E**  
 Date **5/19/2011**  
 Done by **JAO**

RB=Roadside Buffer  
 Imp=Impervious area  
 Land=Landscaped Area

L=Length  
 W=Width  
 B=Buffer

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**REQUIRED BUFFER FLOW PATH LENGTHS**  
**~BUFFER ADJACENT TO DOWN HILL SIDE OF ROAD~**

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# of Travel Ways to Buffer	Length of Flow Forest	Length of Flow Meadow
1	35	50
2	55	80

\* Buffer slopes may not exceed 20%

\*\* Buffers may not be located in a wetland

\*\*\* Roadside slopes may be included in a meadow buffer if the slope is less than 4:1 and if the soils allow infiltration

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**Mill Privilege Pond**

BMP Type & #	Roadway Align. or Turbine Site	# of Travel Ways (1 or 2)	Buffer Type (Forest or Meadow)	Treatment Factor	Standard Buffer Length (ft)	Adjusted Buffer Length (ft)
RB1	BM	2	Forest	0.30	55	73
RB2	BM	2	Forest	0.30	55	73
RB3	BM	2	Forest	0.30	55	73
RB4	BM	2	Forest	0.30	55	73
RB103	BM	2	Meadow	0.30	80	107

## Shaw Lake

<b>BMP Type &amp; #</b>	<b>Roadway Align. or Turbine Site</b>	<b># of Travel Ways (1 or 2)</b>	<b>Buffer Type (Forest or Meadow)</b>	<b>Treatment Factor</b>	<b>Standard Buffer Length (ft)</b>	<b>Adjusted Buffer Length (ft)</b>
RB26	SP	2	Forest	0.40	55	55
RB45	SP	2	Forest	0.40	55	55

## Dipper Pond

<b>BMP Type &amp; #</b>	<b>Roadway Align. or Turbine Site</b>	<b># of Travel Ways (1 or 2)</b>	<b>Buffer Type (Forest or Meadow)</b>	<b>Treatment Factor</b>	<b>Standard Buffer Length (ft)</b>	<b>Adjusted Buffer Length (ft)</b>
RB32	DHA	2	Forest	0.30	55	73
RB36	DH	2	Forest	0.30	55	73

## Pleasant Lake (CP)

<b>BMP Type &amp; #</b>	<b>Roadway Align. or Turbine Site</b>	<b># of Travel Ways (1 or 2)</b>	<b>Buffer Type (Forest or Meadow)</b>	<b>Treatment Factor</b>	<b>Standard Buffer Length (ft)</b>	<b>Adjusted Buffer Length (ft)</b>
RB10	BM10	2	Forest	0.30	55	73
RB13	BM	2	Forest	0.30	55	73
RB18	SP	2	Forest	0.30	55	73
RB19	SP	2	Forest	0.30	55	73
RB20	SP	2	Forest	0.30	55	73
RB22	SP	2	Forest	0.30	55	73
RB23	SP	2	Forest	0.30	55	73
RB24	SP	2	Forest	0.30	55	73
RB25	SP	2	Forest	0.30	55	73
RB27	SP	2	Meadow	0.30	80	107
RB35	DH	2	Forest	0.30	55	73
RB106	SP	2	Forest	0.30	55	73



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**Pleasant Lake (KT)**

<b>BMP Type &amp; #</b>	<b>Roadway Align. or Turbine Site</b>	<b># of Travel Ways (1 or 2)</b>	<b>Buffer Type (Forest or Meadow)</b>	<b>Treatment Factor</b>	<b>Standard Buffer Length (ft)</b>	<b>Adjusted Buffer Length (ft)</b>
RB37	DH	2	Forest	0.30	55	73
RB44	DH23	2	Forest	0.30	55	73

**Baskahegan Lake (CP)**

<b>BMP Type &amp; #</b>	<b>Roadway Align. or Turbine Site</b>	<b># of Travel Ways (1 or 2)</b>	<b>Buffer Type (Forest or Meadow)</b>	<b>Treatment Factor</b>	<b>Standard Buffer Length (ft)</b>	<b>Adjusted Buffer Length (ft)</b>
RB5	BM	2	Forest	0.30	55	73
RB6	BM	2	Forest	0.30	55	73
RB7	BM	2	Meadow	0.30	80	107
RB8	BM	2	Forest	0.30	55	73
RB9	BM	2	Forest	0.30	55	73
RB11	BM	2	Forest	0.30	55	73
RB12	BM	2	Forest	0.30	55	73
RB14	BM	2	Forest	0.30	55	73
RB15	BM	2	Forest	0.30	55	73
RB16	BM	2	Forest	0.30	55	73
RB17	BM	2	Forest	0.40	55	55
RB29	DP	2	Meadow	0.40	80	80
RB31	DP	2	Forest	0.30	55	73
RB33	DHA	2	Forest	0.40	55	55
RB36	DH	2	Forest	0.40	55	55
RB101	BHA	2	Forest	0.40	55	55
RB102	BHA	2	Forest	0.40	55	55
RB104	OMRD	2	Forest	0.40	55	55

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**Baskahegan Lake (KT)**

<b>BMP Type &amp; #</b>	<b>Roadway Align. or Turbine Site</b>	<b># of Travel Ways (1 or 2)</b>	<b>Buffer Type (Forest or Meadow)</b>	<b>Treatment Factor</b>	<b>Standard Buffer Length (ft)</b>	<b>Adjusted Buffer Length (ft)</b>
RB34	DHA	2	Forest	0.40	55	55
RB36	DH	2	Forest	0.40	55	55
RB37	DH	2	Forest	0.40	55	55
RB38	T22	2	Forest	0.40	55	55
RB39	DH	2	Meadow	0.40	80	80
RB40	DH	2	Forest	0.40	55	55
RB41	DH	2	Forest	0.40	55	55
RB42	DH	2	Forest	0.40	55	55
RB44	DH23	2	Forest	0.40	55	55
RB105	DH	2	Forest	0.40	55	55

Project Name **BOWERS WIND**  
 Project Number **72380E**  
 Date **5/19/2011**  
 Done by **JAO**

BL=Buffer with a Level Lip Spread L=Length  
 Imp=Impervious area W=Width  
 Land=Landscaped Area B=Buffer  
 C1=Loamy Sand or Sandy Loam C2=Silt Loam, Clay Loam or Silty Clay Loam

**REQUIRED BUFFER FLOW PATH LENGTHS**  
**~BUFFERS WITH LEVEL LIP SPREADERS~**

**0-8% Buffer Slope**

**9-15% Buffer Slope**

Soils	Length of Flow Thru Buffer (ft)	Berm L for Forested Buffer(ft)		Berm L for Meadow Buffer(ft)	
		Per acre Imp	Per acre Land	Per acre Imp	Per acre Land
<b>A</b>	75	75	25	125	35
	100	65	20	75	25
	150	50	15	60	20
<b>B</b>	75	100	30	150	45
	100	80	25	100	30
	150	65	20	75	25
<b>C1</b>	75	125	35	150	45
	100	100	30	125	35
	150	75	25	100	30
<b>C2</b>	100	150	45	200	60
	150	100	30	150	45
<b>D</b>	150	150	45	200	60

Length of Flow Thru Buffer (ft)	Berm L for Forested Buffer(ft)		Berm L for Meadow Buffer(ft)	
	Per acre Imp	Per acre Land	Per acre Imp	Per acre Land
75	90	30	150	42
100	78	24	90	30
150	60	18	72	24
75	120	36	180	54
100	96	30	120	36
150	78	24	90	30
75	150	42	180	54
100	120	36	150	42
150	90	30	120	36
100	180	54	240	72
150	120	36	180	54
150	180	54	240	72

**Mill Privilege Pond**

from table      from table

BMP Type & #	Roadway Align. or Turbine Site	Imp (acres)	Buffer Type (forest/meadow)	Treatment Factor	Soil Type	Buffer Slope	Standard Buffer Length (ft)	L of Berm per ac. imp	Standard Berm Length (ft)	Adjusted Buffer Length (ft)
BL15	SP	0.1492	Forest	0.3	C	8%	100	150	22	133
BL60	BM	0.1406	Forest	0.3	B	14%	75	120	17	100
BL61	BM	0.4218	Forest	0.3	B	23%	100	96	40	133
BL112	BM	0.0603	Forest	0.3	C	30%	100	180	11	133

**Shaw Lake**

from table from table

BMP Type & #	Roadway Align. or Turbine Site	Imp (acres)	Buffer Type (forest/meadow)	Treatment Factor	Soil Type	Buffer Slope	Standard Buffer Length (ft)	L of Berm per ac. imp	Standard Berm Length (ft)	Adjusted Buffer Length (ft)
BL16	SP	0.1607	Forest	0.4	D	13%	150	180	29	150
BL19	SP	0.2611	Forest	0.4	D	5%	150	150	39	150
BL20	SP	0.2009	Forest	0.4	C	4%	100	150	30	100
BL49	SP	0.1607	Forest	0.4	D	8%	150	150	24	150

**Dipper Pond**

from table from table

BMP Type & #	Roadway Align. or Turbine Site	Imp (acres)	Buffer Type (forest/meadow)	Treatment Factor	Soil Type	Buffer Slope	Standard Buffer Length (ft)	L of Berm per ac. imp	Standard Berm Length (ft)	Adjusted Buffer Length (ft)
BL28	DHA	0.1561	Forest	0.3	C	10%	100	180	28	133

**Pleasant Lake (CP)**

from table from table

BMP Type & #	Roadway Align. or Turbine Site	Imp (acres)	Buffer Type (forest/meadow)	Treatment Factor	Soil Type	Buffer Slope	Standard Buffer Length (ft)	L of Berm per ac. imp	Standard Berm Length (ft)	Adjusted Buffer Length (ft)
BL2	BM	0.2611	Forest	0.3	D	25%	150	180	47	200
BL4	BM	0.2410	Forest	0.3	D	13%	150	180	43	200
BL37	BM	0.2009	Forest	0.3	B	10%	75	120	24	100
BL6	BM	0.2640	Forest	0.3	C	10%	100	180	48	133
BL11	BM	0.2611	Forest	0.3	D	9%	150	180	47	200
BL12	BM	0.1607	Meadow	0.3	D	8%	150	200	32	200
BL111	BM	0.2009	Forest	0.3	D	4%	150	150	30	200
BL14	SP	0.2296	Forest	0.3	C	11%	100	180	41	133
BL17	SP	0.2611	Forest	0.3	D	8%	150	150	39	200
BL18	SP	0.2812	Forest	0.3	D	16%	150	180	51	200
BL52	BM10	0.2410	Forest	0.3	D	24%	150	180	43	200
BL53	BM10	0.1406	Forest	0.3	D	18%	150	180	25	200
BL22	SP	0.1205	Forest	0.3	D	20%	150	180	22	200

**Pleasant Lake (KT)**

from table from table

BMP Type & #	Roadway Align. or Turbine Site	Imp (acres)	Buffer Type (forest/meadow)	Treatment Factor	Soil Type	Buffer Slope	Standard Buffer Length (ft)	L of Berm per ac. imp	Standard Berm Length (ft)	Adjusted Buffer Length (ft)
BL31	DH	0.2009	Forest	0.3	D	4%	150	150	30	200
BL32	DH	0.4017	Forest	0.3	C	7%	150	100	40	200

**Baskahegan Lake (CP)**

from table from table

BMP Type & #	Roadway Align. or Turbine Site	Imp (acres)	Buffer Type (forest/meadow)	Treatment Factor	Soil Type	Buffer Slope	Standard Buffer Length (ft)	L of Berm per ac. imp	Standard Berm Length (ft)	Adjusted Buffer Length (ft)
BL3	BM	0.3214	Forest	0.3	D	20%	150	180	58	200
BL5	BM	0.1607	Forest	0.3	D	3%	150	150	24	200
BL9	BM	0.1205	Forest	0.3	D	20%	150	180	22	200
BL10	BM	0.2410	Forest	0.3	D	10%	150	180	43	200
BL36	T11	0.4256	Forest	0.3	D	8%	150	150	64	200
BL13	BM	0.3558	Forest	0.4	C	17%	150	120	43	150
BL21	BM	0.1751	Forest	0.3	D	4%	150	150	26	200
BL23	DP	0.1492	Forest	0.4	C	6%	100	150	22	100
BL25	DP	0.1033	Forest	0.3	C	15%	100	180	19	133
BL27	DHA	0.1377	Forest	0.4	C	3%	100	150	21	100
BL103	BHA	0.0918	Forest	0.4	D	9%	150	180	17	150
BL104	BHA	0.1377	Forest	0.4	D	9%	150	180	25	150
BL105	BHA	0.1951	Forest	0.4	D	12%	150	180	35	150
BL106	BHA	0.1377	Forest	0.4	D	6%	150	150	21	150
BL1	BM	0.2410	Forest	0.3	D	22%	150	180	43	200
BL30	PMT14	0.1928	Forest	0.4	D	6%	150	150	29	150
BL35	PMT15	0.0804	Forest	0.4	D	3%	150	150	12	150
BL109	T8 SPUR	0.0941	Forest	0.4	D	4%	150	150	14	150
BL110	T8 SPUR	0.1492	Forest	0.4	D	14%	150	180	27	150

**Baskahegan Lake (KT)**

from table from table

BMP Type & #	Roadway Align. or Turbine Site	Imp (acres)	Buffer Type (forest/meadow)	Treatment Factor	Soil Type	Buffer Slope	Standard Buffer Length (ft)	L of Berm per ac. imp	Standard Berm Length (ft)	Adjusted Buffer Length (ft)
BL29	DHA	0.1492	Forest	0.4	C	14%	100	180	27	100

BL34	DH	0.2410	Forest	0.4	C	8%	100	150	36	100
BL38	PMT 25	0.1377	Forest	0.4	B	1%	75	100	14	75
BL109	PMT 25	0.1537	Forest	0.4	C	3%	100	150	23	100
BL39	DH	0.3214	Forest	0.4	C	8%	100	150	48	100
BL40	DH	0.3817	Forest	0.4	D	4%	150	150	57	150
BL41	DH	0.3817	Forest	0.4	D	4%	150	150	57	150
BL42	DH	0.2410	Forest	0.4	C	5%	150	100	24	150
BL43	DH	0.1808	Forest	0.4	D	8%	150	150	27	150
BL44	DH	0.1377	Forest	0.4	D	8%	150	150	21	150
BL45	DH	0.1837	Forest	0.4	D	9%	150	180	33	150
BL46	DH	0.1607	Forest	0.4	D	8%	150	150	24	150
BL50	DH	0.1722	Forest	0.4	D	6%	150	150	26	150
BL51	DH	0.2066	Forest	0.4	D	9%	150	180	37	150
BL100	BHA	0.0918	Forest	0.4	D	6%	150	150	14	150
BL101	BHA	0.1033	Forest	0.4	D	12%	150	180	19	150
BL102	BHA	0.1263	Forest	0.4	D	8%	150	150	19	150
BL107	PMT 21-22	0.1289	Forest	0.4	C	12%	100	180	23	100
BL108	PMT 25-26	0.2066	Forest	0.4	C	8%	100	150	31	100







Project Name **BOWERS WIND** c= 0.15  
 Project Number **72380E** I (10 yr)= 5  
 Date 5/19/2011  
 Done by JAO

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**Level Spreader Calcs**

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$Q=ciA$

**Bowers Mountain**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
100700	3.1	2.325	9
103700	0.11	0.0825	0
105275	1.41	1.0575	4
105575	1.73	1.2975	5
105850	1.44	1.08	4
106825	0.6	0.45	2
107550	0.9	0.675	3
109150	4.6	3.45	14
109600	0.1	0.075	0
109700	0.2	0.15	1
110375	1	0.75	3
110825	2.27	1.7025	7
111375	1.8	1.35	5
111625	4.02	3.015	12
112125	2.9	2.175	9
112300	2.9	2.175	9
112700	2.55	1.9125	8
113000	0.73	0.5475	2
113525	1.82	1.365	5
114600	1.3	0.975	4
116900	2.67	2.0025	8
T12	0.5	0.375	2
T14	0.46	0.345	1

**South Peak Crane Path**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
300800	2.25	1.6875	7
302500	0.05	0.0375	0
303050	4	3	12

**South Peak Access Road**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
200375	4.6	3.45	14
200575	2.68	2.01	8
200750	7.33	5.4975	22
201100	2	1.5	6
201325	3.51	2.6325	11
201650	10.36	7.77	31
201875	3.75	2.8125	11

202150	4.26	3.195	13
202524	18.7	14.025	56
202875	4.5	3.375	14
204250	7.26	5.445	22
204500	7.02	5.265	21
204850	3.5	2.625	11
205350	9.42	7.065	28
205750	4.63	3.4725	14
206050	2.23	1.6725	7
206450	1.35	1.0125	4

**Alignment 10**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
181525	0.85	0.6375	3

**Baskahegan Access Road**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
2650	0.14	0.105	0
3100	0.14	0.105	0

**Dipper Pond Access Road**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
1000	2.5	1.875	8
2350	0.2	0.15	1
2950	3.65	2.7375	11
3150	16.7	12.525	50
3810	0.28	0.21	1

**Dill Hill Access Road**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
5000	0.22	0.165	1
5825	0.26	0.195	1
6175	3.28	2.46	10
6450	4.61	3.4575	14
6750	3.68	2.76	11
7250	3.51	2.6325	11
7575	0.38	0.285	1

**Dill Hill Crane Path**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
11700	2.61	1.9575	8
12575	0.43	0.3225	1
14300	1.22	0.915	4
14525	1.97	1.4775	6
14875	5.34	4.005	16
15200	4.68	3.51	14
15925	0.14	0.105	0

16375	2.07	1.5525	6
17525	8.32	6.24	25
17725	2.96	2.22	9
18800	4.78	3.585	14
19075	3.65	2.7375	11
19550	18.62	13.965	56
21200	3.32	2.49	10
21925	11.36	8.52	34
22375	0.81	0.6075	2
T19	0.14	0.105	0
T27	0.19	0.1425	1

**Alignment T23**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
8575	19.71	14.7825	59

**O&M Site**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
1260	0.16	0.12	0
1575	16.6	12.45	50

**PMT 14**

CL Station	Drainage Area	Flow (Q)	Level Spreader Length (ft)
700	0.4	0.3	1