Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	84	228	183	508	800	77	43	48	25	48	706	626
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	190.0	178.5	177.6	166.7	180.1	190.0	184.5	172.7	147.3	190.0	183.8	188.1
Lanes	1	3	0	1	3	0	1	2	0	0	2	1
Cap, veh/h	377	1689	789	497	2469	147	195	820	362	98	1188	592
Arrive On Green	0.69	0.69	0.69	0.69	0.69	0.69	0.37	0.37	0.37	0.37	0.37	0.00
Sat Flow, veh/h	689	3249	1517	897	4748	282	759	2215	979	156	3210	1599
Grp Volume(v), veh/h	93	253	190	564	613	329	48	38	40	443	394	0
Grp Sat Flow(s),veh/h/ln	689	1624	1517	897	1639	1752	759	1641	1554	1776	1589	1599
Q Serve(g_s), s	6.8	2.7	4.6	47.4	7.7	7.7	5.7	1.5	1.7	11.1	20.7	0.0
Cycle Q Clear(g_c), s	14.5	2.7	4.6	52.0	7.7	7.7	26.4	1.5	1.7	20.7	20.7	0.0
Prop In Lane	1.00		1.00	1.00		0.16	1.00		0.63	0.12		1.00
Lane Grp Cap(c), veh/h	377	1689	789	497	1705	911	195	607	575	697	588	592
V/C Ratio(X)	0.25	0.15	0.24	1.14	0.36	0.36	0.25	0.06	0.07	0.64	0.67	0.00
Avail Cap(c_a), veh/h	377	1689	789	497	1705	911	195	607	575	697	588	592
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.6	7.8	8.1	21.2	8.6	8.6	37.4	20.3	20.4	26.3	26.4	0.0
Incr Delay (d2), s/veh	1.6	0.2	0.7	83.1	0.6	1.1	3.0	0.2	0.2	4.4	6.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.2	1.0	1.7	23.8	2.7	3.0	1.3	0.6	0.7	10.0	9.0	0.0
Lane Grp Delay (d), s/veh	13.1	8.0	8.8	104.2	9.2	9.7	40.4	20.5	20.6	30.7	32.3	0.0
Lane Grp LOS	B	A	A	F	A	A	D	C	C	C	C	
Approach Vol, veh/h		536			1506			126			837	
Approach Delay, s/veh		9.2			44.9			28.1			31.4	
Approach LOS		A			D			C			C	

Timer												
Assigned Phs		2			6			8			4	
Phs Duration (G+Y+Rc), s		57.0			57.0			43.0			43.0	
Change Period (Y+Rc), s		5.0			5.0			6.0			6.0	
Max Green Setting (Gmax), s		52.0			52.0			37.0			37.0	
Max Q Clear Time (g_c+I1), s		16.5			54.0			28.4			22.7	
Green Ext Time (p_c), s		7.6			0.0			1.9			2.3	

Intersection Summary			
HCM 2010 Ctrl Delay		34.1	
HCM 2010 LOS		C	

Notes

8: Darien Street & Packer Avenue
2016 & 2021 Build wit ImpsTraffic Conditions - PM Event Peak

2/2/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	136	207	673	541	70	210	57	214	241	318	183
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	188.1	186.7	188.1	188.1	182.7	186.3	181.0	188.1	172.7	182.7	188.1	188.2
Lanes	1	3	0	1	2	1	1	1	1	1	1	1
Cap, veh/h	487	1868	873	531	1493	613	268	640	499	424	640	544
Arrive On Green	0.09	0.73	0.73	0.57	0.57	0.00	0.34	0.34	0.34	0.34	0.34	0.00
Sat Flow, veh/h	1792	3397	1587	1068	3471	1425	1045	1881	1468	1108	1881	1600
Grp Volume(v), veh/h	48	151	224	748	601	0	233	63	226	268	353	0
Grp Sat Flow(s),veh/h/ln	1792	1699	1587	1068	1736	1425	1045	1881	1468	1108	1881	1600
Q Serve(g_s), s	1.3	1.3	4.7	43.0	9.6	0.0	18.8	2.3	12.0	21.8	15.2	0.0
Cycle Q Clear(g_c), s	1.3	1.3	4.7	43.0	9.6	0.0	34.0	2.3	12.0	24.1	15.2	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	487	1868	873	531	1493	613	268	640	499	424	640	544
V/C Ratio(X)	0.10	0.08	0.26	1.41	0.40	0.00	0.87	0.10	0.45	0.63	0.55	0.00
Avail Cap(c_a), veh/h	487	1868	873	531	1493	613	268	640	499	424	640	544
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.5	6.2	6.7	24.3	14.3	0.0	42.1	22.5	25.7	30.8	26.8	0.0
Incr Delay (d2), s/veh	0.4	0.1	0.7	194.8	0.8	0.0	29.7	0.3	2.9	7.0	3.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.6	0.5	1.7	41.9	3.7	0.0	8.2	1.1	4.7	6.9	7.7	0.0
Lane Grp Delay (d), s/veh	12.9	6.3	7.4	219.2	15.1	0.0	71.9	22.8	28.7	37.8	30.2	0.0
Lane Grp LOS	B	A	A	F	B		E	C	C	D	C	
Approach Vol, veh/h		423			1349			522			621	
Approach Delay, s/veh		7.6			128.2			47.3			33.5	
Approach LOS		A			F			D			C	
Timer												
Assigned Phs	5	2			6			8			4	
Phs Duration (G+Y+Rc), s	12.0	61.0			49.0			39.0			39.0	
Change Period (Y+Rc), s	5.5	6.0			6.0			5.0			5.0	
Max Green Setting (Gmax), s	6.5	55.0			43.0			34.0			34.0	
Max Q Clear Time (g_c+I1), s	3.3	6.7			45.0			36.0			26.1	
Green Ext Time (p_c), s	0.0	6.5			0.0			0.0			2.3	
Intersection Summary												
HCM 2010 Ctrl Delay			76.0									
HCM 2010 LOS			E									
Notes												

APPENDIX I

QUEUE ANALYSIS WORKSHEETS

2012 EXISTING WEEKDAY PM PEAK HOUR CONDITIONS

Queuing and Blocking Report
2012 Existing Traffic Conditions - PM Peak

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	87	96	47	49	18	82	97	60	37	40	114	44
Average Queue (ft)	30	39	6	9	1	27	29	16	4	7	50	10
95th Queue (ft)	69	81	28	34	8	62	70	40	22	28	99	33
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	77
Average Queue (ft)	29
95th Queue (ft)	64
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	164	112	106	98	67	66	95	104	60	50	60	77
Average Queue (ft)	81	46	45	40	12	23	34	24	15	14	17	28
95th Queue (ft)	145	87	92	88	40	53	76	69	42	38	50	64
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	23
Average Queue (ft)	1
95th Queue (ft)	12
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	78	66	51	42	52	113	155	82	88	71	309	160
Average Queue (ft)	34	17	9	12	10	41	72	29	37	21	187	22
95th Queue (ft)	65	47	36	38	34	89	133	68	75	52	309	111
Link Distance (ft)		604	604	604		560	560		1137	1137	293	
Upstream Blk Time (%)											3	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)									0		27	
Queuing Penalty (veh)									0		10	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	250	202	104	55	58	112	36	34	143	247
Average Queue (ft)	135	90	27	5	8	33	4	6	52	61
95th Queue (ft)	220	163	75	26	30	83	19	25	111	183
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						0			2	
Queuing Penalty (veh)						0			0	

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	157	42	101
Average Queue (ft)	49	2	12
95th Queue (ft)	116	18	53
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	203	299	134	17	272	213	137	268	286
Average Queue (ft)	53	185	5	1	138	105	34	134	167
95th Queue (ft)	145	297	58	9	221	181	89	246	276
Link Distance (ft)	261	261		175	561	561		555	555
Upstream Blk Time (%)	1	5							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		9	0					1	
Queuing Penalty (veh)		2	0					0	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	350	306	28	224	112	126	311	329
Average Queue (ft)	206	158	2	122	40	49	212	248
95th Queue (ft)	313	281	14	206	95	96	328	364
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)	0		0				5	17
Queuing Penalty (veh)	0		0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				0				
Queuing Penalty (veh)				1				

Network Summary

Network wide Queuing Penalty: 14

2016 NO BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	86	118	60	58	14	64	82	66	37	48	106	33
Average Queue (ft)	29	38	8	15	1	29	28	18	5	8	53	7
95th Queue (ft)	70	82	37	44	6	59	65	44	22	31	93	27
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)		0										
Queuing Penalty (veh)		0										

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	73
Average Queue (ft)	32
95th Queue (ft)	64
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	176	116	120	111	42	65	89	115	60	38	65	67
Average Queue (ft)	81	49	44	44	9	23	32	29	15	12	15	28
95th Queue (ft)	150	91	93	95	29	53	71	76	43	35	48	62
Link Distance (ft)		*560*	*560*	*560*		*1936*	*1936*	*1936*		*1460*	*1460*	*610*
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	40
Average Queue (ft)	3
95th Queue (ft)	21
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	78	61	47	48	56	100	137	82	108	63	317	160
Average Queue (ft)	30	17	12	13	15	37	66	29	42	20	198	27
95th Queue (ft)	65	46	37	39	41	83	121	66	88	49	326	126
Link Distance (ft)		604	604	604		560	560		1137	1137	293	
Upstream Blk Time (%)											5	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)											32	0
Queuing Penalty (veh)											13	0

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	281	232	114	41	44	142	72	51	156	265
Average Queue (ft)	144	102	34	5	8	34	4	9	49	68
95th Queue (ft)	252	193	90	23	32	86	24	34	110	197
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						2			1	
Queuing Penalty (veh)						0			0	

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	NB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	166	43	29	118
Average Queue (ft)	59	2	2	18
95th Queue (ft)	125	32	19	73
Link Distance (ft)		334	561	561
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	180			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	1	0		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	172	307	225	24	243	203	142	291	304
Average Queue (ft)	52	189	14	1	152	115	39	152	192
95th Queue (ft)	138	312	105	11	227	197	97	261	292
Link Distance (ft)	261	261		175	561	561		555	555
Upstream Blk Time (%)	0	7							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		13	0					0	
Queuing Penalty (veh)		3	0					0	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	370	304	18	254	108	122	317	329
Average Queue (ft)	207	154	1	136	35	61	231	261
95th Queue (ft)	313	271	9	218	83	102	341	377
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)	0	0	0				12	32
Queuing Penalty (veh)	0	0	0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Network Summary

Network wide Queuing Penalty: 18

2016 BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 1: Darien Street & Port Cochere Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	55
Average Queue (ft)	27
95th Queue (ft)	52
Link Distance (ft)	68
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: 7th Street & Port Cochere Enter

Movement	NB
Directions Served	LT
Maximum Queue (ft)	40
Average Queue (ft)	3
95th Queue (ft)	19
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	150
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	39	13
Average Queue (ft)	10	0
95th Queue (ft)	34	5
Link Distance (ft)		435
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	166	109	134	159	164	70	94	117	70	61	71	85
Average Queue (ft)	80	51	60	74	72	25	35	30	15	13	18	23
95th Queue (ft)	139	94	115	135	141	57	75	80	45	40	53	62
Link Distance (ft)		560	560	560		1938	1938	1938	237	237	237	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	58
Average Queue (ft)	21
95th Queue (ft)	51
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	95	75	42	44	65	114	137	151	183	112	340	235
Average Queue (ft)	37	19	13	16	17	43	69	90	69	51	310	117
95th Queue (ft)	77	54	39	43	46	90	121	144	141	88	342	310
Link Distance (ft)		604	604	604		560	560		161	161	293	
Upstream Blk Time (%)								0	0		79	
Queuing Penalty (veh)								0	1		0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)								1	0		81	
Queuing Penalty (veh)								1	1		33	

Intersection: 14: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	135
Average Queue (ft)	69
95th Queue (ft)	109
Link Distance (ft)	110
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	316	258	124	38	45	123	69	39	128	220
Average Queue (ft)	173	130	29	7	10	35	8	5	50	58
95th Queue (ft)	279	223	79	27	33	89	37	24	102	169
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						1			1	
Queuing Penalty (veh)						0			0	

Intersection: 18: Darien Street & Employee Drivewa

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	73	31
Average Queue (ft)	32	7
95th Queue (ft)	59	29
Link Distance (ft)	131	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	170	24	178
Average Queue (ft)	72	1	30
95th Queue (ft)	137	12	104
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	1		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	162	297	224	12	357	306	63	149	474
Average Queue (ft)	43	194	18	1	188	158	16	52	123
95th Queue (ft)	107	299	117	10	290	259	51	127	335
Link Distance (ft)	261	261		175	561	561		556	556
Upstream Blk Time (%)	0	4							0
Queuing Penalty (veh)	0	0							0
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		10	0						
Queuing Penalty (veh)		2	0						

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	407	407	29	279	122	60	321	330
Average Queue (ft)	242	206	2	135	20	15	230	268
95th Queue (ft)	377	365	13	229	91	47	348	376
Link Distance (ft)	473	473	47		556	556	272	272
Upstream Blk Time (%)	0	1	0				14	30
Queuing Penalty (veh)	0	0	0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				0				
Queuing Penalty (veh)				0				

Network Summary

Network wide Queuing Penalty: 40

2016 BUILD WITH IMPROVEMENTS WEEKDAY PM PEAK HOUR CONDITIONS

2016 Build with Improvements Traffic Conditions - PM Peak
Queuing and Blocking Report

Intersection: 1: Darien Street & Port Cochere Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	67
Average Queue (ft)	28
95th Queue (ft)	55
Link Distance (ft)	68
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: 7th Street & Port Cochere Enter

Movement	NB
Directions Served	LT
Maximum Queue (ft)	28
Average Queue (ft)	2
95th Queue (ft)	15
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	150
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	44	17
Average Queue (ft)	11	1
95th Queue (ft)	37	9
Link Distance (ft)		435
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	78	98	48	55	9	119	114	60	37	36	145	44
Average Queue (ft)	30	43	7	13	1	60	59	17	5	8	51	7
95th Queue (ft)	68	85	32	43	7	106	102	42	23	29	109	29
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)		0										
Queuing Penalty (veh)		0										

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	82
Average Queue (ft)	29
95th Queue (ft)	67
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	132	103	124	146	145	72	85	97	46	52	61	81
Average Queue (ft)	74	48	53	64	55	21	27	23	13	15	12	24
95th Queue (ft)	120	92	101	114	112	53	67	68	38	43	43	62
Link Distance (ft)		560	560	560		1938	1938	1938	237	237	237	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	64
Average Queue (ft)	19
95th Queue (ft)	52
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	126	66	50	63	66	139	169	156	141	101	312	235
Average Queue (ft)	53	23	12	17	22	70	95	77	45	46	204	22
95th Queue (ft)	104	55	39	46	56	125	150	139	96	79	319	133
Link Distance (ft)		604	604	604		560	560		161	161	293	
Upstream Blk Time (%)								0	0		4	
Queuing Penalty (veh)								0	0		0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)	0							0	0		33	
Queuing Penalty (veh)	0							1	0		13	

Intersection: 14: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	118
Average Queue (ft)	70
95th Queue (ft)	109
Link Distance (ft)	110
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	356	286	99	45	47	111	42	54	140	238
Average Queue (ft)	170	125	29	7	11	35	5	5	47	58
95th Queue (ft)	289	227	77	27	37	87	23	28	103	169
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						1			1	
Queuing Penalty (veh)						0			0	

Intersection: 18: Darien Street & Employee Drivewa

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	53	4	35
Average Queue (ft)	27	0	5
95th Queue (ft)	50	3	24
Link Distance (ft)	131	215	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	NB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	186	74	96	144
Average Queue (ft)	63	3	5	17
95th Queue (ft)	136	54	49	84
Link Distance (ft)		334	561	561
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		1		
Storage Bay Dist (ft)	180			
Storage Blk Time (%)	0			
Queuing Penalty (veh)	2			

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	165	294	90	6	282	250	85	171	646
Average Queue (ft)	42	183	8	0	182	156	19	57	147
95th Queue (ft)	110	287	76	6	261	244	60	136	385
Link Distance (ft)	261	261		175	561	561		552	552
Upstream Blk Time (%)	0	3							0
Queuing Penalty (veh)	0	0							0
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		8	0					0	
Queuing Penalty (veh)		2	0					0	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	R	LTR	L	T	TR	T	TR
Maximum Queue (ft)	325	260	105	24	237	62	52	317	330
Average Queue (ft)	196	147	9	1	126	17	13	236	268
95th Queue (ft)	283	257	72	10	214	48	42	341	368
Link Distance (ft)	473	473		48		552	552	269	269
Upstream Blk Time (%)				0				12	32
Queuing Penalty (veh)				0				0	0
Storage Bay Dist (ft)			150		250				
Storage Blk Time (%)		2	0		0				
Queuing Penalty (veh)		5	0		0				

Network Summary

Network wide Queuing Penalty: 24

2021 NO BUILD WEEKDAY PM PEAK HOUR CONDITIONS

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	94	93	65	41	10	76	94	49	26	50	121	39
Average Queue (ft)	30	39	6	12	1	29	32	20	5	13	57	7
95th Queue (ft)	74	80	30	36	5	62	75	42	21	38	100	27
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	91
Average Queue (ft)	37
95th Queue (ft)	77
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	181	102	105	94	52	103	127	119	64	56	78	71
Average Queue (ft)	81	52	49	34	9	28	36	32	18	16	21	29
95th Queue (ft)	150	88	96	79	34	73	82	78	52	40	56	62
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	30
Average Queue (ft)	3
95th Queue (ft)	16
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	93	60	50	53	50	126	164	88	102	73	332	235
Average Queue (ft)	37	20	12	14	14	42	74	26	46	24	193	21
95th Queue (ft)	71	48	38	41	37	97	126	63	86	58	315	132
Link Distance (ft)		604	604	604		560	560		1137	1137	293	
Upstream Blk Time (%)											7	
Queuing Penalty (veh)											0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)											33	
Queuing Penalty (veh)											14	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	248	209	119	32	56	129	110	47	130	253
Average Queue (ft)	139	102	29	3	10	40	12	9	50	78
95th Queue (ft)	222	182	75	18	35	99	55	32	107	217
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						2			2	
Queuing Penalty (veh)						0			0	

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	161	12	105
Average Queue (ft)	66	0	13
95th Queue (ft)	129	0	58
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	0		
Queuing Penalty (veh)	0		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	TR	L	T	T
Maximum Queue (ft)	158	297	225	290	267	126	322	498
Average Queue (ft)	47	202	20	156	119	41	156	208
95th Queue (ft)	102	318	126	257	212	101	267	357
Link Distance (ft)	261	261		561	561		555	555
Upstream Blk Time (%)		6						
Queuing Penalty (veh)		0						
Storage Bay Dist (ft)			200			240		
Storage Blk Time (%)		12	0				0	
Queuing Penalty (veh)		3	0				0	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	359	261	15	268	73	96	318	330
Average Queue (ft)	207	154	1	143	31	54	238	269
95th Queue (ft)	301	254	7	237	73	91	353	380
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)			0				13	31
Queuing Penalty (veh)			0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				1				
Queuing Penalty (veh)				2				

Network Summary

Network wide Queuing Penalty: 20

2021 BUILD WEEKDAY PM PEAK HOUR CONDITIONS

2021 Build Traffic Conditions - PM Peak
Queuing and Blocking Report

Intersection: 1: Darien Street & Port Cochere Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	70
Average Queue (ft)	26
95th Queue (ft)	55
Link Distance (ft)	48
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	130
Average Queue (ft)	78
95th Queue (ft)	121
Link Distance (ft)	108
Upstream Blk Time (%)	2
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	31	7
Average Queue (ft)	13	0
95th Queue (ft)	37	4
Link Distance (ft)		478
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	85	104	44	56	23	118	119	58	40	35	137	28
Average Queue (ft)	32	44	6	13	1	55	61	20	6	8	54	8
95th Queue (ft)	70	86	27	39	9	99	106	46	26	29	104	28
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	86
Average Queue (ft)	36
95th Queue (ft)	71
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	177	129	133	164	172	72	88	108	54	53	85	92
Average Queue (ft)	83	64	67	85	66	23	23	24	13	13	15	26
95th Queue (ft)	151	114	117	145	147	55	64	68	39	38	49	69
Link Distance (ft)		560	560	560		1934	1934	1934	246	246	246	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)	0											
Queuing Penalty (veh)	0											

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	92
Average Queue (ft)	24
95th Queue (ft)	67
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	138	64	64	64	83	191	182	131	132	93	314	235
Average Queue (ft)	50	26	19	23	21	79	105	69	48	46	206	17
95th Queue (ft)	101	57	50	54	59	146	165	117	105	77	336	116
Link Distance (ft)		604	604	604		560	560		143	143	293	
Upstream Blk Time (%)								0	0	0	7	
Queuing Penalty (veh)								0	0	0	0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)						0		0	0		34	
Queuing Penalty (veh)						0		0	0		14	

Intersection: 14: 7th Street & Port Cochere Enter

Movement	NB
Directions Served	LT
Maximum Queue (ft)	30
Average Queue (ft)	4
95th Queue (ft)	20
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	150
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	405	283	104	58	52	127	84	26	174	320
Average Queue (ft)	193	139	32	7	11	42	12	6	58	71
95th Queue (ft)	315	241	75	31	39	97	49	23	127	200
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						2			1	
Queuing Penalty (veh)						0			0	

Intersection: 18: Darien Street & Employee Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	68	46
Average Queue (ft)	29	9
95th Queue (ft)	53	33
Link Distance (ft)	119	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	184	53	206
Average Queue (ft)	81	6	34
95th Queue (ft)	152	40	116
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	1		
Queuing Penalty (veh)	2		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	TR	L	T	T
Maximum Queue (ft)	175	313	225	374	288	75	153	497
Average Queue (ft)	52	187	19	204	168	19	59	128
95th Queue (ft)	130	309	121	320	264	55	134	328
Link Distance (ft)	261	261		561	561		555	555
Upstream Blk Time (%)	0	6						0
Queuing Penalty (veh)	0	0						0
Storage Bay Dist (ft)			200			240		
Storage Blk Time (%)		11	0					
Queuing Penalty (veh)		3	0					

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	388	396	10	279	155	68	316	328
Average Queue (ft)	253	218	1	150	18	17	245	278
95th Queue (ft)	370	359	8	249	89	51	342	365
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)	0	1	0				14	38
Queuing Penalty (veh)	0	0	0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)				1				
Queuing Penalty (veh)				1				

Network Summary

Network wide Queuing Penalty: 22

2021 BUILD WITH IMPROVEMENTS WEEKDAY PM PEAK HOUR CONDITIONS

2021 Build with Improvements Traffic Conditions - PM Peak
Queuing and Blocking Report

Intersection: 1: Darien Street & Port Cochere Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	62
Average Queue (ft)	27
95th Queue (ft)	50
Link Distance (ft)	48
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	130
Average Queue (ft)	80
95th Queue (ft)	121
Link Distance (ft)	108
Upstream Blk Time (%)	2
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	31	15
Average Queue (ft)	10	1
95th Queue (ft)	34	6
Link Distance (ft)		467
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	L	T
Maximum Queue (ft)	77	101	54	56	23	138	118	56	38	35	118	42
Average Queue (ft)	29	41	6	15	2	60	56	21	5	8	49	7
95th Queue (ft)	64	81	30	42	12	108	98	44	23	29	95	28
Link Distance (ft)		254	254	254		604	604	604		768		768
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150		250	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 6: 10th Street & Packer Avenue

Movement	SB
Directions Served	TR
Maximum Queue (ft)	76
Average Queue (ft)	33
95th Queue (ft)	66
Link Distance (ft)	768
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	166	121	145	171	161	76	66	92	68	46	67	82
Average Queue (ft)	81	62	60	89	56	23	23	24	11	13	17	25
95th Queue (ft)	138	108	113	152	115	56	58	68	40	39	51	63
Link Distance (ft)		560	560	560		1934	1934	1934	246	246	246	610
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 7: 7th Street & Packer Avenue

Movement	SB
Directions Served	T
Maximum Queue (ft)	80
Average Queue (ft)	30
95th Queue (ft)	68
Link Distance (ft)	610
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	T	TR	L	T	T	L	T	R	LT	R
Maximum Queue (ft)	111	50	58	65	75	152	164	133	132	97	326	235
Average Queue (ft)	45	22	11	22	25	77	105	73	45	46	211	22
95th Queue (ft)	87	52	40	54	59	135	160	123	94	79	332	136
Link Distance (ft)		604	604	604		560	560		143	143	293	
Upstream Blk Time (%)								0	0		7	
Queuing Penalty (veh)								0	0		0	
Storage Bay Dist (ft)	200				225			150				110
Storage Blk Time (%)								0	0		36	
Queuing Penalty (veh)								0	0		15	

Intersection: 14: 7th Street & Port Cochere Enter

Movement	NB
Directions Served	LT
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	23
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	150
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	339	250	117	59	59	122	41	34	179	263
Average Queue (ft)	176	135	29	8	8	40	5	3	58	70
95th Queue (ft)	279	219	75	33	33	94	23	18	128	190
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)										0
Queuing Penalty (veh)										0
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)						2			2	
Queuing Penalty (veh)						0			0	

Intersection: 18: Darien Street & Employee Driveway

Movement	WB	SB
Directions Served	LR	L
Maximum Queue (ft)	63	45
Average Queue (ft)	26	8
95th Queue (ft)	50	31
Link Distance (ft)	119	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		100
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	149	114	170
Average Queue (ft)	72	5	29
95th Queue (ft)	134	42	99
Link Distance (ft)		561	561
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	180		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	257	296	150	20	347	292	77	157	193
Average Queue (ft)	54	202	13	1	202	169	21	53	101
95th Queue (ft)	136	317	99	11	313	281	57	130	181
Link Distance (ft)	261	261		175	561	561		555	555
Upstream Blk Time (%)	1	9							
Queuing Penalty (veh)	0	0							
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		14	0						
Queuing Penalty (veh)		4	0						

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LTR	L	T	TR	T	TR
Maximum Queue (ft)	429	427	287	58	67	316	328
Average Queue (ft)	246	221	146	14	19	256	289
95th Queue (ft)	382	376	243	45	54	343	358
Link Distance (ft)	420	420		555	555	272	272
Upstream Blk Time (%)	2	3				17	41
Queuing Penalty (veh)	0	0				0	0
Storage Bay Dist (ft)			250				
Storage Blk Time (%)			1				
Queuing Penalty (veh)			1				

Network Summary

Network wide Queuing Penalty: 21

2012 EXISTING WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Intersection: 3:

Movement	
Directions Served	
Maximum Queue (ft)	
Average Queue (ft)	
95th Queue (ft)	
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	R	L
Maximum Queue (ft)	70	97	105	198	315	556	393	368	49	28	30	111
Average Queue (ft)	20	36	16	82	251	206	109	74	7	3	7	50
95th Queue (ft)	54	79	59	153	366	596	418	371	29	18	26	95
Link Distance (ft)		254	254	254		598	598	598		768	768	
Upstream Blk Time (%)						2	1	0				
Queuing Penalty (veh)						4	2	0				
Storage Bay Dist (ft)	150				250				150			250
Storage Blk Time (%)		0			36	0						
Queuing Penalty (veh)		0			35	0						

Intersection: 6: 10th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	122	112
Average Queue (ft)	59	41
95th Queue (ft)	105	88
Link Distance (ft)	768	768
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	118	65	59	108	380	1590	1349	1066	92	55	73	637
Average Queue (ft)	47	23	19	43	365	1089	748	201	31	18	18	358
95th Queue (ft)	91	55	49	87	466	1563	1386	775	73	46	54	745
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												5
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)					11	82						
Queuing Penalty (veh)					30	366						

Intersection: 7: 7th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	655	669
Average Queue (ft)	627	630
95th Queue (ft)	643	649
Link Distance (ft)	610	610
Upstream Blk Time (%)	86	98
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	T	R	LT
Maximum Queue (ft)	69	63	50	129	325	591	587	681	162	87	73	333
Average Queue (ft)	20	24	10	52	324	568	509	641	80	20	33	279
95th Queue (ft)	50	54	35	101	326	584	613	769	146	67	66	368
Link Distance (ft)		598	598	598		560	560	560		1137	1137	292
Upstream Blk Time (%)						28	4	98				34
Queuing Penalty (veh)						137	21	476				0
Storage Bay Dist (ft)	200				225				150			
Storage Blk Time (%)					85	4			4			54
Queuing Penalty (veh)					230	28			1			98

Intersection: 8: Darien Street & Packer Avenue

Movement	SB
Directions Served	R
Maximum Queue (ft)	160
Average Queue (ft)	126
95th Queue (ft)	232
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	110
Storage Blk Time (%)	0
Queuing Penalty (veh)	0

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	307	209	63	28	77	143	79	57	304	352
Average Queue (ft)	154	103	9	2	31	55	12	4	165	239
95th Queue (ft)	258	185	40	13	72	119	43	29	273	398
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)									0	2
Queuing Penalty (veh)									1	18
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)					0	2			24	
Queuing Penalty (veh)					0	1			2	

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	186	308	404
Average Queue (ft)	69	27	120
95th Queue (ft)	136	156	409
Link Distance (ft)		561	561
Upstream Blk Time (%)		0	6
Queuing Penalty (veh)		0	57
Storage Bay Dist (ft)	180		
Storage Blk Time (%)	1		
Queuing Penalty (veh)	2		

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	276	320	225	6	197	162	133	270	521
Average Queue (ft)	77	296	225	0	102	80	57	185	211
95th Queue (ft)	205	317	226	5	169	139	115	260	356
Link Distance (ft)	261	261		175	561	561		555	555
Upstream Blk Time (%)	1	70							0
Queuing Penalty (veh)	0	0							0
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		10	81					1	
Queuing Penalty (veh)		71	517					1	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	LTR	LTR	L	T	TR	T	TR
Maximum Queue (ft)	478	478	61	161	85	76	305	312
Average Queue (ft)	447	456	25	74	29	18	177	158
95th Queue (ft)	468	478	57	138	68	55	278	304
Link Distance (ft)	420	420	47		555	555	272	272
Upstream Blk Time (%)	56	97	4				1	3
Queuing Penalty (veh)	0	0	0				0	0
Storage Bay Dist (ft)				250				
Storage Blk Time (%)								
Queuing Penalty (veh)								

Network Summary

Network wide Queuing Penalty: 2098

2016 AND 2021 NO BUILD WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	R	L
Maximum Queue (ft)	64	82	114	175	315	596	502	341	42	28	30	114
Average Queue (ft)	18	33	17	87	257	225	120	34	7	3	8	51
95th Queue (ft)	48	75	66	153	373	629	445	228	28	15	29	98
Link Distance (ft)		254	254	254		604	604	604		768	768	
Upstream Blk Time (%)						1	0	0				
Queuing Penalty (veh)						4	1	0				
Storage Bay Dist (ft)	150				250				150			250
Storage Blk Time (%)					39	0						
Queuing Penalty (veh)					38	0						

Intersection: 6: 10th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	126	124
Average Queue (ft)	56	45
95th Queue (ft)	101	91
Link Distance (ft)	768	768
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	123	64	67	102	380	1440	1201	931	105	55	72	623
Average Queue (ft)	53	22	20	42	370	1010	728	129	34	17	18	311
95th Queue (ft)	103	50	54	84	442	1461	1327	526	86	43	52	675
Link Distance (ft)		560	560	560		1936	1936	1936		1460	1460	610
Upstream Blk Time (%)												3
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200				275				225			
Storage Blk Time (%)					15	83						
Queuing Penalty (veh)					40	367						

Intersection: 7: 7th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	656	657
Average Queue (ft)	613	627
95th Queue (ft)	746	655
Link Distance (ft)	610	610
Upstream Blk Time (%)	83	94
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

2016 AND 2021 BUILD WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

Intersection: 1: Darien Street & Employee Driveway

Movement	WB	NB	SB
Directions Served	LR	TR	L
Maximum Queue (ft)	54	4	31
Average Queue (ft)	23	0	5
95th Queue (ft)	46	3	23
Link Distance (ft)	95	215	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			100
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	R	L
Maximum Queue (ft)	60	93	139	173	309	436	309	230	45	31	30	127
Average Queue (ft)	21	31	25	87	213	161	86	25	9	3	8	56
95th Queue (ft)	50	68	87	157	359	513	327	187	33	18	28	107
Link Distance (ft)		254	254	254		604	604	604		768	768	
Upstream Blk Time (%)						1	0					
Queuing Penalty (veh)						3	1					
Storage Bay Dist (ft)	150				250				150			250
Storage Blk Time (%)					24	0						
Queuing Penalty (veh)					32	0						

Intersection: 6: 10th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	116	95
Average Queue (ft)	58	41
95th Queue (ft)	102	81
Link Distance (ft)	768	768
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	127	71	82	160	380	1528	1294	1064	100	46	68	632
Average Queue (ft)	49	27	31	67	374	1102	845	190	28	14	18	367
95th Queue (ft)	97	57	68	124	434	1453	1349	736	70	38	53	752
Link Distance (ft)		560	560	560		1936	1936	1936	244	244	244	610
Upstream Blk Time (%)												5
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)					42	57						
Queuing Penalty (veh)					113	288						

Intersection: 7: 7th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	659	661
Average Queue (ft)	623	629
95th Queue (ft)	694	644
Link Distance (ft)	610	610
Upstream Blk Time (%)	83	98
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	T	R	LT
Maximum Queue (ft)	52	59	56	149	325	589	607	677	163	224	126	349
Average Queue (ft)	19	21	14	57	324	560	506	649	124	101	52	316
95th Queue (ft)	46	49	42	112	325	612	651	665	183	245	96	336
Link Distance (ft)		604	604	604		560	560	560		164	164	293
Upstream Blk Time (%)						27	4	99	11	16	0	75
Queuing Penalty (veh)						132	21	486	0	39	0	0
Storage Bay Dist (ft)	200				225				150			
Storage Blk Time (%)					84	1			23	12		80
Queuing Penalty (veh)					226	8			13	26		147

Intersection: 8: Darien Street & Packer Avenue

Movement	SB
Directions Served	R
Maximum Queue (ft)	235
Average Queue (ft)	221
95th Queue (ft)	311
Link Distance (ft)	
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	110
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: Darien Street & Port Cochere Exit

Movement	WB	NB	NB
Directions Served	LR	T	T
Maximum Queue (ft)	70	182	67
Average Queue (ft)	22	30	2
95th Queue (ft)	53	138	30
Link Distance (ft)	86	460	460
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	316	267	59	28	107	127	56	55	320	368
Average Queue (ft)	182	134	10	2	34	51	10	3	156	230
95th Queue (ft)	291	238	38	15	86	108	35	27	252	392
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)									0	2
Queuing Penalty (veh)									0	19
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)					2	1			23	
Queuing Penalty (veh)					1	0			2	

Intersection: 17: Darien Street & Garage Exit

Movement	WB
Directions Served	LR
Maximum Queue (ft)	121
Average Queue (ft)	58
95th Queue (ft)	99
Link Distance (ft)	113
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 19: 7th Street & Garage Enter

Movement	NB	SB
Directions Served	L	TR
Maximum Queue (ft)	54	9
Average Queue (ft)	17	0
95th Queue (ft)	47	5
Link Distance (ft)		459
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	NB	NB	SB	SB
Directions Served	L	T	T	T	TR
Maximum Queue (ft)	182	109	60	424	493
Average Queue (ft)	77	4	2	42	156
95th Queue (ft)	145	58	44	202	511
Link Distance (ft)		334	334	561	561
Upstream Blk Time (%)		0			11
Queuing Penalty (veh)		0			110
Storage Bay Dist (ft)	180				
Storage Blk Time (%)	1	0			
Queuing Penalty (veh)	3	0			

2016 AND 2021 BUILD WITH IMPROVEMENTS WEEKDAY PRE-PHILLIES EVENT PEAK HOUR CONDITIONS

2016 & 2021 Build wit ImpsTraffic Conditions - PM Event Peak
Queuing and Blocking Report

Intersection: 1: Darien Street & Employee Driveway

Movement	WB	NB	NB	SB
Directions Served	LR	T	TR	L
Maximum Queue (ft)	62	145	130	31
Average Queue (ft)	27	22	11	4
95th Queue (ft)	53	116	80	22
Link Distance (ft)	95	215	215	
Upstream Blk Time (%)		1	1	
Queuing Penalty (veh)		2	1	
Storage Bay Dist (ft)				100
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: 10th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	R	L
Maximum Queue (ft)	51	65	46	128	271	38	57	17	45	40	34	171
Average Queue (ft)	15	18	6	54	113	9	14	2	9	5	10	84
95th Queue (ft)	42	51	30	104	206	33	43	11	32	23	33	146
Link Distance (ft)		254	254	254		605	605	605		768	768	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	150				250				150			250
Storage Blk Time (%)					0							0
Queuing Penalty (veh)					1							0

Intersection: 6: 10th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	163	160
Average Queue (ft)	90	74
95th Queue (ft)	150	140
Link Distance (ft)	768	768
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: 7th Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	TR	L	T	TR	LT
Maximum Queue (ft)	136	95	106	185	380	1021	922	463	102	55	70	612
Average Queue (ft)	61	45	42	91	312	478	298	48	38	15	19	274
95th Queue (ft)	120	83	85	164	471	1017	827	276	88	41	53	563
Link Distance (ft)		560	560	560		1936	1936	1936	244	244	244	610
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	200				275							
Storage Blk Time (%)	0				31	20						
Queuing Penalty (veh)	0				84	105						

Intersection: 7: 7th Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	655	656
Average Queue (ft)	555	589
95th Queue (ft)	825	804
Link Distance (ft)	610	610
Upstream Blk Time (%)	56	82
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Darien Street & Packer Avenue

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	TR	L	T	T	R	L	T	R	L
Maximum Queue (ft)	52	59	37	138	325	584	598	684	164	234	115	125
Average Queue (ft)	17	21	6	48	315	479	407	623	150	192	53	112
95th Queue (ft)	45	50	27	105	365	727	750	841	190	305	96	147
Link Distance (ft)		605	605	605		560	560	560		164	164	
Upstream Blk Time (%)						5	2	94	41	60	0	
Queuing Penalty (veh)						27	11	459	0	145	0	
Storage Bay Dist (ft)	200				225				150			75
Storage Blk Time (%)					65	2			67	43		37
Queuing Penalty (veh)					176	11			38	92		185

Intersection: 8: Darien Street & Packer Avenue

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	329	293
Average Queue (ft)	230	73
95th Queue (ft)	358	281
Link Distance (ft)	293	
Upstream Blk Time (%)	12	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		110
Storage Blk Time (%)	39	
Queuing Penalty (veh)	167	

Intersection: 13: Darien Street & Port Cochere Exit

Movement	WB	NB	NB
Directions Served	LR	T	T
Maximum Queue (ft)	99	410	364
Average Queue (ft)	54	186	41
95th Queue (ft)	105	484	229
Link Distance (ft)	86	460	460
Upstream Blk Time (%)	43	9	0
Queuing Penalty (veh)	0	19	1
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Front Street & Packer Avenue/I-95

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	L	TR	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	371	267	67	50	118	152	79	86	314	347
Average Queue (ft)	197	135	11	4	38	55	11	6	163	235
95th Queue (ft)	319	234	43	22	88	114	38	40	276	390
Link Distance (ft)	771	771	771	128		453	453		334	334
Upstream Blk Time (%)									0	2
Queuing Penalty (veh)									0	19
Storage Bay Dist (ft)					100			100		
Storage Blk Time (%)					2	2			22	
Queuing Penalty (veh)					1	1			2	

Intersection: 17: Darien Street & Garage Exit

Movement	WB	NB
Directions Served	LR	T
Maximum Queue (ft)	131	11
Average Queue (ft)	63	0
95th Queue (ft)	107	8
Link Distance (ft)	113	333
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: 7th Street & Garage Enter

Movement	NB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	58	10	13
Average Queue (ft)	21	0	1
95th Queue (ft)	50	7	7
Link Distance (ft)		459	459
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	100		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 22: Front Street & Walt Whitman Br

Movement	NB	NB	NB	SB	SB
Directions Served	L	T	T	T	TR
Maximum Queue (ft)	211	218	78	425	555
Average Queue (ft)	96	23	8	44	324
95th Queue (ft)	187	155	93	221	811
Link Distance (ft)		334	334	561	561
Upstream Blk Time (%)		1	0		40
Queuing Penalty (veh)		3	0		393
Storage Bay Dist (ft)	180				
Storage Blk Time (%)	6	0			
Queuing Penalty (veh)	16	0			

Intersection: 23: Front Street & Walt Whitman Bridge/I-95 SB

Movement	EB	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	TR	L	T	T
Maximum Queue (ft)	264	316	225	6	222	193	170	311	482
Average Queue (ft)	69	294	225	0	120	102	61	183	205
95th Queue (ft)	183	316	231	5	200	173	131	263	326
Link Distance (ft)	261	261		175	561	561		552	552
Upstream Blk Time (%)	1	73							0
Queuing Penalty (veh)	0	0							0
Storage Bay Dist (ft)			200				240		
Storage Blk Time (%)		8	86					1	
Queuing Penalty (veh)		55	553					1	

Intersection: 27: Front Street & I-95 Ramps

Movement	EB	EB	EB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	R	LTR	L	T	TR	T	TR
Maximum Queue (ft)	410	482	175	60	228	89	78	285	309
Average Queue (ft)	205	460	175	24	118	23	18	165	148
95th Queue (ft)	398	481	176	56	208	62	56	266	289
Link Distance (ft)	419	419		48		552	552	268	268
Upstream Blk Time (%)	2	98		3				1	3
Queuing Penalty (veh)	0	0		0				0	0
Storage Bay Dist (ft)			150		250				
Storage Blk Time (%)		17	22		0				
Queuing Penalty (veh)		139	52		0				

Intersection: 32: 7th Street & Port Cochere Enter

Movement	NB	SB
Directions Served	LT	T
Maximum Queue (ft)	60	6
Average Queue (ft)	8	0
95th Queue (ft)	37	4
Link Distance (ft)		244
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	150	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 2760

APPENDIX J

WORKS CITED

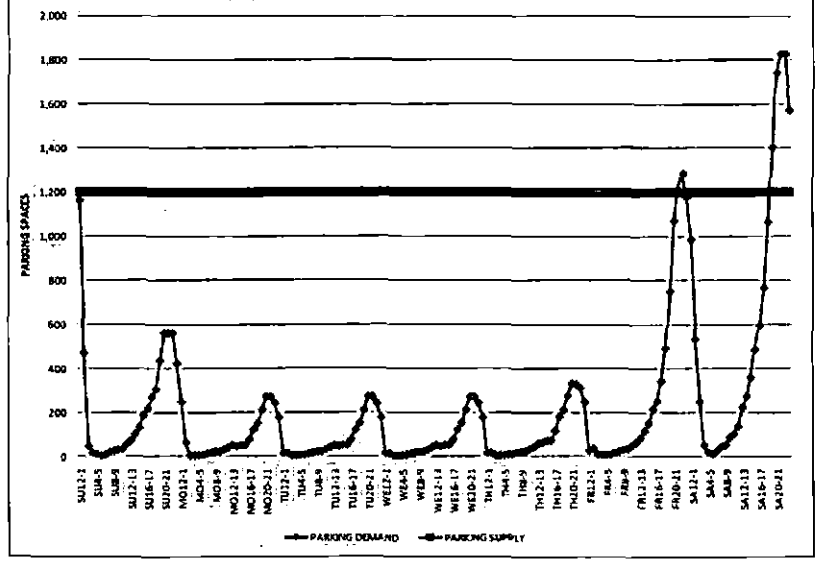
Parking and Profits in Indian Country

by James M. Klas

Parking at Indian casinos is often an underappreciated issue in the gaming industry. Five years ago, ramps were more the exception than the rule. Parking was generally considered a cost of doing business rather than a direct enhancement to bottom line performance. The main question was, "How much do I need?" as opposed to, "How can parking, both in terms of amount and configuration, help maximize profits for the complex as a whole?" Much has happened in five years. Structured parking is now commonplace among new facilities and expansions. It's time not only to provide updated parking rules of thumb and statistics, but also to explain in detail just why and how parking can affect your profits to a significant degree.

Suppose that you have a casino with 1,000 gaming positions (895 machines and 15 tables for example) making $175 per gaming position per day. You have all the typical base amenities in terms of food and beverage and retail, but no hotel, no big showroom or other component that requires extra parking spaces. Suppose also that your casino does not have a significant busing program. Essentially all of your customers come by car. If the casino has 1,200 parking spaces available for customers (not counting employees) and a typical customer flow from hour to hour and day to day, the parking pattern might look something like the graph in Figure 1.

FIGURE 1: PARKING SUPPLY vs DEMAND (1,000 POSITION CASINO)



If you look at the graph, it appears that 1,200 spaces is more than enough for the customer base except for a few hours on Friday and Saturday night. Surely adding parking that would only be used for about seven hours per week would be too expensive, right? Not so fast.

The total shortage in the example amounts to 2,468 vehicle hours per week. Now some of those vehicles will wait for a spot. Some of those vehicles will come back another time. Some of them will just park in some area that isn't supposed to be used. In each case, your casino will still get some or all of the money those people intended to spend. Nevertheless, some of those vehicles will turn around and go home (and probably not come back again). How many? Suppose the figure is half. If those cars averaged between 2.0 and 2.1 people per vehicle and those people planned to spend $65 apiece on your gaming floor, you just lost

Table 1: Parking Ratios

	Median	Lower Quartile	Upper Quartile
ALL U.S. CASINOS (parking spaces per gaming position)	1.07	0.75	1.59
CASINOS WITH BINGO HALLS (parking spaces per gaming position and bingo seat)	0.68	0.54	0.96
CASINOS WITH HOTELS (parking spaces per gaming position and hotel room)	0.88	0.61	1.15
CASINOS WITH HOTELS AND CONVENTION SPACE (parking spaces per gaming position, hotel room and 100 sq. ft. of function space)	0.80	0.55	1.07
CASINOS WITH HOTELS, CONVENTION SPACE AND BINGO HALLS (parking spaces per gaming position, hotel room, bingo seat and 100 sq. ft. of convention space)	0.62	0.45	0.81
CASINOS WITH NO HOTELS, CONVENTION SPACE OR BINGO HALLS (parking spaces per gaming position)	0.98	0.63	1.59

Source: KlasRobinson Q.E.D. and Casino City's Gaming Business Directory August 2010

Table 2: Parking Rules of Thumb

Component	Spaces
CASINO	1 to 1.2 per position
BINGO HALL	1:2 seats or 2:3 seats
HOTEL	2:3 rooms or 3:4 rooms
CONVENTION SPACE	1:200 sq. ft. or 2:300 sq. ft.
SHOWROOMS	1:2 seats
RESTAURANT & BARS	Included
OTHER ATTRACTIONS/AMENITIES	Varies by type/market

Source: KlasRobinson Q.E.D.

over $164,000 in gaming revenue that week. Since this is an average week, you will continue to lose $164,000 per week every week, or $8.5 million per year.

Maybe your customers are more resilient or more determined. Maybe you only lose one out of every four instead of half. That still amounts to nearly $4.3 million per year in lost revenue.

What would it take to get that revenue back? An additional 628 parking spaces would mean that in an average week there would never be a parking shortage. Now 628 spaces can be expensive to build. Assume there isn't enough space for that many additional surface spots and you have to build a ramp. At a cost of $14,000 per space, that ramp would cost nearly $8.8 million dollars. While that's quite a sum, the return on that investment in terms of extra gaming revenue equals almost 49 percent if you are losing one in four and a whopping 97 percent at one half!

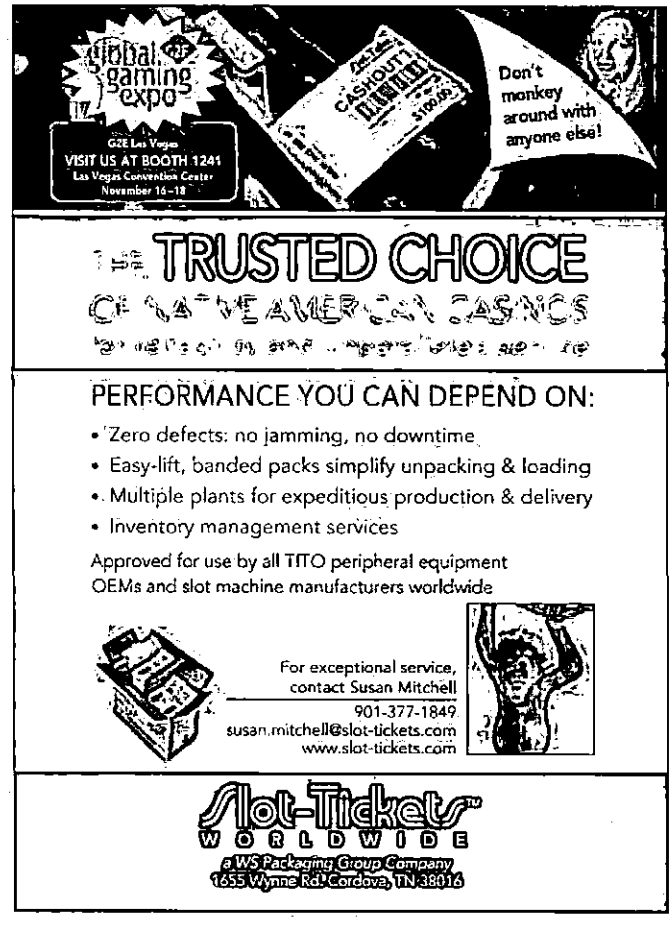
The example might not fit your property, but the principle certainly does. If you are losing customers because of insufficient parking, even just a few customers during just a few hours on one or two peak nights, the money you lose in gaming revenue is more than enough to justify the cost of building the extra space, even if it's ramp space. In fact, ramp space in general can offer more than just added capacity. Shorter walks from the car to the casino equals more time on the gaming floor. Protection from the elements makes it easier for customers to spend their rainy days or sweltering days or snowy days with your casino rather than stuck at home waiting for better weather. Shorter valet waits, premium parking spots for top players, these and other advantages have caused ramps to increase in popularity and importance for casinos across the country.

So how much parking do you need? Table 1 shows the median and quartile statistics for all U.S. casinos and for sub-categories depending upon what ancillary facilities and amenities they have. For each category, the relevant ratio is described below the line item. For all U.S. casinos and for casinos without hotels, convention space or bingo, the measure is parking spaces per gaming position (tables count for seven positions). For casinos with bingo halls, the bingo seating is added to the gaming position count. For casinos with hotels, the room count is added to the gaming positions. For convention space, the ratio reflects the inclusion of each 100 sq. ft. of space.

Table 2 provides general rules of thumb by component that serve as a starting point. It's important to remember that these rules of thumb are minimums for parking and that more is not only desirable, it may even be necessary. Note in Table 1 the range between the lower and upper quartiles for each category, keeping in mind that one quarter of the U.S. casinos in each category have even more parking than the upper quartile ratios shown. In fact, if the hypothetical casino we used for our example followed the rules of thumb shown, it would have had even fewer than the 1,200 spaces assumed.

Parking and profits? Let's call it parking for profits. It has long been understood that gaming floors should be built large enough to accommodate near peak demand. The same concept applies to parking, garages included. The returns are better than meets the eye. ♣

James M. Klas is Co-Founder and Principal of KlasRobinson Q.E.D. He can be reached by calling (800) 475-8140 or email jklas@klasrobinsonqed.com.



PITG Gaming, LLC

THE MAJESTIC STAR CASINO, PITTSBURGH TRANSPORTATION AND PARKING ASSESSMENT

FINAL REPORT

DECEMBER 2005 - REV OCT 2006

IBI GROUP

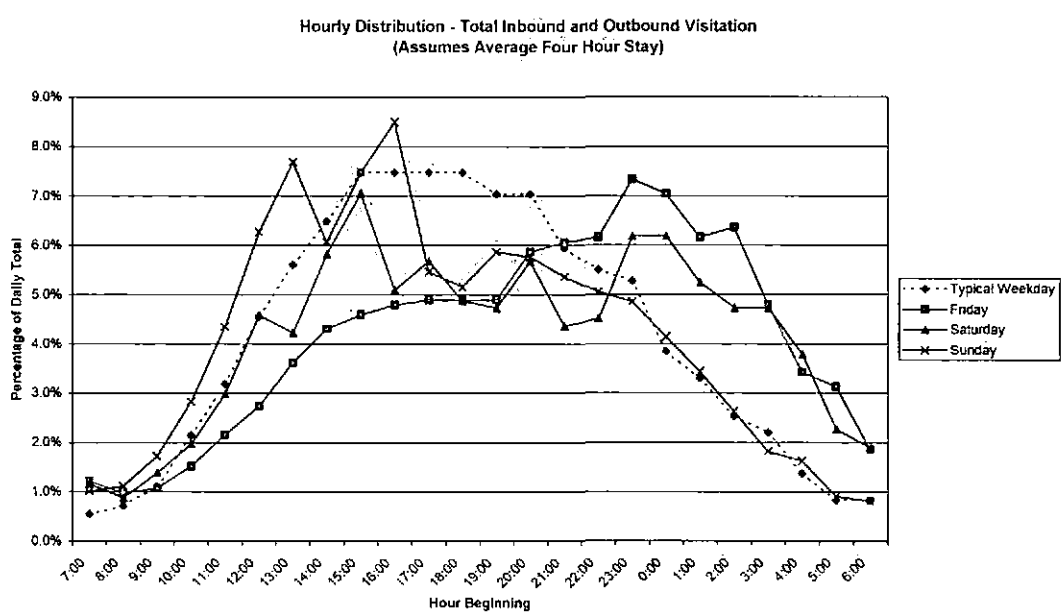
Exhibit 7-1 - Design Level of Daily Person Visits

Day	Recorded Average Visits (MSC/Trump 3265 slots)	Estimated Daily Visits Per Slot	Estimated Daily Visits Per 5000 Slots	Daily Visit Design Levels
Sunday	15600	4.8	23,890	30,000
Weekday	11500	3.5	17,611	20,000
Friday	16500	5.1	25,268	30,000
Saturday	20200	6.2	30,934	36,000

Hourly Variation

Hourly arrival and departure patterns were obtained from data measured at Casino Niagara in Niagara Falls, Canada. When surveyed, Casino Niagara had annual attendance of approximately 10 million per year for a 3,000 slot facility. The proposed North Shore Casino is expected to draw a maximum of 10 million visits per year. The total inbound hourly visits as a percentage of the daily visits are shown in **Exhibit 7-2** below.

Exhibit 7-2 – Hourly Variation of Visits



The number of automobiles entering the proposed North Shore Casino site was calculated using the following assumed parameters, based on Casino Niagara data, but adjusted to reflect a lower percentage of people walking to the site for the North Shore location.

- Automobile modal split: 90% by car (assumes remaining 10% arrives by taxi, charter bus, water taxi or walking); and

Philadelphia Sports Complex
Parking and Traffic Management Plan

Philadelphia, Pennsylvania

Prepared For:

Philadelphia Industrial Development Corporation
2600 Centre Square West, Suite 2600
SW Corner 15th Street and Market Street
Philadelphia, PA 19102

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September 21, 2010
220017201

2 Existing Event Parking Analysis

The following is a brief discussion of various large events at the existing Sports Complex, including parking demands and a summary of traffic and parking management for events. Events are currently scheduled so that there is ample parking for all events, except for some dual events, when all lots can approach capacity. Table 1 summarizes peak demands for each individual existing use.

Table 1
Single Event Peak Parking Demand
Existing Events at the Philadelphia Sports Complex

Event	Peak Single-Event Demand
Wachovia Spectrum/Center Event	7,200
MLB Game	10,000
MLB Post-Season Game	15,000
NFL Game	18,000

Lincoln Financial Field

Located within the sports complex, south of Pattison Avenue, Lincoln Financial Field (LFF) is the home of the NFL's Philadelphia Eagles. Lincoln Financial Field also hosts Temple University football games and occasional soccer games, concerts, the Army-Navy football game. From September 2008 through August 2009, Lincoln Financial Field hosted 21 major events.

Lincoln Financial Field has 68,532 seats for football games. Typically, almost all of the seats are sold for pro football games; however actual attendance is typically lower due to "no shows". During the 2008 seasons, the average attendance was almost 96% of capacity. Pre-season games typically have an attendance of approximately 55,000.

Not every striped on-site space is used for Eagles games, due to parking inefficiencies from tailgating (most evident in the Wachovia lots), as well as the availability of parking in several large off-site private lots. The total supply of striped spaces for NFL games is 19,765 (5,497 spaces at Lincoln Financial Field, 8,318 spaces at Citizens Bank Park, and 5,959 spaces at the Wachovia complex). There are also about 2,600 overflow parking spaces in FDR Park and in the Naval Hospital lot.

Citizens Bank Park

The baseball stadium, with 43,647 seats, is the home of the Philadelphia Phillies (MLB). It also hosts occasional concerts.

Intersection Signalization

The City of Philadelphia Streets Department, Engineering Division, owns, operates and maintains the traffic signal system enclosed in the Sports Complex area along with all signals within the City limits.

Interconnect

The traffic signals in the system are interconnected with fiber optic cable on three (3) corridors.

1. Broad Street between City Hall to Terminal Avenue
2. Pattison Avenue between 7th Street to Penrose Avenue
3. Front Street between Oregon Avenue to Packer Avenue

All fiber optic cable is multimode with the exception of Pattison Avenue east of Broad Street which is single mode fiber optic cable. The Broad Street and Pattison Avenue corridors are interconnected together. The Front Street corridor is a stand alone system. All fiber optic cable is located in underground conduit.

A gap within the system is on Pattison Avenue from 7th Street to Front Street. When the system is being updated, this gap should be closed.

Controller Cabinet Equipment

The signalized intersections within in the Sports Complex area are equipped with solid state Type 170 controller cabinets, image video detection for vehicle detection, along with upgraded pedestrian facilities including pedestrian countdown Hand/Man signals and ADA compliant handicap ramps.

When the system upgrade is undertaken, complete equipment upgrades are recommended for the traffic signals along Packer Avenue.

Timing

The central hub intersection within the system is located at Broad Street and Pattison Avenue. The controller cabinet houses a special "manual plan select" panel with four (4) buttons that control traffic signal timings and cycle lengths along Broad Street and Pattison Avenue. The limits of the timing changes along the corridors are as follows:

1. Broad Street between Bigler Street to Terminal Avenue
2. Pattison Avenue between 7th Street to Penrose Avenue

Prior to an event, a Philadelphia Police Department representative opens the controller cabinet at Broad Street and Pattison Avenue and institutes one of the following four (4) programs:

- Program 1: normal operation – 90 second cycle length.

- Program 2: pre-game operation – 100-second cycle length. Consistent and synchronized green time on Broad Street.
- Program 3: pre-game operation – 120 second cycle length. Designed to move traffic along Broad Street to Pattison Avenue.
- Program 4: post-game operation – 120 second cycle length. Timing favors Pattison Avenue and progresses traffic flow towards I-95 and I-76.

It is important to note that three hours after a program is instituted normal operation is supposed to return. It has also been reported through stakeholder discussions that normal operations doesn't always resume within those three hours, therefore it would be important that operations staff verify that the time-out feature is functioning properly.

Intelligent Transportation Systems

Currently a stimulus driven ITS design build project is at the 30% design phase named I-95 GR1 ITS. This PennDOT project proposes to install two CCTV cameras on Broad Street and permanent Variable Message Signs (VMS) along both Broad Street and Pattison Avenue. As stated earlier this project is in the early design phase and as such the final locations of these devices has not been determined at the time of this report. The proposed VMS signs are small two line message boards to provide immediate incident manage messages to the motoring public.

Operations

A comprehensive signal plan should be developed – these improvements should be implemented in conjunction with event day signal programs along the Packer Avenue and Front Street corridors to fully realize the benefits of these measures.

Figure 5-10 shows existing queues along the Front Street and Packer Avenue corridors for egress from an Eagles event. After implementing the signal timing changes at Front Street and the I-76 West off-ramp, and improving coordination along the Front Street and Packer Avenue corridors, projected queues may be reduced to the extents shown in Figure 5-11. A side benefit of the reduced queues and overall improved operations along the Front Street and Packer Avenue corridors would likely be a decrease in the number of vehicles using 10th Street north of Packer Avenue as an alternate egress route.

Note that additional coordination may be required in the Front Street and Packer Avenue corridors to ensure that the projected benefits are realized. For example, the intersections along these corridors should be coordinated with the new signal timing.

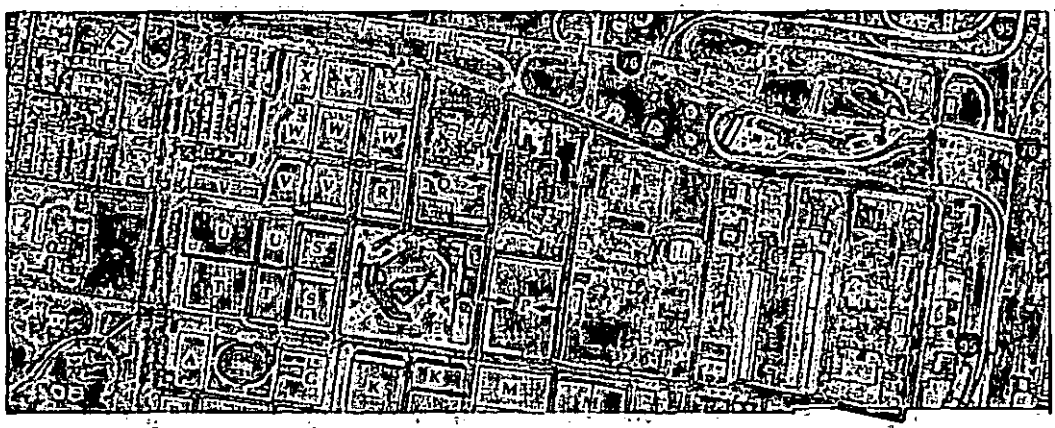

Figure 5-10: Queues from the intersections along Front Street typically extend back to and add to congestion on Packer Avenue.

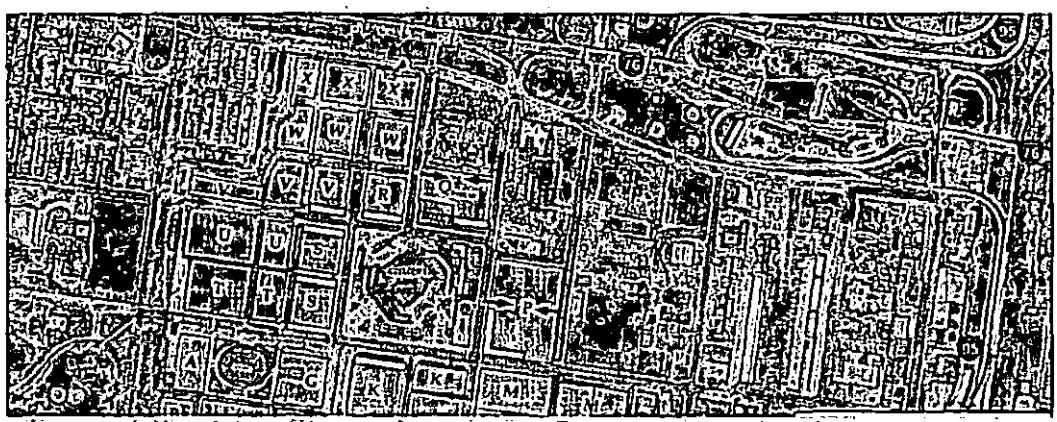

Figure 5-11: Signal timing improvements along Front Street should help reduce queues along Packer Street on egress.

Coordinated Signal Control

In general, the program for post-event conditions may improve egress conditions significantly if it is consistently adhered to. The Front Street signal corridor should be connected to the Broad Street and Pattison Avenue signal corridors. Once all three corridors are connected, a central control point, such as at the Traffic Management Center at the Wachovia Center, should be established from which all the signals can be set to operate on the appropriate ingress or egress program.

The event programs should be triggered at the following times, depending on the event type:

Gaming Casino Traffic

THE AUTHORS SUMMARIZE RESULTS FROM TRAFFIC VOLUME STUDIES OF TWO GAMING CASINOS—THE CASINO ST. CHARLES AND THE CASINO QUEEN.

BY PAUL C. BOX AND WILLIAM BUNTE

GAMING CASINOS GENERATE significant volumes of traffic—especially during the evening peak hour. Two studies of existing operations were made in the St. Louis, Mo., USA, metropolitan area, including hourly vehicular volumes and daily variations. Also, the projections from an economic report for a proposed casino were utilized to provide multiplication factors for traffic counted in any given month, to that expected during the peak summer months.

Gaming casinos have three general types of positions—individual, such as slots and video poker; table, such as blackjack and poker; and audience, such as Keno or racing. For riverboat type facilities, a land-side staging area is used. Other customary services include bar and restaurant.

The Casino St. Charles is located in the metropolitan area, west of the Missouri River. It is reported to have about 2,500 gaming positions, about 80 percent of which are slots or video poker machines.

In January 1995, counts of entering and leaving traffic were taken across weekdays, Saturday and Sunday.[1] For the peak hours, the counts were converted into rates of flow in and out of the facility per gaming position and were expanded to the summer peak conditions (see Table 1). The highest weekday traffic occurs on Friday, while the absolute peak hour occurs on Saturday evening.

From the counts, it also was possible to calculate the hourly variation by the days of the week during which counts

Table 1. Casino St. Charles peak hour rates of vehicular flow per gaming position.

Day	Hour	Rate*
Thursday facility peak	18:00 to 19:00	
IN		0.25
OUT		0.23
Thursday street peak	16:30 to 17:30	
IN		0.19
OUT		0.23
Friday facility peak	18:00 to 19:00	
IN		0.29
OUT		0.25
Friday street peak	16:30 to 17:30	
IN		0.19
OUT		0.24
Saturday facility peak	18:00 to 19:00	
IN		0.34
OUT		0.30
Sunday facility peak		
IN	13:00 to 14:00	0.25
OUT	16:00 to 17:00	0.25

*Expanded to summer peaks.
Source: Ref. 1

were taken. These data are given in Table 2. It should be noted that the facility is quite busy from 09:00 through 22:00 hours. Unlike residential, office or industrial developments, gaming casinos have no significant AM peak hour loading.

A second study was taken at the Casino Queen, a land-based facility on the north side of the Mississippi River in East St. Louis, Ill., USA. Table 3 gives the rates of flow in the PM peak hour per gaming position for customer traffic and separately for employee/service vehicles. The counts have been expanded to peak summer month activity. Only one truck entered or left the casino during the PM peak, which was from 16:30 to 17:30. This is a much smaller facility than the Casino St. Charles, with only 1,200 gaming positions. About 80 percent are slots or video poker. Furthermore, this casino is only open 22 hours per day (09:00 through 07:00). Pickup/dropoff traffic also was observed at the Casino Queen, and amounted to about 10 vehicles during the PM peak. Data on various characteristics of the casinos, such as floor area and employees, are given in Table 4.

The peak gaming months are reported as May, July and August. These may be considered as the "design" condition. The percent of average months and the monthly variation in expected casino traffic, provided in the form of a multiplier for counts taken in a given month to those projected during the peak months, is given in Table 5. For example, a February count would be expanded by 30 percent (1.3 times the count) to reach peak month volumes. The data are taken from an economic study,[3] prepared in connection with a gaming facility zoning application to St. Louis County.

Additional studies of casino traffic are warranted because of widely varying characteristics. For example, the St. Louis casinos had similar rates of peak flow per gaming position. However, the St. Charles facility continued to experience significant flow and had a weekday peak just after the PM peak, while the Casino Queen traffic dropped abruptly at the end of the rush hour. The count was discontinued at this point, because

Table 2. Hourly variation by day of week.

	Percent of Daily Vehicular Traffic					
	IN			OUT		
Hour Begin	Weekday*	Sat.	Sun.	Weekday*	Sat.	Sun.
00	2.5	3.0	3.9	4.3	5.9	7.3
01	1.8	2.7	3.7	3.9	4.4	6.2
02	1.2	1.3	1.9	3.3	4.2	5.4
03	0.7	0.8	1.0	3.2	4.7	5.2
04	1.0	0.6	0.9	3.3	3.7	3.9
05	0.7	0.6	0.9	1.6	2.0	2.5
06	1.0	0.7	0.8	0.6	0.7	0.8
07	1.6	1.1	1.3	0.6	0.5	0.4
08	3.9	3.3	4.4	1.2	0.9	0.8
09	5.6	4.7	6.1	1.3	0.9	0.9
10	5.2	4.3	5.6	2.1	1.7	1.9
11	5.5	4.9	5.7	3.0	2.6	2.9
12	5.8	4.8	6.6	4.1	2.8	3.8
13	6.0	5.2	7.2	5.2	3.5	4.4
14	5.4	5.6	6.5	6.1	4.1	5.5
15	5.2	5.6	6.1	6.4	5.8	6.5
16	5.3	5.7	5.8	7.1	6.3	6.6
17	5.9	6.7	6.2	6.6	6.8	6.0
18	7.8	7.8	5.8	7.0	6.9	6.4
19	7.4	7.7	4.0	5.7	6.4	5.8
20	6.3	6.5	3.9	5.3	6.7	4.3
21	5.3	6.1	5.0	5.7	6.1	4.3
22	4.7	5.7	3.4	6.3	6.0	4.6
23	4.0	4.6	3.3	6.1	6.4	3.6

*Average Monday AM, Thursday PM plus Friday.
Source: Ref. 1.

Table 3. Evening peak hour Casino Queen vehicular traffic.

	Rate per Gaming Position*	
Type of Traffic	IN	OUT
Customer	0.27	0.26
Employee/Service	0.02	0.02
TOTAL	0.29	0.28

*Expanded to peak months per Ref. 3.
Source: Ref. 2.

Table 4. Site characteristics.

	St. Charles	Casino Queen
Floor area (gaming and staging), square feet*	47,000	65,000
Employees	—	1,200
Employees at peak time	700	450
Capacity (gamblers)	4,200	—

*Conversion: One square foot = 0.093 square meter.

Table 5. Monthly variation.

Month of Count	Percent of Average Month	Multiplier to Expand to Seasonal Peak
January	111%	1.1
February	90%	1.3
March	111%	1.1
April	108%	1.1
May	116%	1.0
June	108%	1.1
July	121%	1.0
August	121%	1.0
September	113%	1.1
October	105%	1.2
November	98%	1.2
December	105%	1.2

Source: Ref. 3.

the scope of study was intended to analyze only the PM street peak hour generation.

The two sites studied have provided useful information on hourly and monthly variation. These data should guide studies of other sites. Separate counts of customer and employee vehicular traffic, plus trucks, should be taken on busy weekdays and perhaps on a Saturday evening, if a street capacity problem is likely. At some locations, large numbers of patrons may arrive by bus, which relates to geometric design of driveways.

Other studies of gaming facilities needed include parking generation, which represents a major factor. The development of gaming on Native American tribal lands is often away from or at the fringe of metropolitan areas. Traffic and parking characteristics of these facilities may differ from those

within a metropolitan area. Busing may represent a more significant factor—especially relative to parking layout. ■

References

1. *Traffic Impact Study for the Ultimate Development of St. Charles Riverfront Station.* Final Report. Crawford, Bunte, Brammeier, August 1995, unpublished.

2. *Study of Casino Queen.* Paul C. Box and Associates Inc., November 1996, unpublished.

3. *Horseshoe Gaming, St. Louis County Project.* Economics Research Associates, as presented to County Plan Commission about September 1996, unpublished.

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Executive Summary of the

INTERIM REPORT OF FINDINGS

Philadelphia Gaming Advisory Task Force

TABLE 3: Casino Visitation Patterns by Time of Day

		Morning	Afternoon	Adj. To	Rush Hour	Evening	Night	Graveyard	Adj. To
		8-11a	11a-4p	3-hour period	4p-7p	7p-10p	10p-1a	1a-8a	3-hour period
Monday – Thursday	average	8%	30%	18%	17%	18.5%	14.5%	12%	5.1%
	peak	10%	33%	19.8%	20%	20%	17%	14%	6.0%
Friday	average	7%	18%	10.8%	12%	18%	18%	27%	11.6%
	peak	9%	21%	12.6%	15%	22%	20.5%	30%	12.9%
Saturday	average	9%	24%	14.4%	15%	17.5%	16.5%	18%	7.7%
	peak	11.5%	26.5%	15.9%	17.5%	22%	19%	20.5%	8.8%
Sunday	average	7.5%	29%	17.4%	20%	18.5%	14%	11%	4.7%
	peak	10%	31.5%	18.9%	22.5%	21%	16%	13%	5.6%

Source: Innovation Group

Mode of Arrival

With up to 5,000 slot machines per gaming facility and between 12,000 and 36,000 visitors per day, traffic and parking demands generated by Philadelphia slots-only casinos will be substantial. Understanding how gamers are likely to arrive at Philadelphia slots parlors is a necessary first step in assessing the potential traffic impacts associated with casino development. Graph 2 displays the expected typical distribution of transportation modes for a casino located in a given area of the City.

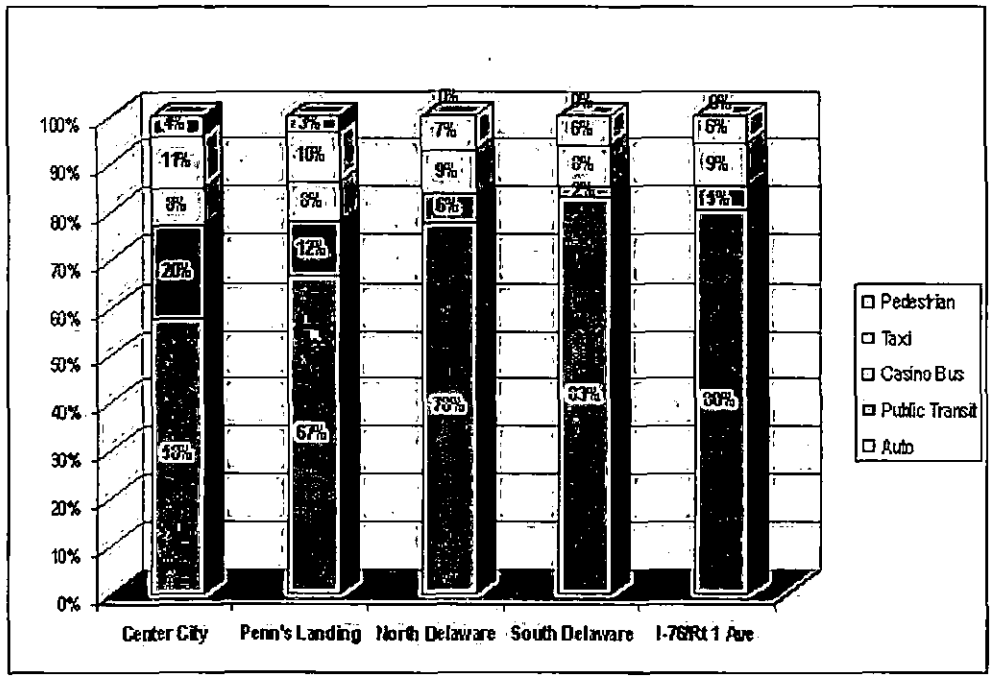
Private automobile will be the overwhelming preferred mode of arrival at Philadelphia gaming sites, with more than half of gamers expected to drive to a casino in or near Center City, and more than three-quarters arriving by car at other sites in the city. Philadelphia casinos are expected to rely on chartered buses significantly less than Atlantic City, but still will draw approximately 8 percent of their visitors by coach.

Public transit share would be significant only for casinos located in Center City and, to a lesser degree, at Penn's Landing. Despite Philadelphia's extensive transit infrastructure, it is anticipated that no more than 20 percent of casino customers would arrive via transit at a Center City site, and as little as two percent for a site along the South Delaware.

More than half of regional survey respondents (52 percent) claim that having public transportation proximate to a Philadelphia casino would be important to them. However, current behavior heavily favoring personal automobile use – 83 percent of respondents said they drive into the city for leisure activity – suggests that while people may think transit is important in general or for others, they personally will continue to drive.

Pedestrian volume to Philadelphia casino locations will be minimal except for Center City or Penn's Landing locations, and taxi volumes would be maximized at sites in, or close to, Center City.

GRAPH 2: Mode of Arrival



Source: Innovation Group

Transportation Access Analysis

In order to assess traffic impacts, the Task Force conducted a detailed analysis of existing and projected traffic volumes on streets surrounding potential gaming sites, as well as an engineering review of the capacity of those streets and intersections to carry the increased volumes. A summary of current traffic volumes on major roads near potential gaming sites and the projected additional traffic demand generated by casino development at each site are presented in Tables 4 and 5. For each site, the numbers in the first row are current traffic volumes based on electronic counts of vehicles conducted during May 2005. The second row shows the estimated number of additional vehicles on weekdays and Saturdays if a slots-only casino were to be placed at that location. The estimates vary between sites for two main reasons: (1) Based on Task Force projections, different sites will experience different levels of visitation based on their varying proximity and accessibility to patrons and (2) it is estimated that some sites will draw more patrons by public transit and therefore the number of automobiles would be less.

It is important to note that conclusions about potential congestion problems at these sites cannot be drawn without analyzing projected traffic volumes within the context of existing roadway and intersection capacity and without an understanding of peak traffic volumes. A projected sharp increase in traffic volume

PHASE I ENVIRONMENTAL SITE ASSESSMENT

The Turf Club
700 Packer Avenue
Philadelphia, Pennsylvania 19148

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November 6, 2012

TABLE OF CONTENTS

Page

EXECUTIVE SUMMARY ..... **iii**
Findings and Opinion iii
Conclusions iv

1.0 INTRODUCTION **1**
1.1 Purpose 1
1.2 Scope of Work 1
1.3 Limitations, Exceptions, Special Terms and Conditions 2
1.4 User Reliance 2

2.0 SUBJECT PROPERTY DESCRIPTION **3**
2.1 Property Location and Legal Description 3
2.2 Subject Property Characteristics 3
2.2.1 Current Use of the Subject Property 3
2.2.2 Site Structures 3
2.2.3 Site Utilities 3
2.3 Current Uses of Adjoining Properties and Properties in the Surrounding Area 4

3.0 USER PROVIDED INFORMATION **5**
3.1 Chain of Title Information 5
3.2 Environmental Liens and/or Activity and Use Limitations 5
3.3 Specialized Knowledge and Interviews 5
3.4 Commonly Known or Reasonably Ascertainable Information 5
3.5 Valuation Reduction for Environmental Issues 5
3.6 Presence or Likely Presence of Contamination at the Subject Property 5
3.7 Previous Reports 6

4.0 PHYSICAL SETTING **7**
4.1 Topography/Regional Drainage 7
4.2 Soils 7
4.3 Underlying Formation 7
4.4 Groundwater 7
4.5 Water Migratory Pathways 8

5.0 HISTORICAL RECORDS **9**
5.1 Aerial Photographs 9
5.2 Historical Maps 10
5.3 Property Tax Files 11
5.4 Recorded Land Title Records 11
5.5 Historical Topographical Maps 11
5.6 Local Street Directories 11
5.7 Building Department Records 11
5.8 Zoning/Land Use Records 11
5.9 Previous Environmental Reports 12

6.0 REGULATORY AGENCY RECORDS REVIEW 13
6.1 Standard Environmental Record Sources, Federal and State 13
6.1.1 Subject Property 14
6.1.2 Vicinity Properties -- Facilities of Potential Concern 14
6.1.3 Orphan Sites 15
6.2 Additional Environmental Records Sources – State and Federal 15
6.2.1 Pennsylvania Department of Environmental Protection 15
6.2.2 United States Environmental Protection Agency 15
6.3 Additional Environmental Records Sources – Regional and Local 15
6.3.1 Philadelphia Water Department 15
6.3.2 City of Philadelphia Department of Licenses and Inspections 15

7.0 SITE RECONNAISSANCE 17
7.1 General Observations – Exterior Areas 17
7.2 General Observations – Interior Areas 17
7.3 Hazardous Substances in Connection with Identified Uses 17
7.4 Storage Tanks 18
7.5 Floor Drains and/or Sumps 18
7.6 Other Observations 18
7.7 Polychlorinated Biphenyls (PCBs) 18
7.7.1 Transformers and Capacitors 19
7.7.2 Fluorescent Light Ballasts 19
7.7.3 Elevators and Hydraulic Equipment 19
7.8 Non-Scope Considerations 19
7.8.1 Asbestos-Containing Material (ACM) 19
7.8.2 Lead-Based Paint 21
7.8.3 Lead in Drinking Water 22
7.8.4 Wetlands 22
7.8.5 Radon Gas 22
7.8.6 Mold 22

8.0 DATA GAPS AND DEVIATIONS 24

9.0 ENVIRONMENTAL PROFESSIONAL STATEMENT AND SIGNATURE 25

10.0 REFERENCES 26

APPENDICES

A Figures
B Environmental Database Report
C Supporting Documentation
D Photographs

EXECUTIVE SUMMARY

On behalf of Penn National Gaming, Inc. (Client), Pennoni Associates Inc. (Pennoni) has performed a Phase I Environmental Site Assessment (ESA) of the property located at 700 Packer Avenue in Philadelphia, Pennsylvania. The subject property consists of approximately 13.35 acres of land improved with an approximately 120,218 square foot mixed use commercial building.

Pennoni conducted the ESA in general conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E 1527-05. ASTM E 1527-05 is a voluntary consensus standard that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice." The procedures included in the ASTM E1527-05 standard comply with the United States Environmental Protection Agency (USEPA) 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule.

The primary objective of the Phase I ESA was to identify recognized environmental conditions (RECs) in connection with the subject property. A REC is defined as the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

To identify RECs in connection with the subject property, Pennoni's Phase I ESA included a records review, a site reconnaissance, interviews with owners, operators, and occupants of the subject property, interviews with local, state, and federal government officials, a review of information provided by the User (i.e., the party seeking to complete an environmental site assessment of the subject property), and preparation of a report presenting Pennoni's findings, opinions, conclusions and supporting documentation. The Phase I ESA for the subject property did not include any testing or sampling of materials (e.g., soil, water, air, building materials).

Our findings, opinions, and conclusions regarding RECs in connection with the subject property are summarized below. Results of our evaluation of non-scope considerations including wetlands, flood zones, and radon are also summarized below.

Findings and Opinion

The key findings of Pennoni's Phase I ESA for the subject property are presented in the table below.

FINDINGS SUMMARY TABLE

Area of Concern	Not Identified/No Significant Finding	*De minimis*	ASTM Non-Scope	REC/ HREC	Further Action Recommended
Historical Review				X	YES
On-Site Industrial Operations	X				
User Provided Information	X				
Adjoining Properties of Concern	X				

Area of Concern	Not Identified/No Significant Finding	*De minimis*	ASTM Non-Scope	REC/ HREC	Further Action Recommended
Regulatory Agency Review	X				
Hazardous Substances	X				
Storage Tanks	X				
Floor Drains/Sumps				X	YES
Other Issues – stains and corrosion, drains, sumps, stressed vegetation, solid waste, septic systems, etc.	X				
PCBs		X			YES
Asbestos-Containing Materials			X		YES
Lead-Based Paint			X		YES
Wetlands	X				
Radon	X				

Conclusions

This assessment has revealed the following RECs or conditions indicative of releases or threatened releases of hazardous substances on, at, in or to the subject property:

1. Review of the 1951 historic Sanborn map reveals the former use of the subject property as a City Dump/Public Dump. Historic dumping of unknown materials may have impacted subsurface soil and groundwater beneath the subject property. Pennoni recommends that a subsurface soil and groundwater investigation be performed to determine if regulated compounds are present in either media at concentrations exceeding the Pennsylvania Department of Environmental Protection (PADEP) Residential or Non-Residential Used Aquifer Statewide Health Standards.

2. Pennoni observed evidence of six (6) below-ground hydraulic lifts which appear to have been removed and filled within the vacant truck repair garage on the subject property. Controls for the six (6) underground lifts were also observed along the walls of the building. The condition of the hydraulic fluid supply lines that formerly provided hydraulic oil to the underground cylinders is not known. There is a potential that subsurface soils in the vicinity of the lifts may have been impacted with concentrations of polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) at concentrations exceeding PADEP Residential or Non-Residential Used Aquifer Statewide Health Standards as a result of releases from the hydraulic fluid supply lines. Pennoni recommends that a subsurface soil investigation be conducted within the vacant truck garage building to evaluate soil quality in the vicinity of the lifts.

3. Pennoni observed floor drains throughout the vacant truck repair garage on the subject property. Pennoni also observed two (2) manhole covers which appear to be access ways for an oil/water separator within the building; however, the presence of an oil/water separator could not be verified. Notable staining was not observed in the vicinity of the drains and no chemical or petroleum odors were noted; however, the integrity of a holding tank associated with the oil/water separator could not be verified. Therefore, subsurface soils in the vicinity of the suspect oil/water separator may be impacted with regulated compounds at concentrations

exceeding the PADEP Residential or Non-Residential Used Aquifer Statewide Health Standards. Pennoni recommends that a subsurface soil investigation be conducted in the vicinity of the oil/water separator holding tank.

Additionally, Pennoni has identified the following *de minimis* conditions in connection with the subject property:

- Pennoni observed a pad-mounted transformer located in the southeast corner of the subject property. Pennoni did not observe a placard indicating the PCB-content of the transformer. No evidence of leaking or staining was observed on the concrete pad or grass surrounding the transformer.

- Fluorescent lights were observed throughout the subject property buildings. Based on the age of the buildings of the subject property building, it is possible that the ballasts contains PCBs. Evidence of staining or leaking was not observed in the vicinity of the fluorescent lights; however, it would be prudent to check the lighting for PCB labeling prior to disposal.

Pennoni has also identified the following ASTM Non-Scope Considerations in connection with the subject property:

- No ACM was definitively identified during this ESA and no sampling was performed. During the site visit, however, some suspect materials were observed within the subject property buildings. The materials include, but are not limited to, 12 x 12 in. vinyl floor tile and 2 x 2 ft. ceiling tile. The observed suspect materials appeared by be in fair to good condition. Whether or not these materials are asbestos containing can only be confirmed by manufacturer knowledge or by collecting samples of the materials and having them analyzed by an accredited laboratory. Prior to renovations or demotion, an ACM survey should be performed.

- No LBP was definitively identified during the ESA; however, the subject property buildings would be expected to have one or more layer of LBP based on the dates of construction. Testing of the paint can be performed to determine if any of the older layers are lead containing, or the materials can merely be presumed to be LBP and, subsequent to receiving proper notice of the potential presence of LBP on or in the structures, renovation or demolition contractors can take appropriate precautionary measures to prevent worker exposure and proper handling during renovation or demolition activities.

1.0 INTRODUCTION

On behalf of Penn National Gaming (Client), Pennoni Associates Inc. (Pennoni) has performed a Phase I Environmental Site Assessment (ESA) of the property located at 700 Packer Avenue in Philadelphia, Pennsylvania.

Pennoni conducted the Phase I ESA in general conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E 1527-05. The procedures included in the ASTM E1527-05 standard comply with the United States Environmental Protection Agency (USEPA) 40 CFR Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule.

ASTM E 1527-05 is a voluntary consensus standard that constitutes "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice." The ASTM practice is intended to permit a User (i.e., the party seeking to complete an environmental site assessment of the subject property, in this case, Penn National Gaming, Inc.) to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) liability (i.e., landowner liability protections or LLPs). The practice does not address whether requirements in addition to all appropriate inquiry have been met in order to qualify for LLPs (e.g., continuing obligations not to impede the integrity and effectiveness of AULs, the duty to take reasonable steps to prevent releases, or the duty to comply with legally required release reporting obligations).

ASTM E 1527-05 does not include any testing or sampling of materials (e.g., soil, water, air, building materials).

This report presents the findings, opinions, and conclusions, and supporting documentation for the Phase I ESA of the subject property, completed by Pennoni as of the date of this report. Information made available to Pennoni after this date, which would change the conclusions of this report, will be forwarded upon receipt.

1.1 Purpose

The purpose of the assessment was to identify recognized environmental conditions (RECs) in connection with the subject property. A REC is defined as the presence or likely presence of any hazardous substance or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property.

1.2 Scope of Work

Pennoni's Phase I ESA for the subject property included a records review, site reconnaissance, interviews with owners, operators, and occupants of the subject property, interviews with local, state, and federal government officials, review of information provided by the User, and preparation of this report presenting Pennoni's findings, opinions, conclusions and supporting documentation.

The environmental professionals responsible for the preparation of this Report have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and

setting of the subject property. The Report was reviewed by Mr. William Schmidt, PE, Associate Vice President of Pennoni Associates Inc. Mr. Schmidt was supported by various staff, including Ms. Jennifer Higgins, Project Environmental Scientist, with Pennoni. Mr. Schmidt and Ms. Higgins meet the definition of an "Environmental Professional" as defined in the ASTM standard and AAI regulation. The Environmental Professional Statement and Signature are presented in Section 9.0 of this report.

1.3 Limitations, Exceptions, Special Terms and Conditions

Pennoni conducted a Phase I ESA of the subject property in general conformance with the scope and limitations of ASTM Standard E 1527-05. The Phase I ESA for the subject property did not deviate from this standard. Data gaps that would affect the ability of the environmental professional to identify conditions indicative of releases or threatened releases of pollutants, contaminants, petroleum and petroleum products are identified in Section 8.0 of this report. This Phase I ESA is presumed to be valid provided it has been completed less than 180 days prior to the acquisition of the subject property or the date of the intended transaction. Recognizing that the passage of time affects the information provided in the reports; our opinions relating to site conditions are based upon information that existed at the time our conclusions were formulated.

1.4 User Reliance

This Report and findings, conclusions, and recommendations contained herein, are furnished for the sole use and benefit of the Client to aid in understanding the environmental condition and potential liabilities of the subject property. This Report may not be assigned, quoted, reproduced, relied upon, or otherwise used without the express prior written consent of Pennoni.

All documents prepared by Pennoni Associates Inc. are the instruments of service in respect of the project. They are not intended or represented to be suitable for reuse by owner or others on extensions of the project or on any other project.

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2.0 SUBJECT PROPERTY DESCRIPTION

The following paragraphs provide a description of the subject property including its location, general characteristics, and current use. Current uses of adjoining properties and properties in the surrounding area are also described below.

2.1 Property Location and Legal Description

The subject property is located in Philadelphia, Pennsylvania along the south side of Packer Avenue between Darien and South 7th Streets. The property can be found on the United States Geological Survey (USGS) 7.5- minute topographic quadrangle for Philadelphia, Pennsylvania-New Jersey at map coordinates longitude 75.162093 West, latitude 39.908892 North. A copy of a topographic map is provided in Appendix A.

The subject property is identified on the City of Philadelphia Tax Map 48-S-02 as Tax Parcel 0072. A copy of the City of Philadelphia Tax Map depicting the subject property is included in Appendix A.

2.2 Subject Property Characteristics

The following paragraphs describe the general characteristics of the subject property, including its current use and a description of structures, roads, and other improvements (i.e., heating/cooling system, sewage disposal, source of potable water, etc.) on the subject property.

2.2.1 Current Use of the Subject Property

The subject property is identified as an approximate 13.35 acre area occupied by the Philadelphia Turf Club off-track betting facility which includes tenant space occupied by the Pennsylvania Lottery offices, Catch Packer Recovery Program, PharmDoor, Verifone, and Packer Avenue Foods. The subject property also contains a vacant truck repair garage.

2.2.2 Site Structures

The subject property is improved with an approximately 120,218 square foot mixed use commercial building which contains an off track betting lounge, vacant warehouse space, warehouse space occupied by Packer Avenue Foods, a garage used for installation of taxi radios by Verifone, and office space occupied by PharmDoor, Catch Packer Recovery Program, and the Pennsylvania Lottery. Additionally, the subject property contains an approximately 9,000 square foot vacant truck repair garage. Based on a review of historical documentation, the subject property buildings were constructed in 1969.

2.2.3 Site Utilities

The subject property is serviced by standard utilities. Sanitary sewer and water service are provided by the Philadelphia Water Department. Electrical service is provided by PECO and natural gas service is provided by the Philadelphia Gas Works.

2.3 Current Uses of Adjoining Properties and Properties in the Surrounding Area

Adjoining properties, and properties and roads in the area surrounding the subject property, are identified below.

- North – Packer Avenue borders the subject property to the north, followed by a grass area and I-76, the Schuylkill Expressway.
- South – A warehouse building is located adjacent to the south of the subject property, followed by a parking lot for Citizens Bank Park.
- East – South 7th Street is located adjacent to the east of the subject property, followed by an industrial property occupied by Sysco Philadelphia.
- West – South Darien Street borders the subject property to the west followed by a Holiday Inn hotel.

3.0 USER PROVIDED INFORMATION

3.1 Chain of Title Information

Chain of title information was not provided by the User for review and inclusion in this report.

3.2 Environmental Liens and/or Activity and Use Limitations

The Client is not aware of any environmental liens that are filed or recorded against the subject property. Furthermore, the Client is not aware of any activity and use limitations (AULs) (e.g., engineering controls, land use restrictions, or institutional controls) that are in place on the subject property or that have been filed or recorded in a registry under federal, tribal, state, or local law. Pennoni reviewed the current deed for the subject property as part of this Phase I ESA; based upon this review, Pennoni has concluded that the subject property is not subject to environmental liens, institutional controls, or engineering controls.

3.3 Specialized Knowledge and Interviews

The Client does not have any specialized knowledge or experience related to the subject property or nearby properties.

According to Mr. Frank Costello, representative of the subject property owner, Philadelphia Suburban Development Corporation, who was interviewed during the site inspection, the vacant warehouse space located on the first floor of the Turf Club building was formerly occupied by a tire dealer and a hardware store. Mr. Costello also informed Pennoni that the truck garage on the subject property has been vacant for a while; however, a more specific estimate of the amount of time was not known.

3.4 Commonly Known or Reasonably Ascertainable Information

The Client is not aware of commonly known or reasonably ascertainable information about the property that would help the Environmental Professional to identify conditions indicative of releases or threatened releases. The Client is not aware of specific chemicals that are present or once were present on the subject property; spills or other chemical releases that have taken place at the subject property, or any environmental cleanups that have taken place at the subject property.

3.5 Valuation Reduction for Environmental Issues

In the Client's opinion, the purchase price being paid for subject property reasonably reflects the fair market value of the subject property.

3.6 Presence or Likely Presence of Contamination at the Subject Property

Based on their knowledge and experience related to the subject property, the Client is not aware of any obvious indicators that point to the presence or likely presence of contamination at the subject property.

3.7 Previous Reports

Previous environmental reports pertaining to the subject property were not provided by the User for review and inclusion in this report.

4.0 PHYSICAL SETTING

4.1 Topography/Regional Drainage

The subject property is located on the Philadelphia, PA-NJ 7.5-minute USGS topographic quadrangle at an approximate elevation of 20 feet above mean sea level. Surface water on the subject property is expected to runoff the impervious areas of the subject property via sheetflow and drain into the Philadelphia Water Department storm water inlets located throughout the asphalt-paved parking areas of the subject property. Storm water running off the property is expected to ultimately discharge to the east towards the Delware River, which is located approximately 1.45 miles to the east of the subject property.

4.2 Soils

A review of the USDA-NRCS Web Soil Survey published by the United States Department of Agriculture-Soil Conservation Service (USDA-SCS) revealed that the soils present on the subject property consist primarily of Urban Land (UR) soils. This land type consists of cut and fill areas, most of which have been developed for residential, commercial, or industrial use or for multilane highways. During development, the original soil horizon was destroyed in at least 70 percent of the area. Areas of both cut and fill are moderately or rapidly permeable. Where the original soil was removed and the substratum exposed, the material remaining is rapidly permeable and extremely low in organic-matter content and fertility.

4.3 Underlying Formation

Based on the Pennsylvania Department of Conservation and Natural Resources (DCNR), Bureau of Topographic and Geological Survey's *Physiographic Provinces of Pennsylvania (Map 13)*, 4th Edition, 2000, the subject property lies within the Atlantic Coastal Plain Physiographic Province, which consists of unconsolidated to poorly consolidated sand and gravel, which are underlain by highly folded and faulted schist, gneiss and other metamorphic rock. The underlying formation, as determined by DCNR's *Atlas of Preliminary Geologic Quadrangles (Map 61)*, Fourth Series, 1981 and the *Geologic Map of Pennsylvania (Map 7)*, 3rd edition, 1990, is the Quaternary-aged Trenton Gravel Formation (geologic symbol Qt).

According to DCNR's *Engineering Characteristics of the Rocks of Pennsylvania* (Environmental Geology Report 1), 2nd edition, 1982, the Trenton Gravel is approximately 30 feet thick and consists of gray to pale-reddish-brown, very gravelly sand, inter-bedded with cross-bedded sand and silt layers. The Trenton Gravel occurs at between 0 and 20 feet above mean sea level in the Delaware River Valley and was deposited by the alluvial processes of the Delaware River. Porosity and permeability are high and wells may have yields in excess of 1,000 gallons per minute.

4.4 Groundwater

Groundwater is expected to flow to the east, parallel to the surface gradient. Groundwater would be expected to be located in the joints and fractures of the underlying formation. In order to further determine groundwater conditions on the subject property, however, a property-specific hydrogeologic investigation would be necessary.

4.5 Water Migratory Pathways

Potential migratory pathways for surface water and groundwater entering and exiting the subject property are important in establishing the potential for surrounding areas to impact the subject property or for the subject property to impact neighboring properties that are down gradient. Local topography slopes slightly to the east. Surface water and groundwater, therefore, are expected to migrate from the properties located to the west. Storm drainage and surface water flow drains into storm water inlets located on the subject property into the Philadelphia combined sanitary and storm water system. Regionally, the area is drained by the Delaware River, which is located approximately 1.45 miles to the east of the subject property.

5.0 HISTORICAL RECORDS

The purpose of consulting historical records is to develop a history of the previous uses of the subject property and surrounding area in order to help identify the likelihood of past uses having led to RECs in connection with the subject property.

ASTM E 1527-05 requires identification of all obvious uses of the subject property from the present, back to the subject property's first developed use (including agricultural uses and placement of fill dirt), or back to 1940, whichever is earlier. As such, Pennoni reviewed as many of the standard historical sources (i.e., aerial photographs, fire insurance maps, property tax files, recorded land title records, USGS topographic maps, local street directories, building department records, zoning/land use records, etc.) as were necessary and both reasonably ascertainable and practically reviewable (i.e., publicly available, obtainable from its source within reasonable time and cost constraints). In addition, the historical sources must be determined to be sufficiently useful by the environmental professional.

5.1 Aerial Photographs

Available aerial photographs were obtained from Environmental Data Resources, Inc. in an effort to determine past uses and conditions of the subject property. Aerial photographs were reviewed for the years 1940, 1957, 1967, 1981, 1999, 2005 and 2010, with a scale of one (1) inch to 500 feet. Copies of the aerial photographs reviewed by Pennoni are included in Appendix A. The following is a brief narrative of the aerial photographs reviewed:

- 1940 – The subject property and surrounding properties to the south, east and west consist of vacant land. South 7th Street is visible to the east of the subject property. Railroad tracks are visible to the north of the subject property.

- 1957 – No significant changes to the subject property or surrounding properties to the south, east or west were observed from the 1940 photograph. The railroad tracks formerly located to the north of the subject property have been replaced by the Schuylkill Expressway.

- 1967 – The current Turf Club and garage buildings are visible on the subject property. Packer Avenue is visible to the north of the subject property, followed by a baseball field and the Schuylkill Expressway, and the current warehouse building is visible to the south. Darien Street now borders the subject property to the west and an industrial building is visible to the east of the subject property across South 7th Street.

- 1981 – No significant changes to the subject property were observed from the 1967 photograph. The current hotel building is visible to the west of the subject property and a new on-ramp to the Schuylkill Expressway has been constructed to the north of the subject property across Packer Avenue.

- 1999 – No significant changes to the subject property or surrounding area were observed from the 1981 photograph.

- 2005 – No significant changes to the subject property or surrounding area were observed from the 1999 photograph, except that Citizens Bank Park has been constructed to the southwest of the subject property.

- 2010 – No significant changes to the subject property or surrounding area were observed from the 2005 photograph, except that a new industrial building has been constructed to the southeast of the subject property.

5.2 Historical Maps

Available Sanborn Fire Insurance Maps were obtained from FirstSearch Technology Corporation to determine past uses and conditions of the subject property. Sanborn Fire Insurance maps for the subject property and surrounding area were reviewed for the years 1922, 1951, 1976, and 1978. A copy of the Sanborn map reviewed by Pennoni is included in Appendix A. Historic property atlases and Land Use Maps obtained from the *Greater Philadelphia GeoHistory Network* website published by the Philadelphia Area Consortium of Special Collections Libraries, were also reviewed in order to determine the past uses and conditions of the subject property. Historic Atlases were reviewed for the years 1862, 1895, and 1910; Land Use Maps were reviewed for the years 1942 and 1962. The following is a brief narrative of the historical map review:

- 1862 – No structures are depicted on the subject property. Hollander Creek is identified running through the property. South 8th Street is identified through the subject property; neither Packer Avenue nor Darien Street are depicted on the map.

- 1895 – No significant changes to the subject property or surrounding area were observed from the 1862 map, except that the Hollander Creek is no longer depicted. The subject property is identified as part of Girard Estate.

- 1910 – No significant changes to the subject property were observed from the 1895 Atlas.

- 1922 – The subject property contains several dwellings and farm structures, identified as coops. Southwark Avenue, Geary Street, South 8th Street, and Curtin Avenue all run through the subject property. Southwark Place is identified on the southern portion of the subject property and a canal is depicted along the southern border of the subject property. Railroad tracks and a car and power house are depicted to the north of the subject property, across Packer Avenue. The car and power house contains two (2) tank structures which are identified as air compressors.

- 1942 – The subject property is identified as vacant land and farms. No significant changes to the surrounding properties were observed from the 1922 map.

- 1951 – The subject property contains two (2) structures identified as dwellings and is labeled as City Dump/Public Dump. Southwark Avenue still runs through the subject property in addition to several unopened streets including Curtin Avenue, Geary Street, and South Franklin Street. Darien Street is identified to the west of the subject property and is labeled as not opened. A canal is identified along the southern border of the subject property, followed by residential dwellings located along South 7th Street. Railroad tracks are depicted to the north of the subject property, across Packer Avenue.

- 1962 – The use of the subject property and surrounding properties are not identified.

- 1976 – The subject property is improved with the current structures. The Turf Club building is identified as Abbott's Dairies a Division of Fairmont Foods Co.; the map indicates that the building was constructed in 1968. The use of the garage structure on the subject property is not identified. The adjacent property to the west contains the current hotel structure identified as the Philadelphia Hilton Inn. The warehouse building to the south of the subject property is identified as Cason Packing Co. The adjacent properties to the east across South 7th Street are identified as Perloff Bros. Inc. (wholesale grocery and produce), and the City of Philadelphia Streets Department Maintenance Yard and Sanitation Department Southeast Service Building, which contains a filling station. The Schuylkill Expressway is depicted to the north of the subject property.

- 1978 – No significant changes to the subject property or surrounding properties were observed from the 1976 map.

5.3 Property Tax Files

Property tax files including records of past ownership, appraisals, maps, sketches, photos, or other information pertaining to the property were reviewed by Pennoni.

Pennoni obtained a current tax map for the subject property from Philadelphia Records Department; a copy of the tax map is included in Appendix A. The subject property is identified on the City of Philadelphia Tax Map 48-S-02 as Tax Parcel 0072.

5.4 Recorded Land Title Records

Recorded land title records including records of historical fee ownership, including leases, land contracts and AULs on or of the subject property were not provided to Pennoni by the Client; however, Pennoni obtained a copy of the current deed for the subject property from the City of Philadelphia Department of Licenses and Inspections (L&I). Philadelphia Suburban Development Corporation (PSDC) is the current owner of the subject property. According to the current deed, PSDC acquired the subject property from the Philadelphia Authority for Industrial Development on October 6, 1987, as recorded in Deed Book 0912, Page 502. The current deed also states that the Philadelphia Authority for Industrial Development acquired the subject property from Fairmount Foods Company on January 5, 1982. A copy of the current subject property deed is included in Appendix C.

5.5 Historical Topographical Maps

Historical Topographical Maps were not determined to be reasonably ascertainable, practically reviewable, and/or sufficiently useful.

5.6 Local Street Directories

Local Street Directories were not determined to be reasonably ascertainable, practically reviewable, and/or sufficiently useful.

5.7 Building Department Records

Pennoni obtained available zoning records from L&I via electronic mail. Review of the subject property zoning files did not reveal information regarding storage tanks or other environmental issues. The files

contained in the subject property zoning files indicate that the subject property has been occupied by the Turf Club since 1993. The permit applications contained in the files relate to interior renovations and signage for the Turf Club building; no information regarding the vacant truck repair garage on the subject property was found in the files. Additionally, documentation prior to 1992 was not available from L&I for the subject property. Copies of the documents obtained from L&I are included in Appendix C.

5.8 Zoning/Land Use Records

The subject property is zoned for use as a Food Distribution Center (FDC).

5.9 Previous Environmental Reports

Previous environmental reports pertaining to the subject property were not provided by the Client for review and inclusion in this report.

6.0 REGULATORY AGENCY RECORDS REVIEW

As part of the Phase I ESA for the subject property, Pennoni reviewed both standard and additional environmental record sources for the subject property and surrounding area. Our environmental records review consisted of a review of the following:

- the Environmental FirstSearch Report (FirstSearch Report) for the subject property provided by InfoMap Technologies Incorporated;
- information requested from the United States Environmental Protection Agency (USEPA), Region III;
- information requested from the Pennsylvania Department of Environmental Protection (PADEP); and,
- information requested from regional and local sources including, the City of Philadelphia.

6.1 Standard Environmental Record Sources, Federal and State

Pennoni contracted the services of InfoMap Technologies Corporation (InfoMap) to search both state and federal environmental databases in an attempt to identify potential concerns that may be associated with either the subject site and/or surrounding properties. The FirstSearch Report provided listings, accompanied by a map, of facilities and operations with reported environmental concerns within the ASTM E 1527-05 specified search radius around the subject property.

The federal databases searched by the FirstSearch Report included the following:

- Federal National Priorities List (NPL) site list;
- Federal Delisted NPL site list;
- Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list;
- Federal CERCLIS No Further Remedial Action Planned (NFRAP) site list;
- Federal Resource Conservation and Recovery Act (RCRA) Corrective Action (CORRACTS) facilities list;
- Federal Treatment, Storage, and Disposal (RCRA TSD) facilities list;
- Federal RCRA (RCRA GEN) generators list;
- Federal Institutional Control/Engineering Control (IC/EC) registries; and
- Federal Emergency Response Notification System (ERNS) list.

The FirstSearch Report also searched the following state database files:

- State Hazardous Waste Sites (SHWS) list;
- State Solid Waste Facility/Landfill (SWF/LF) site list;
- State Leaking Underground Storage Tank (LUST) site list;
- State Registered Underground and Aboveground Storage Tank (REG UST/AST) site list;
- State Institutional Control/Engineering Control (IC/EC) registries;
- State Voluntary Cleanup Program (VCP) sites list; and
- State Brownfields sites list.

The FirstSearch Report is presented in Appendix B. Complete listings and descriptions of the each of the databases search are included in the FirstSearch Report.

6.1.1 Subject Property

The subject property was not identified as a regulated site in the FirstSearch Report.

6.1.2 Vicinity Properties -- Facilities of Potential Concern

The FirstSearch Report identified the following facilities located adjacent to or in close proximity to the subject property.

- Sysco Food Svc Phila
  600 Packer Ave
  Philadelphia, PA 19148

The Sysco Food Svc Phila UST and LUST site is located adjacent to the east of the of the subject property across South 7th Street. According to the FirstSearch Report, the site contains two (2) 10,000-gallon diesel ASTs which were installed in December 2010 and are currently in use. The LUST listing states that a release which occurred on August 19, 1992 achieved a cleanup completed status on April 22, 2009. Based on the location of the Sysco Food UST and LUST site relative to the subject property, and the reported regulatory status of the site, adverse impacts to the subject property are not expected.

- Tartan Sysco Foods Inc.
  666 Packer Ave
  Philadelphia, PA 19148

The Tartan Sysco Foods LUST site is located adjacent to the east of the subject property across South 7th Street. According to the FirstSearch Report, a release of diesel fuel was cleaned up at the site pursuant to Act 32. Additional details regarding the listing were not provided in the FirstSearch Report. Based on the location of the Tartan Sysco Foods LUST site relative to the subject property, and the reported regulatory status of the site, adverse impacts to the subject property are not expected.

- 2nd District Maintenance Building
  Seventh St and Hartranft Ave
  Philadelphia, PA 19148

The 2nd District Maintenance Building UST site is located adjacent to the southeast of the subject property across South 7th Street. No details regarding the tanks located at the site were provided in the FirstSearch Report. Based on the location of the 2nd District Maintenance Building UST site relative to the subject property, adverse impacts to the subject property are not expected.

- SE Transfer Station
  Room 840 Mun. Svc. Building
  Philadelphia, PA 19107

The SE Transfer Station SWL site is located adjacent to the south/southeast of the of the subject property. No details regarding the site were provided in the FirstSearch Report. Based on the

location of the SE Transfer Station SWL site relative to the subject property, adverse impacts to the subject property are not expected.

The remaining reported sites are not located on or adjacent to the subject property and are not expected to impact the subject property based on their location and/or reported regulatory status. Complete details for all of the sites listed in the FirstSearch Report are included in Appendix B.

6.1.3 Orphan Sites

The unfiltered FirstSearch Report identified five (5) orphan sites, or sites which could not be mapped due to inadequate address information. None of the identified sites appear to be located on or adjacent to the subject property based on the provided information.

6.2 Additional Environmental Records Sources – State and Federal

6.2.1 Pennsylvania Department of Environmental Protection

Pennoni submitted an records request, via facsimile, on November 1, 2012, to the Pennsylvania Department of Environmental Protection (PADEP), for information regarding environmental concerns at the subject property. A copy of the letter is contained in Appendix C. PADEP responded to our request via telephone and indicated that no files were identified for the subject property.

6.2.2 United States Environmental Protection Agency

A request was submitted online to the United States Environmental Protection Agency (USEPA), (*www.MyPropertyInfo.com*) on October 29, 2012 to search federal files for any information regarding the subject property, and any instances of illegal waste discharges, Notices of Violations, and the current regulatory status of the subject property. No records pertaining to the subject property were identified. A copy of the search record is included in Appendix C.

6.3 Additional Environmental Records Sources – Regional and Local

6.3.1 Philadelphia Water Department

Pennoni submitted a written request, in a letter dated November 5, 2012, to the Philadelphia Water Department for information regarding environmental concerns at the subject property. No response to this request has been received to date. Information received, which changes the findings of this report, will be forwarded upon receipt. A copy of the request is included in Appendix C.

6.3.2 Philadelphia Department of Licenses and Inspections

Pennoni obtained available zoning records from L&I via electronic mail. Review of the subject property zoning files did not reveal information regarding storage tanks or other environmental issues. The files contained in the subject property zoning files indicate that the subject property has been occupied by the Turf Club since 1993. The permit applications contained in the files relate to interior renovations and signage for the Turf Club building; no information regarding the vacant truck repair garage on the subject property was found in the files. Additionally,

documentation prior to 1992 was not available from L&I for the subject property. Copies of the documents obtained from L&I are included in Appendix C.

7.0 SITE RECONNAISSANCE

Pennoni personnel completed an inspection of the subject property on October 31, 2012 in order to visually inspect the property for evidence of RECs. During the site visit Pennoni was escorted by Mr. Frank Costello of Philadelphia Suburban Development Corporation (PSDC), which owns the subject property. Photographs of the significant features observed during the site visit are provided in Appendix D.

Methodology

The property was observed by visually walking the surveyed property line. Interior portions of the subject property were accessed as well. Interior spaces of buildings located on the subject property were observed in a methodical means by accessing each room and space including the basement and penthouse levels, if any. Most individual rooms were physically entered and visual observations were made.

Limitations

Access to interior areas within the buildings on the subject property was provided. The subject property Visit and observations were not limited, with the exception of the Packer Avenue Foods tenant space due to the fact that the occupant was not in at the time of the inspection.

7.1 General Observations – Exterior Areas

The subject property contains an approximately 120,218 square foot mixed use building (Turf Club) and an approximately 9,000 square foot vacant truck repair garage. Asphalt parking areas surround the subject property buildings. Three (3) vacant parking attendant booths were observed on the southwest corner of the subject property. The southern portion of the Turf Club structure on the subject property contains loading docks utilized by Packer Avenue Foods.

7.2 General Observations – Interior Areas

The northern portion of the Turf Club building is two (2) stories and contains the Turf Club on the second floor, and warehouse space and offices for the Pennsylvania Lottery, Catch Packer Recovery Program, and PharmDoor on the first floor. The first floor warehouse space is mostly vacant with a small portion utilized by the Turf Club for storage of building maintenance materials. The northeastern corner of the Turf Club building contains a garage area occupied by Verifone. The garage is used by Verifone to install radios and meters in taxi cabs; no vehicle maintenance is performed in this space. Pennoni observed a small grease trap located beneath a sink in the kitchen of the Deli within the Turf Club. Mr. Costello did not have information regarding disposal of the grease by the Turf Club. Pennoni also observed a waste oil heating unit within the vacant truck repair garage on the subject property.

7.3 Hazardous Substances in Connection with Identified Uses

Pennoni observed storage of various building maintenance supplies, including paint, in the warehouse space located on the first floor of the Turf Club building on the subject property. Additionally, Pennoni observed three (3) 55-gallon drums containing hydraulic oil in this warehouse space. Mr. Costello informed Pennoni that the hydraulic oil is stored on the subject property for use in elevators at other properties owned by PSDC. Staining or evidence of leaks was not observed on the concrete floor

surrounding the drums.

7.4 Storage Tanks

No ASTs or evidence of USTs was observed on the subject property.

7.5 Floor Drains and/or Sumps

Pennoni observed floor drains throughout the vacant truck repair garage on the subject property. Pennoni also observed two (2) manhole covers which appear to be access ways for an oil/water separator within the building; however, the presence of an oil/water separator could not be verified. Notable staining was not observed in the vicinity of the drains and no chemical or petroleum odors were observed.

7.6 Other Observations

Based on the site reconnaissance, review of records, and historical usage of the subject property, Pennoni has identified the following conditions that may impact future development of this property or present the potential for future environmental liability.

Stains or Corrosion	Not Observed
Pits, Ponds or Lagoons	Not Observed
Stained Soil or Pavement	Not Observed
Stressed Vegetation	Not Observed
Fill Material	Not Observed
Municipal Solid Waste	Stored in dumpsters and disposed by private contractors
Regulated Waste Disposal	Not Observed
Biomedical Waste Disposal	Not Observed
Waste Water	Not Observed
Wells	Not Observed
Septic Systems	Not Observed
Current/Past Agricultural Activity	Not Observed
Odors	No strong, pungent, or noxious odors were observed
Pools of Liquid	Not Observed
Drums/Containers	Three (3) drums of hydraulic oil observed in warehouse area occupied by Turf Club.
Unidentified Chemicals	Not Observed

7.7 Polychlorinated Biphenyls (PCBs)

PCBs are a class of compounds that were developed in the 1930s and became widely used in industry from the mid-1900s to the late 1970s. The flame resistance of PCBs made them ideal for use in electrical equipment and they did not break down or react with other chemicals, even under extreme conditions of high temperature and pressure. PCBs were commonly used, therefore, in hydraulic fluids, lubricating oils, and transformers, electric motors, switches, and capacitors (including fluorescent lighting ballasts), as well as in paints, plastics, and other household items.

Because PCBs persist in the environment and, because they are fat-soluble, they bio-accumulate in the food chain, the elimination of PCBs from distribution in commerce was mandated in federal legislation in the late 1970s. For economic reasons, however, the use of PCBs in existing equipment was allowed to continue for the useful or normal life of the equipment, as long as specific conditions were met. At present, many industrial facilities continue to rely upon PCB-containing equipment and transformers, while many commercial and residential structures continue to use lighting fixtures, switches, and other articles that contain some level of PCBs.

7.7.1 Transformers and Capacitors

Transformers and capacitors that contain an oil-based dielectric fluid are considered a recognized environmental condition, due to the potential presence of polychlorinated biphenyls (PCBs) in the dielectric fluid. Pennoni observed a pad-mounted transformer located in the southeast corner of the subject property. Pennoni did not observe a placard indicating the PCB-content of the transformer. No evidence of leaking or staining was observed on the concrete pad or grass surrounding the transformer.

7.7.2 Fluorescent Light Ballasts

Fluorescent light ballasts contain capacitors that may be filled with PCB-containing dielectric fluid. Fluorescent lights were observed throughout the subject property buildings. Based on the age of the buildings of the subject property building, it is possible that the ballasts contains PCBs. Evidence of staining or leaking was not observed in the vicinity of the fluorescent lights; however, it would be prudent to check the lighting for PCB labeling prior to disposal.

7.7.3 Elevators and Hydraulic Equipment

Elevators and hydraulic equipment that contain hydraulic fluid are a potential area of environmental concern due to the potential for PCBs to be present in the hydraulic fluid. Pennoni observed evidence of six (6) in-ground hydraulic lifts which appear to have been removed and filled within the vacant truck repair garage on the subject property.

7.8 Non-Scope Considerations

7.8.1 Asbestos-Containing Material (ACM)

Asbestos is a naturally occurring mineral that has been used for centuries for variety of applications. Asbestos is a very stable crystalline mineral that forms fibers and withstands high temperature extremely well. Because of this physical and chemical property, commercial and industrial applications and usage of asbestos increased dramatically during the early 1900s. Asbestos was commonly known as a type of insulation, but it was also as a stabilizer and strengthening material in plaster, cement, and other composite materials. As such, asbestos was commonly used in building materials such as insulation, plaster, vinyl surfacing materials, and roofing and roof flashings, as well as in brake linings, caulking, and gaskets for ovens and furnaces. Because asbestos is a mineral, it can also be found in the soils of some areas around the world.

Once commercially milled, asbestos fibers are typically found at sizes that are measured in microscopic, micron particle sizes. Uncontrolled releases of asbestos fibers can remain airborne for an extended time and the particles tend to by-pass most of the defense mechanisms of the respiratory tract. As such, asbestos fibers have the ability to reach the inner portions of the lungs where they can become lodged and cause significant scarring and damage on a cellular level. Diseases attributable to asbestos exposure include asbestosis, mesothelioma, and lung cancer. Occupational exposure to asbestos is, therefore, highly regulated in the workplace.

The mere presence of ACM in a building is not necessarily cause for significant concern. So long as asbestos is not disturbed or accessible to damage or contact and does not become airborne, it poses little health risk and management of ACM in-place is considered a safe and acceptable practice. The U.S. EPA and OSHA have issued substantial guidance regarding proper procedures for the operations and maintenance of asbestos in the workplace. The U.S. EPA has also issued guidelines for home and building owners who have ACM insulation and surfacing materials such as flooring and roofing in their houses. Consequently, while most commercial production and use of asbestos was discontinued in the late 1970s and early 1980s, ACM remain in-place and in use in many commercial, industrial, and residential structures.

Asbestos regulations govern issues such as asbestos exposure and materials handling, transportation, and disposal and they place obligations upon building owners and operators to make notification to building occupants, tenants, visitors, contractors, and employees who may come in contact with the ACM.

Building owners, in particular, are responsible to make notifications regarding the presence and location of ACM. Additionally, all suspect materials are required by law to be "presumed" to be asbestos containing materials (PACM). PACM must be handled and treated as ACM until proven otherwise to be non-ACM.

Policies and procedures relating to the on-going management of PACM and ACM in occupied buildings are typically presented in written asbestos Operations and Maintenance (O&M) Plans. O&M Plans outline the various building owner responsibilities and procedures relating to the asbestos and serve as a tool to ensure consistent and proper management practices.

If a building containing ACM is to be demolished, the asbestos is typically removed prior to the demolition activities. Pursuant to the federal EPA National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations in 40 CFR 61, subpart M, ACM and asbestos-containing wastes must be removed, handled, and disposed in a manner that does not allow visible and/or uncontrolled emissions of asbestos to the environment.

Also, pursuant to the OSHA General Industry Standards 29 CFR 1910.1001 and the Construction Standards in 29 CFR 1926.1101, employers of employees who may encounter ACM are responsible to ensure that the employees are not exposed to airborne concentrations in excess of permissible exposure limits (PELs) that are based upon a time-weighted average exposure. Additionally, the employees must be properly trained so that they can recognize hazards and avoid unacceptable exposure.

No ACM was definitively identified during this ESA and no sampling was performed. During the

site visit, however, some suspect materials were observed within the subject property buildings. The materials include, but are not limited to, 12 x 12 in. vinyl floor tile and 2 x 2 ft. ceiling tile. The observed suspect materials appeared by be in fair to good condition. Whether or not these materials are asbestos containing can only be confirmed by manufacturer knowledge or by collecting samples of the materials and having them analyzed by an accredited laboratory. Prior to renovations or demotion, an ACM survey should be performed.

7.8.2 Lead-Based Paint

Lead is commonly added to paints because of its characteristic to resist corrosion. LBP was used substantially for industrial applications; it is also commonly encountered in older commercial and residential properties.

Oral ingestion may represent a major route of exposure in contaminated workplaces and houses. Lead poisoning can cause permanent damage to the brain and many other organs and causes reduced intelligence and behavioral problems. Lead can also cause abnormal fetal development in pregnant women.

The U.S. EPA estimates that approximately three quarters of the nation's housing (i.e., roughly 64 million dwellings) contain some LBP. When properly maintained and managed, this paint poses little risk. However, 1.7 million children have blood-lead levels above safe limits, mostly due to exposure to LBP hazards.

According to the Housing and Urban Development (HUD) Authority, lead-based paint LBP is defined as paint on surfaces with lead in excess of 1.0-milligrams per square centimeter (mg/cm^2), as measured by a x-ray fluorescence (XRF) detector of 0.5 percent by weight.

Use of LBP in construction was banned in 1978 and Congress passed legislation in 1992 requiring the disclosure of known information on LBP and LBP hazards before the sale or lease of most housing built before 1978. Consequently, LBP was generally phased out in commercial buildings, as well.

Similar to asbestos, OSHA has also established worker protection standards for exposure to lead. Unlike the case with asbestos, however, LBP does not need to be removed from a structure prior to demolition so long as the issue of worker exposure and adequate protection can be addressed.

If waste materials from the demolition contain quantities sufficient quantities of LBP, it may meet the definition of a hazardous waste under the U.S. EPA's Resources Conservation and Recovery Act (RCRA) found in 40 CFR 260 - 279. Therefore, the need for pre-demolition abatement of LBP must be evaluated on a case-by-case basis to determine if the abatement is warranted.

Pursuant to applicable OSHA regulations, the party that is contracting for services to perform work in the structure is required to provide notice to the contractor or employer that LBP is likely present. Most contractors will likely need to know specific locations of the paint such that many owners and managers of buildings containing LBP opt to have a survey performed so that information that is more specific is available and the matter does not delay renovation and

construction projects.

No LBP was definitively identified during the ESA; however, the subject property buildings would be expected to have one or more layer of LBP based on the dates of construction. Testing of the paint can be performed to determine if any of the older layers are lead containing, or the materials can merely be presumed to be LBP and, subsequent to receiving proper notice of the potential presence of LBP on or in the structures, renovation or demolition contractors can take appropriate precautionary measures to prevent worker exposure and proper handling during renovation or demolition activities.

7.8.3 Lead in Drinking Water

The subject property is currently provided water by the Philadelphia Water Department. Public Water Suppliers are required to monitor lead levels in supply water and maintain corrosion control programs to minimize the leaching of lead from plumbing, solder joints, and fixtures. Collection of a sample of the water supplied to this property at point of use, and subsequent analysis, would be necessary to determine if drinking water lead concentrations are of concern.

7.8.4 Wetlands

No soils or vegetation characteristic of wetlands were visible on the subject property, although a formal survey was not performed during the ESA. The U.S. Fish & Wildlife Service National Wetlands Inventory database was reviewed to determine if wetland areas have been mapped on the subject property. According to the U.S. Fish & Wildlife Service map, no wetlands are located on the subject property.

7.8.5 Radon Gas

Radon gas is a naturally occurring radioactive gas found in soils and rocks. It is generated by the decay of naturally occurring uranium as a colorless and odorless gas. Radon gas can accumulate once inside an enclosed space such as an office building or home. There is an increased risk of developing lung cancer when exposed to elevated levels of radon gas. In general, the risk increases as the concentration of radon gas and the length of exposure increases. The EPA has established 4 picoCuries per liter (pCi/L) of radon gas in indoor air as a guidance level for residences, while readings above 20 pCi/L are considered an actionable level.

According to the data obtained from the PADEP, the subject property lies within an area with an average indoor air radon concentration below 2 pCi/L. Based on the reported average concentration, and because the subject property does not contain sub-grade living or working space, health risk due to radon concentration is not a concern on the subject property. Actual radon concentration can only be determined by on-site measurement.

7.8.6 Mold

Pennoni conducted a limited visual inspection throughout the buildings to identify significant water damaged or mold-impacted building materials. The conditions of interior building components were inspected for evidence of mold, mildew, other visible contamination and/or

anomalies. Pennoni inspected the buildings for the presence of areas of significant microbial proliferation on walls, fabrics, carpets, and ceilings.

No visual evidence of significant microbial growth was observed within the subject property buildings.

9.0 ENVIRONMENTAL PROFESSIONAL STATEMENT AND SIGNATURE

I declare that, to the best of my professional knowledge and belief, I meet the definition of an "environmental professional" as defined at 40 C.F.R. §312.10. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 C.F.R. Part 312.

William F. Schmidt

William F. Schmidt, PE
Associate Vice President

10.0 REFERENCES

The following documents, publications, maps, etc. were used as source materials for this Phase I Environmental Site Assessment:

- ASTM Standards on Environmental Site Assessments for Commercial Real Estate (E 1527-05), Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, 2005.

- Philadelphia, PA-NJ, USGS, 7.5 minute topographic quadrangle, 1995.

- United States Department of Agriculture, Natural Resource Conservation Service *Web Soil Survey*.

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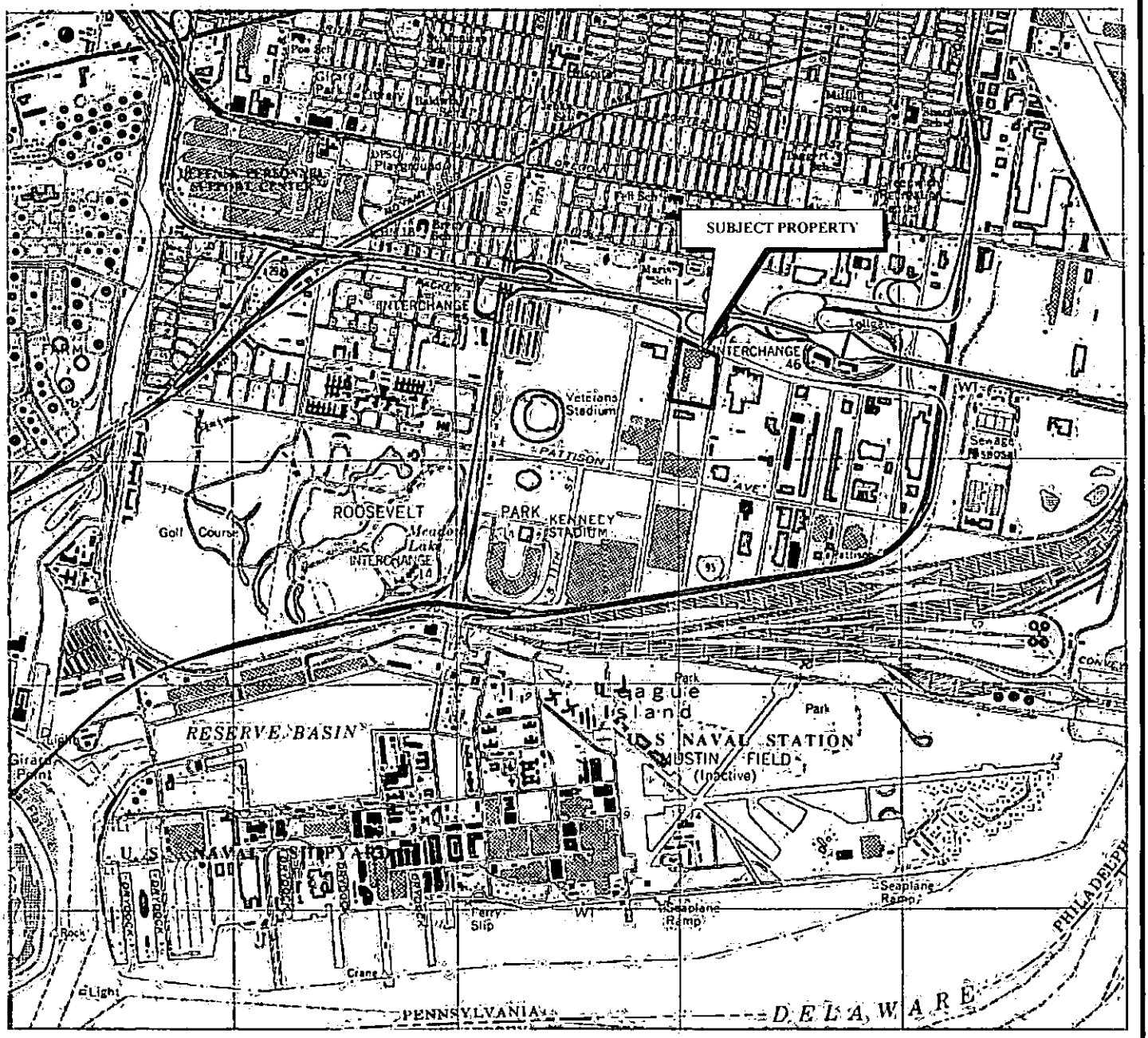
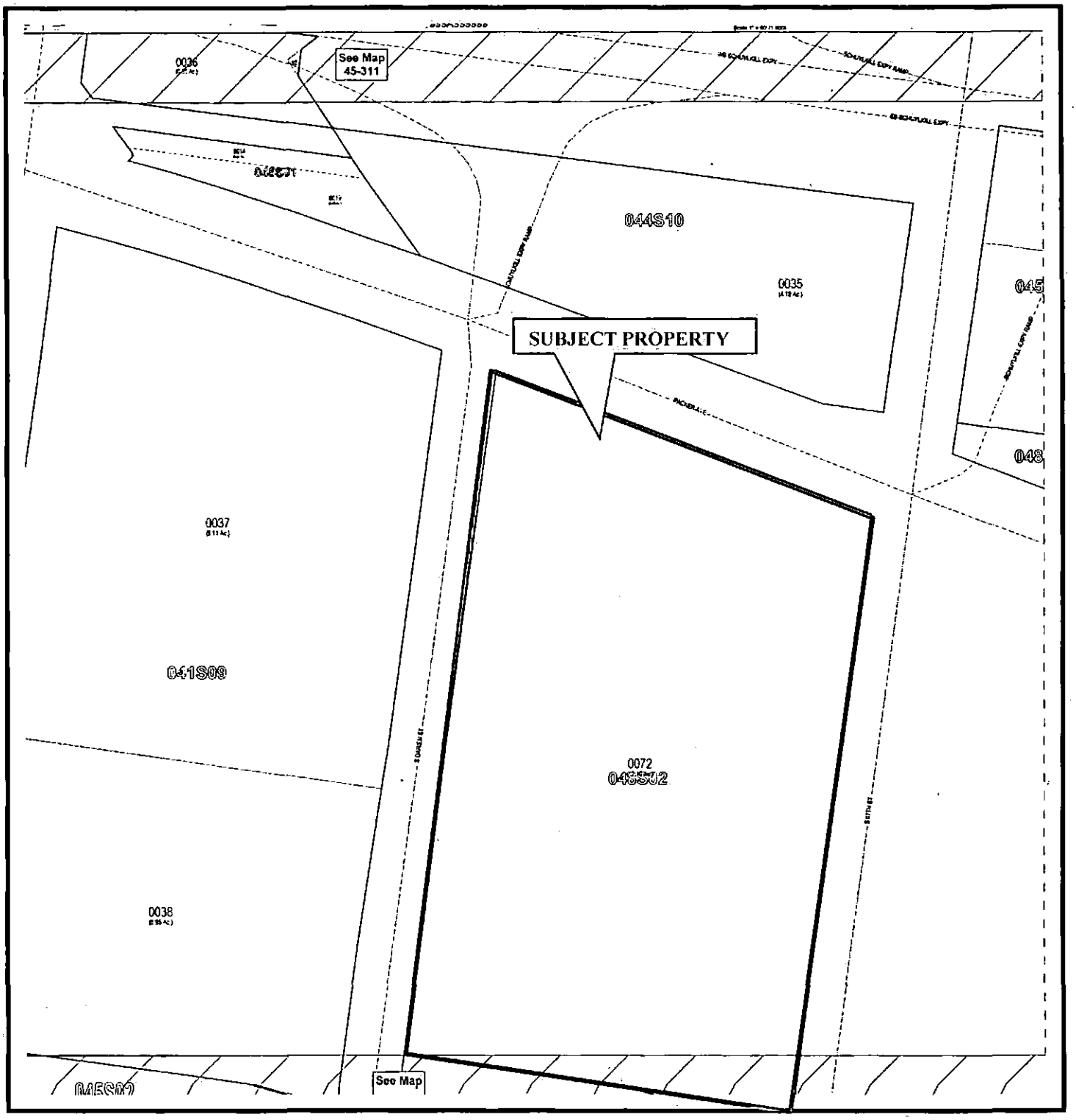


PHILADELPHIA, PA-NJ (1995) QUADRANGLE
U.S.G.S. 7.5 MIN. TOPOGRAPHIC MAP
CONTOUR INTERVAL 20 FEET

Pennoni PENNONI ASSOCIATES INC. CONSULTING ENGINEERS	PENNONI ASSOCIATES INC. ONE DREXEL PLAZA 3001 MARKET STREET PHILADELPHIA, PA 19104	PRELIMINARY ENVIRONMENTAL SITE SCREEN **The Turf Club** **700 Packer Avenue** **Philadelphia, PA 19148**	NORTH
JOB No.: PNGI 1201	SCALE: NOT TO SCALE	**FIGURE 1: SITE LOCATION MAP**	



Pennoni PENNONI ASSOCIATES INC. CONSULTING ENGINEERS	PENNONI ASSOCIATES INC. ONE DREXEL PLAZA 3001 MARKET STREET PHILADELPHIA, PA 19104	PHASE I ENVIRONMENTAL SITE ASSESSMENT **The Turf Club** **700 Packer Avenue** **Philadelphia, Pennsylvania 19148**	NORTH
JOB No.: **PNGI 1201**	SCALE: **NOT TO SCALE**	FIGURE 2: TAX MAP **SOURCE: RealQuest.com**	

Economic and Fiscal Impact of the Proposed Hollywood Casino Philadelphia in the City of Philadelphia, PA

(First Phase)

Submitted to:

Penn National Gaming, Inc.

Prepared by

Urban Partners

829 Spruce Street, Suite 204

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November 8, 2012

TABLE OF CONTENTS

0) *EXECUTIVE SUMMARY* 2
Impact of Hollywood Casino Philadelphia Construction 2
Recurring Impact of Hollywood Casino Philadelphia 3

1) *INTRODUCTION* 4

2) *METHODOLOGY* 6

3) *DEVELOPMENT PERIOD IMPACT* 7

3.1) *DEVELOPMENT PERIOD EMPLOYMENT IMPACT* 8

3.2) *DEVELOPMENT PERIOD TAX REVENUE IMPACT* 9

4) *ANNUAL ECONOMIC IMPACT* 12
Direct Economic Impact 13
Indirect/Induced Economic Impact 15

4.1) *EMPLOYMENT IMPACT FROM ON-GOING OPERATIONS* 16

4.2) *TAX REVENUE IMPACT* 17
Wage Tax Revenue Impact 17
Sales and Hotel Tax Impact 18
Business and Real Estate Tax Impact 19
Gaming Tax Impact 20

5) *APPENDIX A: WHAT IS IMPLAN?* 21

0) EXECUTIVE SUMMARY

In response to the Pennsylvania Gaming Control Board's call for applications for Philadelphia's second casino license, Penn National Gaming, Inc. is proposing the Hollywood Casino Philadelphia on the 700 block of Packer Avenue in South Philadelphia. The first phase of the planned casino facility will include 102,000 SF of gaming floor with 2,050 slot machines and 81 table games, multiple restaurants and bars, and a 180-seat entertainment lounge.

The proposed location is adjacent to the Philadelphia Sports Complex which is comprised of three world-class sports venues and the newly opened XFINITY Live! Philadelphia. The addition of the Hollywood Casino Philadelphia in this area will result in significant economic impact for the City of Philadelphia and the Commonwealth of Pennsylvania.

In order to analyze the economic benefits of the Hollywood Casino Philadelphia, Penn National retained Urban Partners to independently assess the economic impacts of the construction and operation of the proposed facility. Our analysis of the proposed casino's economic impact focuses on three primary factors:

1) The initial construction/development period impacts;
2) The direct and indirect economic impact of the casino's on-going operations and the employment generated by this activity; and
3) The tax benefits received by the City of Philadelphia and the Commonwealth of Pennsylvania as a result of the casino.

Although additional phases of the casino are planned for the future, the economic impact analysis in this report is limited to the first phase only.

Impact of Hollywood Casino Philadelphia Construction

The construction of the first phase of the Hollywood Casino Philadelphia, which is estimated to cost $232.9 million, directly and indirectly will generate a one-time economic impact of **$246.96 million for the Commonwealth of Pennsylvania**, of which **$194.44 million is the estimated portion for the City of Philadelphia.** In addition, the construction of the casino will produce:

- 2,060 full time equivalent jobs in the Commonwealth of Pennsylvania
  - 810 full-time equivalent jobs as a result of direct impact
  - 1,250 full-time equivalent jobs as a result of indirect/induced impact
- 1,565 full time equivalent jobs in the City of Philadelphia
  - 780 full-time equivalent jobs as a result of direct impact
  - 785 full-time equivalent jobs as a result of indirect/induced impact
- $113.85 million in wages and salaries
  - $96.77 million earned within Philadelphia
  - $72.58 million is estimated to be earned by Philadelphia residents

- $7.2 million as income tax revenue
  - $3.7 million as wage tax revenue for the City of Philadelphia
  - $3.5 million as income tax revenue for the Commonwealth of Pennsylvania
- $4.34 million as sales tax revenue
  - $1.08 million for City of Philadelphia
  - $3.26 million for the Commonwealth of Pennsylvania
- $5.05 million in business/corporate & real estate tax revenue
  - $3.51 million for City of Philadelphia
  - $1.54 million for the Commonwealth of Pennsylvania

Annual Operating Impact of Hollywood Casino Philadelphia

In addition to the one-time benefits associated with the development and construction of the casino, this project will result in an on-going spending associated with the operation of the facility. The operational expenditures of the casino and the significant out-of-facility spending of casino visits will generate an **estimated annual direct and indirect/induced economic impact of $596.7 million** for the Commonwealth of Pennsylvania. In addition, casino operations will produce:

- 4,390 full time equivalent jobs in the Commonwealth of Pennsylvania
  - 3,500 full-time equivalent jobs as a result of direct impact
  - 890 full-time equivalent jobs as a result of indirect/induced impact
- 3,740 full time equivalent jobs in the City of Philadelphia
  - 3,210 full-time equivalent jobs as a result of direct impact (2,410 residents)
  - 530 full-time equivalent jobs as a result of indirect/induced impact (400 residents)
- $131.94 million in wages and salaries
  - $108.05 million earned within Philadelphia
  - $81.04 million is estimated to be earned by Philadelphia residents
- $8.18 million as income tax revenue
  - $4.13 million as wage tax revenue for the City of Philadelphia
  - $4.05 million as income tax revenue for the Commonwealth of Pennsylvania
- $12.22 million as sales tax revenue
  - $4.3 million for City of Philadelphia
  - $7.92 million for the Commonwealth of Pennsylvania
- $10 million in business/corporate & real estate tax revenue
  - $6.76 million for City of Philadelphia
  - $3.24 million for the Commonwealth of Pennsylvania
- $155.12 million in gaming tax revenue
  - $11.8 million for City of Philadelphia as host fees
  - $143.32 million for the Commonwealth of Pennsylvania

1) *INTRODUCTION*

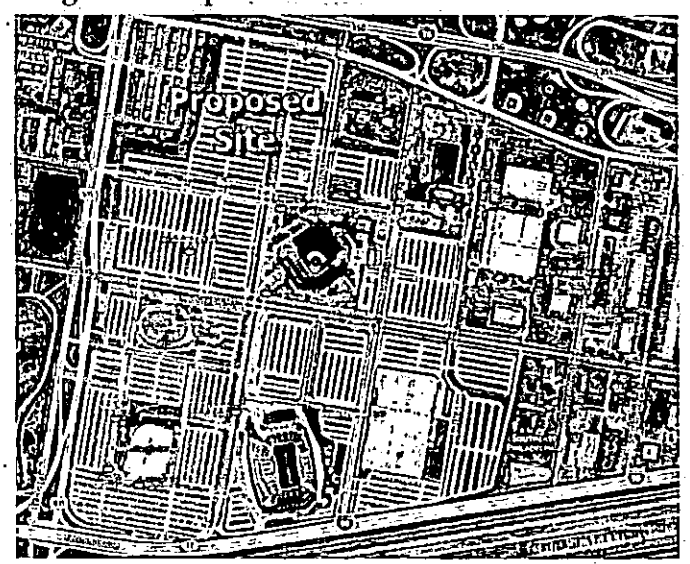
Penn National Gaming, Inc. owns, operates, or has ownership interests in gaming and racing facilities with a focus on slot machine entertainment. The company presently operates 28 facilities in 19 jurisdictions, including Colorado, Florida, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Mississippi, Missouri, Nevada, New Jersey, New Mexico, Ohio, Texas, West Virginia, and Ontario. In Pennsylvania, Penn National operates the Hollywood Casino at Penn National Race Course in Grantville, in addition to off-track wagering facilities located in Chambersburg, Lancaster, Reading, and York.

In response to the Pennsylvania Gaming Control Board's call for applications for Philadelphia's second casino license, Penn National is proposing the Hollywood Casino Philadelphia on the 700 block of Packer Avenue in South Philadelphia (see **Figure 1**). The first phase of the planned casino facility will include:

- 102,000 SF of gaming floor with 2,050 slot machines and 81 table games;
- Steakhouse restaurant/bar (125 seats)
- Noodle bar (70 seats)
- Three meal restaurant (140 seats)
- Four food courts (200 seats)
- Entertainment lounge (180 seats)
- Casino bar (20 seats)
- VIP lounge/bar (40 seats)
- 2,500 SF pre-function room
- 500 SF of retail space

The proposed location is adjacent to the Philadelphia Sports Complex which is comprised of three world-class sports venues (i.e. Lincoln Financial Field, Citizens Bank Park, and the Wells Fargo Center). According to the Sports Complex Special Services District, the Complex "hosts approximately 380 events, 8 million visitors, and 5.5 million vehicle trips each year." Complementing these sports venues is the newly opened XFINITY Live! Philadelphia, which is a dining and entertainment district that's programmed to enhance the visitor experience before and after sports and concert events. The addition of the

Figure 1: Proposed Location



Hollywood Casino Philadelphia in this area will result in significant economic impact for the City of Philadelphia and the Commonwealth of Pennsylvania.

In order to analyze the economic benefits of the Hollywood Casino Philadelphia, Penn National retained Urban Partners to independently assess the economic impacts of the construction and operation of the proposed facility. Our analysis of the economic impact of the Hollywood Casino Philadelphia facility focuses on three primary factors:

1) The initial construction/development period impacts;
2) The direct and indirect economic impact of the casino's on-going operations and the employment generated by this activity; and
3) The tax benefits received by the City of Philadelphia and the Commonwealth of Pennsylvania as a result of the casino.

Section 2 of this report discusses the methodology employed by Urban Partners, including an explanation of the input-output analysis performed using IMPLAN (IMpact analysis for PLANning). In Section 3, the development period impact is discussed, followed by an analysis of the recurring impact from on-going operations of the casino in Section 4. The various components of economic impact (i.e. direct and indirect output, employment, wages, and tax benefits to local and state governments) are included in Sections 3 and 4.

Although additional phases of the casino are planned for the future, the economic impact analysis in this report is limited to the first phase only.

2) *METHODOLOGY*

In order to calculate the potential economic and fiscal impact of the proposed Hollywood Casino Philadelphia on the City of Philadelphia and the Commonwealth of Pennsylvania, Urban Partners employed the IMPLAN (IMpact analysis for PLANning) model.[1] Developed by the U.S. Forest Service's Land Management Planning Unit and the University of Minnesota, IMPLAN utilizes the quantitative economic technique called the input-output model to track the way a dollar injected into one sector is spent and re-spent in other sectors of the economy. Through the use of IMPLAN, the economic impact of a new casino can be traced over multiple rounds of spending in the economy.

The initial round of spending is referred to as the direct impact. This figure is limited to the portion of economic activity that occurs within the local economy. In other words, the expenditures that leave the local economy (e.g. purchases from an out-of-state vendor) are excluded from the figure.

By inputting the initial round of spending into the IMPLAN model, additional effects can be measured in a local economy in two forms: indirect and induced. First, the changes in inter-industry purchases as a result of the direct effect are referred to as the indirect impact. For example, the Hollywood Casino Philadelphia will purchase goods and services from suppliers and vendors, who in turn make purchases of goods and services. Second, the induced effect refers to the impact generated by increased wages as a result of direct and indirect impacts. These wages in turn will pay for local goods and services, creating another round of economic impact. This process continues until leakages eventually stop the cycle.

The magnitude or degree in which the direct impact triggers indirect and induced impacts is referred to as the "multiplier." IMPLAN calculates different multipliers depending on the types of spending that comprises the direct impact, as well as the geographic region that's being studied. For the purposes of this analysis, the study areas are the Commonwealth of Pennsylvania and the City of Philadelphia.

[1] Data and software (IMPLAN system 3.0) furnished by Minnesota IMPLAN Group, Inc. The region data used in the model are for 2010, which are the latest data available. See Appendix A for a technical explanation of the IMPLAN model.

3) *DEVELOPMENT PERIOD IMPACT*

The economic impact analyses in this section are limited to the construction/development period. As shown in **Table 1** below, the total development budget for the Hollywood Casino Philadelphia is $232.9 million, of which $152.5 million is budgeted for hard costs, $62.1 million in furniture/fixtures/equipment, and $18.3 million in soft costs.

Table 1: Total Development Budget (First Phase)

Development Budget		
Construction		$152,500,000
Furniture, fixtures, and equipment		$62,100,000
Soft Costs		$18,300,000
Design & Engineering	$12,800,000	
Other Professional & Admin Costs	$5,500,000	
Total		**$232,900,000**

Source: Penn National

Of this amount, we estimate that $132.175 million can be counted as direct impact for the Commonwealth of Pennsylvania and $122.845 million for the City of Philadelphia:

	Direct Impact Pennsylvania	Direct Impact Philadelphia
• Construction labor[2]:	$61.00 million	$61.00 million
• Materials[3]:	$38.125 million	$38.125 million
• Contractor profit[4]:	$12.20 million	$7.625 million
• FF&E purchases[5]:	$6.21 million	$3.105 million
• Design & engineering[6]:	$10.24 million	$10.24million
• Professional and admin[7]:	$4.4 million	$2.75 million
TOTAL	**$132.175 million**	**$122.845 million**

[2] We apply the industry standard for calculating the labor portion of construction costs (40% of overall construction costs). All economic activity associated with construction labor will occur in the City of Philadelphia.

[3] We apply the industry standard for calculating the materials portion of construction costs (50% of overall construction costs). We estimate that 50% of construction materials purchases will occur in the City of Philadelphia.

[4] We apply the industry standard for calculating the contractor profit portion of construction costs (10% of overall construction costs). We estimate that 80% of the construction contracts will be awarded to Pennsylvania based companies and 50% of the contracts will be awarded to Philadelphia based companies.

[5] The vast majority of FF&E purchases are specialized gaming equipment that's manufactured predominantly in the State of Nevada. We estimate that 10% of FF&E purchases will be made in the Commonwealth of Pennsylvania and 5% will be made in the City of Philadelphia.

[6] We estimate that 80% of the design & engineering contracts will be awarded to Philadelphia based companies.

[7] We estimate that 80% of the professional & admin contracts will be awarded to Pennsylvania based companies and 50% of the contracts will be awarded to Philadelphia based companies.

According to IMPLAN, the multiplier for indirect and induced impacts of the development period economic activity is 0.8684 for the Commonwealth of Pennsylvania and 0.5828 for the City of Philadelphia. Applying these multipliers to the direct impact figures, the resulting indirect/induced impact for the Commonwealth of Pennsylvania is $114.781 million, and $71.594 million for the City of Philadelphia.

In total, the development of the Hollywood Casino Philadelphia will result in **$246.96 million in economic impact for the Commonwealth of Pennsylvania**, of which **$194.44 million is the estimated portion for the City of Philadelphia (Table 2)**.

Table 2: Development Period Economic Impact (First Phase)
(All Estimates in Millions)

	Pennsylvania	Philadelphia
Direct Economic Impact	$132.175	$122.845
Indirect/Induced Impact	$114.781	$71.594
TOTAL ECONOMIC IMPACT	**$246.956**	**$194.439**

Source: Urban Partners

3.1) DEVELOPMENT PERIOD EMPLOYMENT IMPACT

The $246.96 million in total economic impact translates into 2,060 full time equivalent jobs – 810 full-time equivalent jobs as a result of direct economic impact and an additional 1,250 full-time equivalent jobs as a result of indirect/induced economic impact. Philadelphia's portion of the employment impact is estimated to be 1,565 fulltime equivalent jobs (see **Table 3**)

Table 3: Development Period Employment Impact

Development Period--Employment Impact	Pennsylvania	Philadelphia
Direct Employment Impact		
Annualized Construction Jobs (FTE)	560	560
Annualized Materials Jobs (FTE)	140	140
Annualized FF&E Jobs (FTE)	35	15
Annualized Professional Jobs (FTE)	75	65
Total Direct Development Period Employment (Annualized FTE)	**810**	**780**
Indirect/Induced Employment Impact	**1,250**	**785**
Total Employment Impact (Annualized FTE)	**2,060**	**1,565**

Source: Urban Partners

3.2) *DEVELOPMENT PERIOD TAX REVENUE IMPACT*

Table 4 below shows the estimated amount of tax benefits during the development period. The Hollywood Casino Philadelphia will generate approximately $16.58 million in tax revenues during this period--$8.28 million in increased tax revenue for the City of Philadelphia and $8.29 million for the Commonwealth of Pennsylvania[8].

Table 4: Summary of Development Period Tax Benefits

	For City of Phila	For State of PA	Total City & State
Taxes on Wages & Salaries	$3,697,000	$3,495,000	$7,192,000
Sales & Hotel Taxes	$1,080,000	$3,257,000	$4,337,000
Business Privilege & Net Profits Taxes	$1,464,000		$1,464,000
Real Estate Taxes Paid on Business Property	$1,353,000		$1,353,000
Use & Occupancy Taxes Paid on Business Property	$688,000		$688,000
State Corporate & Other Business Taxes		$1,541,000	$1,541,000
Total Annual Tax Benefits	**$8,282,000**	**$8,293,000**	**$16,575,000**

Source: Urban Partners

The 2,060 full-time equivalent jobs supported directly and indirectly by the development of the Hollywood Casino Philadelphia are estimated to generate wages and salaries of approximately $113.9 million (see **Table 5** on the following page). These estimates of wage and salary impact were derived using industrial sector factors developed as part of the IMPLAN analysis adjusted to 2012 dollars.

Of this $113.85 million in wages and salaries, $96.77 million is estimated to be earned within Philadelphia and $72.58 million is estimated to be earned by Philadelphia residents. In terms of tax revenue, this employment activity is estimated to generate $3.7 million as wage tax revenue for the City of Philadelphia and another $3.5 million as income tax revenue for the Commonwealth of Pennsylvania.

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[8] The following are the current tax rates for the City of Philadelphia and the Commonwealth of Pennsylvania:

City of Philadelphia

- Wage tax: 3.928% for city residents; 3.4985% for non-residents.
- Sales tax: 2%.
- Business privilege tax: 1.415 mills on gross receipts and 6.45% on taxable net income (we assume net income is 10% of gross receipts).
- Net profits tax: wage tax rates on net income less 60% of net profits portion of the Business Privilege Tax.
- Real estate tax: 9.432% on assessed value.
- Use and occupancy tax: $5.51 per annum per $100 of assessed value.

Commonwealth of Pennsylvania

- Income tax: 3.07%
- Sales tax: 6%
- Corporate net income tax: 9.9%

Table 5: Development Period Wage & Salary Impacts; Taxes on Wages and Salaries

(All Estimates in Millions)

	Within Pennsylvania	Within Philadelphia	Philadelphia Residents	Non Phila Residents
Direct Wage & Salary Impacts				
Direct Construction Wages & Salaries	$61.00	$61.00	$45.75	$15.25
Direct Material Jobs Wages & Salaries	$4.77	$4.77	$3.58	$1.19
Direct FF&E Jobs Wages & Salaries	$1.18	$0.50	$0.38	$0.13
Direct Professional/Soft Cost Wages & Salaries	$4.44	$3.83	$2.88	$0.96
Indirect/Induced Wage & Salary Impacts	$42.46	$26.66	$20.00	$6.67
Total Wage & Salary Impacts	**$113.85**	**$96.77**	**$72.58**	**$24.19**
Wage Taxes Paid To City of Philadelphia		**$3.70**	**$2.85**	**$0.85**
Income Taxes Paid To State of Pennsylvania	**$3.50**			

Source: Urban Partners

Additionally, sales taxes resulting directly and indirectly from construction of the Hollywood Casino Philadelphia are estimated to account for another $4.34 million in increased public revenue, including $1.08 million in revenue collected by the City of Philadelphia and $3.26 million in revenue collected by the Commonwealth of Pennsylvania (see **Table 6**).

Table 6: Development Period Sales Taxes

	Total	Total Paid to City of Phila	Total Paid to State of PA
Direct Economic Activity			
Sales Tax on Construction Materials	$3,051,000	$763,000	$2,288,000
Sales Tax on FF&E	$435,000	$62,000	$373,000
Total Sales Taxes on Direct Economic Activity	$3,486,000	$825,000	$2,661,000
Indirect/Induced Economic Activity			
Sales Tax on Taxable Indirect/Induced Economic Activity	$717,000	$121,000	$596,000
Liquor Tax on Indirect/Induced Economic Activity	$13,000	$13,000	
Hotel Tax	$121,000	$121,000	
Total Sales Taxes on Indirect/Induced Economic Activity	$851,000	$255,000	$596,000
Total Sales Taxes	**$4,337,000**	**$1,080,000**	**$3,257,000**

Source: Urban Partners

The for-profit business activity generated by the development of the Hollywood Casino Philadelphia will spur on an additional $3.51 million in additional tax revenue for the City of Philadelphia and $1.54 million for the Commonwealth of Pennsylvania (see **Table 7**).

Table 7: Development Period Business Tax & Real Estate Tax Benefits

	Within Pennsylvania	Within Philadelphia
Direct For-Profit Business Activity		
Construction Activity	$132,175,000	$106,750,000
FF&E Activity	$6,210,000	$3,105,000
Design, Professional & Administration Activity	$14,640,000	$12,990,000
Total Direct For-Profit Business Activity	$153,025,000	$122,845,000
Indirect/Induced For-Profit Business Activity	$99,286,000	$61,929,000
Total For-Profit Business Activity	$252,311,000	$184,774,000
Annual Business Privilege & Net Profits Taxes Paid		**$1,464,000**
Annual Real Estate Taxes Paid on Business Property		**$1,353,000**
Annual Use & Occupancy Taxes Paid on Business Property		**$688,000**
State Corporate and Other Business Tax Paid	**$1,541,000**	

Source: Urban Partners

4) *ANNUAL ECONOMIC IMPACT*

In addition to the one-time benefits associated with the development and construction of the casino, this project will result in on-going spending associated with the operation of the facility. The benefit of the increased level of expenditures on the region's economy is multiplied by the fact that Philadelphia area vendors and service providers will supply a significant portion of the goods and services consumed in the operation of the Hollywood Casino Philadelphia facility. The incremental income generated by these businesses as a result of the casino's existence will further extend the economic impact on the local economy by inducing these businesses and their employees to increase their overall level of consumption.

The overall economic impact of the Hollywood Casino Philadelphia is derived from two interrelated components:

- The direct impact of the casino's economic activity, and
- The significant out-of-facility spending of visitors to the casino.

These two components of economic activity constitute the **direct economic impact** of the Hollywood Casino Philadelphia. An important third impact—the **indirect/induced economic activity** stimulated by this direct spending—can also be traced through the regional economy.

According to the IMPLAN model, the multipliers for indirect and induced impacts of the on-going operations of the casino are 0.73416 for non-payroll expenditures of the casino and 0.87521 for out-of-facility spending of casino visitors. Applying these multipliers to the direct impact figures[9], the **estimated annual direct and indirect/induced economic impact of the Hollywood Casino Philadelphia is $596.7 million** (see **Table 8**).

Table 8: Annual Economic Impact (in Millions, '12 Dollars)

Direct Economic Impact	
Casino Economic Activity	$351.00
Visitor Spending (Outside Venue)	$ 97.34
Total Direct Economic Impact in Region	$448.34
Indirect/Induced Economic Impact	
Indirect/Induced Impact of Casino Economic Activity	$ 63.17
Indirect/Induced Impact of Visitor Spending (Outside Venue)	$ 85.19
Total Indirect/Induced Economic Impact	$148.36
Total Economic Impact	**$596.70**

Source: Urban Partners

[9] The basis for calculating the indirect/induced impact for casino economic activity is $86.04 million, which is equivalent to casino's annual operating budget less non-payroll expenses that will be spent outside of the Commonwealth of Pennsylvania (10% of non-payroll expenses).

Direct Economic Impact

Urban Partners utilized the projected income and expense statements prepared by Penn National to estimate the direct economic impact generated by the Hollywood Casino Philadelphia. The projected gross revenue from casino operations is approximately **$351 million**[10] and outlays will total $95.6 million annually, which does not include taxes. These outlays include all payroll, management, security, maintenance, utilities, supplies, and services required to operate the facilities over a one-year period. Approximately 50% of this spending is anticipated to flow in the form of payroll expenses (i.e. wages, salaries and fringe benefits), and 90% of the non-payroll expenses will be spent within the Commonwealth of Pennsylvania.

In addition to the economic activity occurring within the confines of the facility, the casino is anticipated to generate significant visitor spending at other area establishments--including hotels, restaurants, and retail establishments. In order to estimate the amount of visitor expenditures outside the casino, the estimated 4.4 million visitors are first categorized into three geographical designations: 1) Philadelphia residents; 2) out-of-town visitors within 1-hr driving distance; and 3) out-of-town visitors outside of the 1-hr driving radius. Then, the estimated percentage of visitors staying overnight at hotels were calculated from survey data collected from previous economic impact studies performed by Urban Partners.[11]

As shown in **Table 9**, we estimate that seven percent of the visitors (or 308,000) are "incidental" casino visitors who may be in town for other primary reasons. For the purpose of calculating the out-of-facility visitor spending, the total number of incidental visitors are excluded from the analysis since the casino is not their primary reason for coming to Philadelphia. Of the remaining 4.092 million visitors, 35% are estimated to be Philadelphia residents and 58% are out-of-town visitors[12].

Table 9: Characteristics of Casino Visitors

Estimated Annual Visitors (First Year)	4,400,000			
Philadelphia Residents	1,540,000	35%		
Non-Philadelphia Residents	2,552,000	58%		
Incidentals (in town for other primary reasons)	308,000	7%		
	Phila Residents	**Non-Phila Residents Within 1 Hr**	**Non-Phila Residents Outside 1 Hr**	**Total**
Visitor Characteristics				
Estimated Annual Visitors	1,540,000	1,914,000	638,000	4,092,000
Visitors Staying Overnight @ Hotel	-	114,840	146,740	261,580
Daytrip Visitors	1,540,000	1,799,160	491,260	3,830,420

Source: Urban Partners

[10] Annual revenue from table games: $62 million. Taxed at 16% (or $9.92 million). The tax rate will decrease to 14% after the first two years of operation. Annual revenue from slot machines: $264 million. Taxed at 55% (or $145.2 million). Food and alcohol sales: $24.85 million (50% will be food). Merchandise sales: $150,000.

[11] The breakdown of the visitors by geography were estimated using the *Report of Findings of the Philadelphia Gaming Advisory Task Force (2005)* and from survey data collected by Urban Partners for previous economic impact studies of entertainment events in the Philadelphia area.

[12] Estimate from the *Report of Findings of the Philadelphia Gaming Advisory Task Force (2005).*

The estimated percentage of out-of-town visitors who will stay overnight at hotels is extrapolated from survey data collected by Urban Partners for previous economic impact studies of entertainment events in the Philadelphia area. For visitors within a 1-hr driving distance, we estimate that 6% will stay overnight at a hotel (114,800 visitors). For visitors who are outside of the 1-hr driving distance, we estimate that 23% will use hotel lodging (146,740 visitors).

The amount of out-of-facility spending is greatly influenced by a visitor's overnight lodging plans. Visitors who stay overnight spend significantly more per person than daytrip visitors. The following is an estimated out-of-facility spending per person based on geographic breakdown and hotel lodging status[13]:

Daytrip Visitors	Dining	Shopping	Hotel	Total
• Philadelphia Residents:	$12.98	$10.63	$0	**$23.61**
• Inside 1-hr Radius:	$14.13	$5.45	$0	**$19.57**
• Outside 1-hr Radius:	$9.33	$8.17	$0	**$17.50**

Hotel Staying Visitors	Dining	Shopping	Hotel	Total
• Philadelphia Residents:	$0	$0	$0	**$0**
• Inside 1-hr Radius:	$22.92	$13.99	$55.43	**$92.35**
• Outside 1-hr Radius:	$9.88	$9.00	$9.00	**$42.52**

As shown below in **Table 10**, the estimated total for hotel expenditures is $10.14 million, the estimated total dining expenditures $54.07 million, and the estimated total shopping expenditures $33.13 million for a **total out-of-facility expenditures of $97.34 million.**

Table 10: Annual Out-of-Facility Commercial Demand

	Phila Residents	Non-Phila Residents Within 1 Hr	Non-Phila Residents Outside 1 Hr	Total
Visitor Characteristics				
Estimated Annual Visitors	1,540,000	1,914,000	638,000	4,092,000
Visitors Staying Overnight @ Hotel	-	114,840	146,740	261,580
Daytrip Visitors	1,540,000	1,799,160	491,260	3,830,420
Hotel Staying Visitor Expenditures				
Hotel Expenditures	-	$6,365,000	$3,770,000	$10,135,000
Dining Expenditures	-	$2,633,000	$1,576,000	$4,209,000
Shopping Expenditures	-	$1,607,000	$1,436,000	$3,043,000
Non-Hotel Staying Visitor Expenditures				
Dining Expenditures	$19,984,000	$25,416,000	$4,462,000	$49,862,000
Shopping Expenditures	$16,377,000	$9,801,000	$3,911,000	$30,089,000
Total Out-of-Facility Expenditures				**$97,338,000**

Source: Urban Partners

[13] From survey data collected by Urban Partners for previous economic impact studies of entertainment events in the Philadelphia area. Responses regarding expenditure patterns were collected for 1,900 visitors (860 surveys responses).

As shown in **Table 8**, taken together, the calculated **total direct economic impact of casino and visitor expenditures on the regional economy that are attributable to the Hollywood Casino Philadelphia is $448.34 million.**

Indirect/Induced Economic Impact

Assessing the indirect/induced economic impact involves tracking the additional rounds of spending within the region induced by businesses and their employees as a result of these direct expenditures. Inputting various expenditures by industry categories into the IMPLAN model, Urban Partners calculated the appropriate multiplier for indirect/induced economic activity resulting from the Hollywood Casino Philadelphia. The indirect/induced multiplier for casino expenditures is 0.73416 and the appropriate multiplier for indirect/induced economic activity resulting from out-of-facility visitor expenditures is 0.87521.

Applying these multipliers to the casino and visitor expenditures of the Hollywood Casino Philadelphia, a **total indirect/induced economic impact** of **$148.36 million** results.

4.1) *EMPLOYMENT IMPACT FROM ON-GOING OPERATIONS*

The Hollywood Casino Philadelphia will result in significant employment within the Commonwealth and within Philadelphia (see **Table 11**). The casino will employ 1,150 full-time equivalent positions and direct non-payroll expenditures by the casino will result in the support of an additional 490 full-time positions. Employment supported off-site by the out-of-facility spending of the casino visitors is estimated at 1,860 full-time equivalent positions.

Taken together, these **direct employment impacts total 3,500 full-time equivalent jobs.** Due to the proposed location of the casino and the fact that much of the visitor spending will be localized, this direct employment impact will be significantly concentrated within Philadelphia. Based on likely Hollywood Casino Philadelphia's employment patterns, the locations of its contractors/suppliers, and the employment patterns within the key industries in which visitor spending will be concentrated, we estimate that 3,210 of the total 3,500 full-time equivalent jobs supported by the Hollywood Casino Philadelphia will be located within Philadelphia and 2,410 full-time equivalent positions will be filled by City residents.

The **indirect employment impact of the casino will result in the creation of 890 full-time equivalent positions**—270 as an indirect result of the casino's expenditures, and 620 due to the indirect impact of visitor spending outside the casino. Because the indirect economic activity resulting from the Hollywood Casino Philadelphia will be more diffuse—both in terms of industrial sectors and location of employment—this employment is believed to be spread more broadly throughout the region. We estimate that approximately 530 of the 890 full-time equivalent positions supported by the indirect economic impact of the Hollywood Casino Philadelphia will be located within Philadelphia and that 400 will be filled by City residents.

Table 11: Permanent Employment Impacts

	Within Pennsylvania	Within Philadelphia	Philadelphia Residents
Direct Employment Impact			
Casino Employees (Annualized FTE)	1,150	1,150	860
FTE Employment Due to Non-Payroll Casino Expenditures within the Region	490	290	220
Employment Due to Visitor Spending (Outside Venue)--Annualized FTE	1,860	1,770	1,330
Total Direct FTE Employment Impact in Region	3,500	3,210	2,410
Indirect/Induced Employment Impact			
Indirect/Induced Impact of Casino Expenditures	270	160	120
Indirect/Induced Impact of Visitor Spending (Outside Venue)	620	370	280
Total Indirect/Induced Employment Impact	890	530	400
Total Employment Impact	**4,390**	**3,740**	**2,810**

Source: Urban Partners

In total, the direct and indirect/induced employment impacts of the Hollywood Casino Philadelphia will be 4,390 full-time equivalent positions, including **3,740 located within Philadelphia and 2,810 held by City residents.**

4.2) *TAX REVENUE IMPACT*

The Hollywood Casino Philadelphia will generate approximately **$185.52 million in tax revenues**–$26.99 million in increased tax revenue for the City of Philadelphia and $158.53 million for the Commonwealth of Pennsylvania (see **Table 12**).

Table 12: Summary of Annual Tax Benefits[14]

	For City of Phila	For State of PA	Total City & State
Taxes on Wages & Salaries	$4,130,000	$4,050,000	$8,180,000
Sales & Hotel Taxes	$4,300,000	$7,920,000	$12,220,000
Business Privilege & Net Profits Taxes	$2,780,000		$2,780,000
Real Estate Taxes Paid on Business Property	$2,670,000		$2,670,000
Use & Occupancy Taxes Paid on Business Property	$1,310,000		$1,310,000
State Corporate & Other Business Taxes		$3,240,000	$3,240,000
Gaming Tax - Table Games	$1,240,000	$8,680,000	$9,920,000
Gaming Tax - Slot Machines	$10,560,000	$134,640,000	$145,200,000
Total Annual Tax Benefits	**$26,990,000**	**$158,530,000**	**$185,520,000**

Source: Urban Partners

Wage Tax Revenue Impact

The 4,390 full-time equivalent jobs supported directly and indirectly by the Hollywood Casino Philadelphia are estimated to generate wages and salaries of approximately $131.94 million (see **Table 13**). These estimates of wage and salary impact were derived using industrial sector factors developed as part of the IMPLAN analysis adjusted to 2012 dollars. Of this $131.94 million in wages and salaries, $108.05 million is estimated to be earned within Philadelphia and $81.04 million is estimated to be earned by Philadelphia residents.

Table 13: Annual Wage & Salary Impacts (in Millions)

	Within Pennsylvania	Within Philadelphia	Philadelphia Residents
Direct Wage & Salary Impacts			
Casino Payroll	$40.63	$40.63	$30.47
Wages & Salaries Due to Non-Payroll Casino Expenditures within the Region	$11.92	$7.16	$5.37
Wages & Salaries Due to Visitor Spending (Outside Venue)	$36.04	$34.24	$25.68
Total Direct Wage & Salary Impacts	$88.59	$82.03	$61.52
Indirect/Induced Wage & Salary Impacts			
Indirect/Induced Wage & Salary Impact of Casino Expenditures	$13.66	$8.20	$6.15
Indirect/Induced Wage & Salary Impact of Visitor Spending (Outside Venue)	$29.69	$17.82	$13.37
Total Indirect/Induced Wage & Salary Impacts	$43.35	$26.02	$19.52
Total Wage & Salary Impacts	**$131.94**	**$108.05**	**$81.04**

Source: Urban Partners

[14] See tax rates referenced on page 9.

This employment activity is estimated to generate $4.13 million in wage tax revenue for the City of Philadelphia and another $4.05 million in income tax revenue for the Commonwealth of Pennsylvania (see **Table 14**).

Table 14: Annual Taxes on Wages & Salaries

	Total Paid within PA	Total Paid within Phila	Total Paid to Phila Residents	Total Paid within Phila to Non-Residents
Total Direct Wages & Salaries	$88,590,000	$82,020,000	$61,520,000	$20,510,000
Total Indirect/Induced Wages & Salaries	$43,350,000	$26,020,000	$19,520,000	$6,510,000
Total Wages & Salaries	$131,940,000	$108,040,000	$81,040,000	$27,020,000
Wage Taxes Paid to City of Philadelphia		**$4,130,000**	**$3,180,000**	**$940,000**
Income Taxes Paid to the Commonwealth	**$4,050,000**			

Source: Urban Partners

Sales and Hotel Tax Impact

Additionally, sales and hotel taxes directly and indirectly resulting from the on-site spending of the Hollywood Casino Philadelphia, as well as the out-of-facility spending of casino visitors, is estimated to generate another **$12.2 million in increased public revenue**, including $4.3 million in revenue collected by the City of Philadelphia and $7.9 million in revenue collected by the Commonwealth of Pennsylvania (see **Table 15**).

Table 15: Annual Sales Tax & Hotel Tax Benefits

	Total	Total Paid to City of Phila	Total Paid to State of PA
Direct Economic Activity			
Sales Tax on In-Facility Sales	$2,000,000	$500,000	$1,500,000
Sales Tax on Visitor Shopping (Outside Venue)	$2,650,000	$660,000	$1,990,000
Sales Tax on Visitor Food Spending (Outside Venue)	$3,470,000	$870,000	$2,600,000
Liquor Tax on Visitor Retail Spending (Outside Venue)	$1,080,000	$1,080,000	
Sales Tax on Hotel Rooms	$760,000	$200,000	$560,000
Gasoline Tax	$720,000		$720,000
Hotel Tax	$830,000	$830,000	
Total Sales Taxes on Direct Economic Activity	$11,510,000	$4,140,000	$7,370,000
Indirect/Induced Economic Activity			
Sales Tax on Taxable Indirect/Induced Economic Activity	$580,000	$30,000	$550,000
Liquor Tax on Indirect/Induced Economic Activity	$10,000	$10,000	
Hotel Tax	$120,000	$120,000	
Total Sales Taxes on Indirect/Induced Economic Activity	$710,000	$160,000	$550,000
Total Sales Taxes	**$12,220,000**	**$4,300,000**	**$7,920,000**

Source: Urban Partners

Business and Real Estate Tax Impact

Of the $596.7 million in total direct and indirect economic impact, $398.33 million is estimated to support private for-profit business activity, including $351.41 million in business activity within Philadelphia (see **Table 16**).

Table 16: For-Profit Business Activity Generated (in Millions)

	Within Pennsylvania	Within Philadelphia
Direct For-Profit Business Activity		
For-Profit Business Activity Due to Non-Payroll Casino Expenditures	$195.88	$195.88
For-Profit Business Activity Due to Visitor Spending (Outside Venue)	$97.34	$92.47
Total Direct For-Profit Business Activity	$293.22	$288.35
Indirect/Induced For-Profit Business Activity		
Indirect/Induced For-Profit Business Activity Due to Casino Expenditures	$31.42	$18.85
Indirect/Induced For-Profit Business Activity Due to Visitor Spending (Outside Venue)	$73.69	$44.21
Total Indirect/Induced For-Profit Business Activity	$105.11	$63.06
Total For-Profit Business Activity	**$398.33**	**$351.41**

Source: Urban Partners

This for-profit business activity is estimated to generate $6.76 million in additional tax revenue for the City of Philadelphia and $3.24 for the Commonwealth of Pennsylvania (see **Table 17**).

Table 17: Annual Business Tax & Real Estate Tax Benefits

	Within Pennsylvania	Within Philadelphia
Direct For-Profit Business Activity		
For-Profit Business Activity Due to Non-Payroll Organizational Expenditures	$195,880,000	$195,880,000
For-Profit Business Activity Due to Audience Spending	$97,340,000	$92,470,000
Total Direct For-Profit Business Activity	$293,220,000	$288,350,000
Indirect/Induced For-Profit Business Activity		
Indirect/Induced For-Profit Business Activity Due to Organizational Expenditures	$31,420,000	$18,850,000
Indirect/Induced For-Profit Business Activity Due to Audience Spending	$73,690,000	$44,210,000
Total Indirect/Induced For-Profit Business Activity	$105,110,000	$63,060,000
Total For-Profit Business Activity	$398,330,000	$351,410,000
Annual Business Privilege & Net Profits Taxes Paid		**$2,780,000**
Annual Real Estate Taxes Paid on Business Property		**$2,670,000**
Annual Use & Occupancy Taxes Paid on Business Property		**$1,310,000**
State Corporate and Other Business Tax Paid	**$3,240,000**	

Source: Urban Partners

Gaming Tax Impact

The operations of the Hollywood Casino Philadelphia will result in significant gaming tax revenue. Based on the proposed number of tables games and slot machines (81 and 2,050, respectively), the Hollywood Casino Philadelphia is estimated to generate $143.32 million in gaming tax revenue for the Commonwealth of Pennsylvania, and $11.8 million in host fees for the City of Philadelphia (see **Table 18**).

Table 18: Annual Gaming Tax Benefits

	For City of Phila	For State of PA	Total City & State
Tax on Table Games	$1,240,000	$8,680,000	$9,920,000
Tax on Slot Machines			
State Share		$89,760,000	$89,760,000
Local Share	$10,560,000		$10,560,000
Economic Development and Tourism Fund		$13,200,000	$13,200,000
Horse Racing Fund		$31,680,000	$31,680,000
Total Annual Gaming Tax Benefits	**$11,800,000**	**$143,320,000**	**$155,120,000**

Source: Urban Partners

5) *APPENDIX A: WHAT IS IMPLAN?*

(Adapted from the IMPLAN website)

Created by the Minnesota IMPLAN Group, Inc, the IMPLAN software system helps analysts address questions about economic study and analysis like these:

- How does the local economy function?
- What would the economic consequences of this project be?
- What would the effect of this company/base closure be?

By constructing Social Accounts that describe the structure and function of a specific economy, IMPLAN creates a localized model to investigate the consequences of projected economic transactions in a geographic region. Used by thousands of public and private institutions, IMPLAN is the most widely employed and accepted regional economic analysis software for predicting economic impacts.

IMPLAN Analysis

To ensure accuracy, IMPLAN's data is compiled from a wide variety of sources, and each Social Accounting Matrix is derived from unique local and census information. IMPLAN's data can be modified to accommodate new technologies or specifications of local industries, and is reported in a sectoring scheme roughly corresponding to NAICS.

With the IMPLAN modeling system, analysts can create an impact study which will track the effects of a modeled event on 440 unique sectors in the United States. The result is a detailed summary of economic impacts including changes in jobs, household incomes, tax impacts, and gross regional product. The summary can be used to show the effect of firms moving into an area, special events, introduction of new technologies, recreation and tourism, military base closures, changes in government spending and other similar events.

How IMPLAN works

Social Accounting: IMPLAN's Social Accounting Matrices (SAMs) capture the actual dollar amounts of all business transactions taking place in a regional economy as reported each year by businesses and governmental agencies. SAM accounts are a better measure of economic flow than traditional input-output accounts because they include "non-market" transactions. Examples of these transactions would be taxes and unemployment benefits.

Multipliers: Social Accounting Matrices can be constructed to show the effects of a given change on the economy of interest. These are called Multiplier Models. Multiplier Models study the impacts of a user-specified change in the chosen economy for 440 different industries. Because the Multiplier Models are built directly from the region specific Social Accounting Matrices, they will reflect the region's unique structure and trade situation.

Multiplier Models are the framework for building impact analysis questions. Derived mathematically, these models estimate the magnitude and distribution of economic impacts, and measure three types of effects which are displayed in the final report. These are the direct, indirect, and induced changes within the economy. Direct effects are determined by the Event as defined by the user (i.e. a $10 million dollar order is a $10 million dollar direct effect). The indirect effects are determined by the amount of the direct effect spent within the study region on supplies, services, labor and taxes. Finally the induced effect measures the money that is re-spent in the study area as a result of spending from the indirect effect. Each of these steps recognizes an important leakage from the economic study region spent on purchases outside of the defined area. Eventually these leakages will stop the cycle.

Penn National Gaming, Inc.
Hollywood Casino, Philadelphia
700 Packer Avenue

Utility Availability and Feasibility Report

Prepared For:

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November 7, 2012

Table of Contents

	Page No.
I. Executive Summary	1
II. Introduction and Background Information	2
III. Existing Site Utilities	4
IV. Utility Relocation Approval Process	9
V. Utility Availability & Service Connection Requirements	10
VI. Limitations and Conditions	14
Photographs	15
LIST OF FIGURES:	
Figure 1 – Area Map	19
Figure 2 – Vicinity Map	20
Figure 3 – Conceptual Site Plan	21
Figure 4 – Conceptual Sewer Relocation Plan	22
Figure 5 – Conceptual Water Main Relay Plan	23
Figure 6 – Conceptual Gas Main Relocation Plan	24
Figure 7 – Cross Section View of Packer Avenue	25
Off-Site Utility Relocation Construction Cost Estimate	26
APPENDICES:	
Philadelphia Water Department - Private Cost Contracts	A
Philadelphia Water Department - Developer's Agreement	B

I. Executive Summary

Penn National Gaming in an effort to acquire a gaming license has an option to purchase an approximately 13 acre property, located at 700 Packer Avenue, Philadelphia, PA 19148. Prior to purchase, an investigation into various aspects of the site is necessary to better determine the feasibility of developing a first class gaming and entertainment site. The nature of this study is to review and understand the existing utility facilities in order to preliminarily determine the extent of effort necessary to accommodate the proposed development and to determine the ability of existing utilities to provide service.

From a review of available utility records, we have determined that the proposed development site will be in close proximity to existing water, sanitary sewer, natural gas, telephone, and electrical utility infrastructure facilities. Based on the available information, it is our option that the existing adjacent utility infrastructure is capable of adequately serving the scope and scale of the proposed development. As the project is advanced accurate utility demand projections will need to be made and the proposed utility service connections will need to be made coordinated with the appropriate utility company.

Presently, there is a 60' wide Right-of-Way (Former Geary Street) that bisects the site from Darien Street to 7th Street. This Right-of-Way is reserved for use as a drainage right-of-way by the Philadelphia Water Department (PWD) and contains an existing, active 6'-0" (H) x 7'-0" (W) rectangular R.C. combined sewer that conveys both storm-water and sanitary sewage. According to PWD record plans this sewer as well as the sewers in Darien Street, 7th Street and Packer Avenue adjacent to the site are constructed on timber piles due to poor soil conditions. In addition, this Right-of-Way contains an existing, active 8" water main that connects the existing 12" water main in Darien Street to the existing 12" water main in 7th Street.

For sanitary and storm-water collection services, there are public combined flow sewers in and around the proposed site. In order to avoid the encumbrance of a utility easement traversing the site, it will be necessary to relocate this existing R.C. combined sewer. We anticipate that the existing, active 8" water main that transverses the site within this Right-of-Way can merely be abandoned since there are no active service connections from this main and since it merely provides redundancy with the water distribution system.

In order to accommodate the proposed build out of the site, we have determined that it is feasible to re-route this existing R.C. combined sewer around the property via the public right-of-way of Darien Street and Packer Avenue. However as a result of

this sewer relocation it will also be necessary to relocate the existing 60" diameter RCP sewer in Packer Avenue between Darien Street and 7th Street due to a direct conflict with the relocated sewer. Due to hydraulic considerations, at this time, we recommend that the new sewers in Packer Avenue be reconstructed as a 6'-0" (h) x 7'-0" (w) twin cell reinforced concrete box sewer; however this preliminary sizing will need to be confirmed with the Philadelphia Water Department as the project is progressed. In addition as a result of this sewer relocation it will also be necessary to relocate the existing 12" water main in Packer Avenue between Darien Street and 7th Street due to a direct conflict with the relocated sewer.

It is anticipated that the relocated sewers will need to be constructed on timber piles since all of the existing sewers adjacent to the site are constructed on timber piles according to the PWD record plan information. This will need to be confirmed by soiltesting as the design of these facilities progresses.

The existing 6'-0" (H) x 7'-0" (W) rectangular R.C. combined sewer in the Former Geary Street drainage Right-of-Way would need to either be filled and abandoned or removed as necessary through the site.

Once these Philadelphia Water Department sewer and water facilities are relocated out of the Former Geary Street Drainage Right-of-Way, the Right-of-Way can be stricken and vacated by ordinance of City Council.

Please refer to FIGURE 4 for the proposed alignment of the relocated sewer(s) and FIGURE 7 for a typical section of the relocated sewer in Packer Avenue. FIGURE 5 depicts the abandonment of the existing 8" water main in the Former Geary Street Right-of-Way and the relocation of the existing 12" water main in Packer Avenue.

II. Introduction and Background Information

a.) Penn National Gaming, Inc. in an effort to acquire a gaming license has opted to purchase approximately 13 acre property, located at 700 Packer Avenue, Philadelphia, PA 19148. The property is located in South Philadelphia near the stadium district where numerous entertainment and sports venues make this an ideal location to develop a first class gaming and entertainment facility. Please refer to FIGURE 1 showing the project site with respect to the City of Philadelphia.

b.) The proposed site provides easy access to both Center City Philadelphia and Interstates I-95, and I-76 with minimal impact on the adjacent communities. The site is located less than four (4) miles from Center City Philadelphia and is immediately adjacent to Interstate I-76 and is in close proximity to Interstate

I-95. The site is also located less than eight (8) miles from the Philadelphia International Airport. Generally the commercial / industrial areas of this community are bound by I-76 to the north, I-95 to the south and east, and Broad Street (State Route 611) to the west. The proposed site and its proximity to Center City Philadelphia and I-76 / I-95 is shown on the attached Vicinity Map designated as FIGURE 2.

c.) It is our understanding that the optioned property includes the following parcel:

Address	Total Lot Area
700 Packer Avenue	13.35+/- Acres
TOTAL:	**13.35+/- Acres**

Please refer to FIGURE 3 showing the project site overlaid with a conceptual site plan.

d.) The site is located in the City's Second Council District that is represented by Councilman Kenyatta Johnson. The site is located in the City's 39th ward, which is bound by Broad Street to the West, Mifflin Street to the North, and Delaware River to the East and South.

e.) Historically, the existing site was used as an industrial type of facility. From our research of historical maps of Philadelphia, the site was developed after the 1960's. Prior to that, we believe the existing site was either used as farmland or undeveloped. In addition, we believe the existing site is located directly above or near old creek beds, namely Hollanders and Hay Creeks.

f.) The existing site is occupied by a 120,218 +/- square foot mixed use commercial building which contains an off track betting facility, vacant warehouse space, warehouse space occupied by Packer avenue Foods, a garage used for the installation of taxi radios by Verifone, and office space occupied by Catch Packer Recovery Program and the Pennsylvania Lottery. Additionally, the subject parcel contains a 9,000+/- square foot vacant truck repair garage.

g.) According to elevation data obtained from City Plan #43S, the elevations of the public streets adjacent to the site vary from +9.00 to +12.00 City Datum while the 100-year flood elevation of the Delaware River in this vicinity is elevation +4.29+/- City Datum. (Elevation +0.00 City Datum = Elevation +5.71+/- National Geodetic Vertical Datum of 1929).

The site is located on published Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) panel No. 35 of 45, Community Panel No. 4207570035C with an effective date of May 29, 1981. The FIRM designation for the proposed site is Zone C, defined as areas of minimal flooding.

h.) The site is located in the proximity of the Delaware River. As such, below any fill materials that may have been placed, there is likely an alluvial soil layer that generally consists of fine sand, silt, clay and organic matter. Although no geotechnical investigation has yet been performed on the site in conjunction with this project, it is anticipated that the physical properties of this layer will make it highly compressible when loads are applied. Deposits of compact sands and gravels generally underlie the alluvial soil layer. This general information is confirmed by the available PWD record plans that indicate that the existing sewers in the area are supported by timber piles. Based on available historical information, it is anticipated that groundwater throughout the site will generally be encountered at relatively shallow depths at about 10 feet below the ground surface.

i.) The existing site conditions along Seventh Street, Packer Avenue, and Darien Street are shown in the attached Photographs numbered 1 through 7.

j.) The purpose of this Utility Availability and Feasibility Report is to review and understand the existing utility facilities in order to preliminarily determine the extent of effort necessary to accommodate the proposed development and to determine the ability of existing utilities to provide service.

In order to maximize the area available for proposed development, we have also verified the feasibility of relocating the existing Philadelphia Water Department sewer and water main facilities from the existing 60' wide Former Geary Street Drainage Right-of-Way that bisects the site from Darien Street to 7th Street so that this right-of-way can be stricken and vacated. In addition to confirming the feasibility of relocating this existing sewer and water utility infrastructure; this report also identifies an order of magnitude construction costs for these utility relocations.

III. Existing Site Utilities

a.) We contacted the Pennsylvania One Call System on October 29, 2012 and requested existing underground utility record plan information for the project area from all involved utilities. Record Plans for the following locations were requested:

LOCATION	WARD	PA ONE CALL SERIAL NO.
Packer Ave. from 10th St. to Lawrence St.	39	3030800
Darien St. from Pattison Ave. to Packer Ave.	39	3030800
7th St. from Pattison Ave. to Packer Ave.	39	3030800
Hartranft St. from Darien St. to 11th St.	39	3030800

b.) Based on utility record plans that we have compiled, it is our understanding that following companies presently maintain utilities in proximity to the project site:

1. Philadelphia Water Department
2. Philadelphia Gas Works
3. PECO Energy
4. Verizon
5. Comcast Cable
6. Zayo Bandwidth
8. Philadelphia Streets Department

c.) As part of our utility records compilation, we also obtained the Highway Supervisors Plans for the project area from the Philadelphia Department of Streets. These plans are maintained by the Philadelphia Department of Streets and are basically a compilation of the various utility record plans showing the utilities in a given area. However, these plans may not be 100% accurate as they are not continuously updated.

d.) The Philadelphia Water Department owns and maintains the potable water distribution system as well as the sanitary and storm-water collection systems in the City of Philadelphia. Additional information concerning the Philadelphia Water Department is available via their website at www.phila.gov/water. The following is a summary of the Philadelphia Water Department infrastructure within the project area:

1. Water Distribution System: The water distribution system in the project area is shown in the attached FIGURE 5. In addition to the mains themselves, there are numerous fire hydrants, valves and water service connections in the project area. The project site receives potable water from the Department's Baxter Water Treatment Plant. The Baxter Plant pumps raw water from the Delaware River at a point just north of the Pennypack Creek. The treated water is then pumped from the Lardner's Point Pumping Station and is distributed to various parts of Philadelphia.

2. The project is located in what is known as the East Park District service area. The static water pressure in the water distribution system at this location is reportedly just under 50 PSI, although no pressure tests have yet been performed for this project. The following table summarizes the existing water mains in each of the streets adjacent to the project:

LOCATION	WATER MAIN FACILITIES
Packer Avenue from Darien St. to 7th St.	12" Distribution Main & 24" Transmission Main
Drainage ROW from Darien St. to 7th St.	8" Distribution Main
Darien St. from Packer Ave. to Hartranft St.	12" Distribution Main
S 7th St. from Hartranft St. to Packer Ave.	12" Distribution Main & 20" Transmission Main

Generally all service connections are from the distribution water mains and the transmission water mains feed the distribution mains.

3. Sanitary and Storm-Water Collection System: In this section of the City, the sanitary sewerage and storm-water runoff are combined in a single piping system, as is common in the older areas of the City. The combined sewers in and around the project site are shown on the attached Figure 4. Under normal conditions, intercepting chambers and sewers divert the combined flow to the wastewater treatment plant. However, during severe storm events, there may be a combined sewer overflow into the river via the outfall pipe since the intercepting chambers and sewers cannot accommodate all of the runoff from the larger storms.

Sanitary sewerage from the project site is treated at Philadelphia Water Department's Southeast plant that is located at Pattison and Delaware Avenues in South Philadelphia. In addition to the sanitary sewers and storm-water conduits themselves, there are numerous inlets, manholes, and junction chambers in the project area as are indicated on attached Figure. The following table summarizes the existing sanitary and storm-water collection system facilities in each of the streets adjacent to the project:

LOCATION	SANITARY & STORM-WATER (SW) FACILITIES
Packer Avenue from Darien St. to 7th St.	60" RCP Combined Sewer

Drainage ROW from Darien St. to 7th St.	6'-0" (H) x 7'-0" (W) Rect. R.C. Combined Sewer
Darien St. from Packer Avenue to Hartranft St.	24"/30"/42" RCP Combined Sewers
7th St. from Hartranft St. to Packer Ave.	6'-0" (H) x 8'-0" (W) Rect. R.C. Combined Sewer / 42" RCP Combined Sewer

According to PWD record plans these sewers adjacent to the site are constructed on timber piles due to poor soil conditions.

e.) The Philadelphia Gas Works (PGW) owns and maintains the natural gas distribution system in the City of Philadelphia. The Philadelphia Gas Works is the largest municipally owned natural gas utility in the country. The gas mains that are owned and maintained by the Philadelphia Gas Works range in size from about 1-1/4" to 36" diameter and the pressure ranges from about 5 PSI to 150 PSI. Additional information concerning the Philadelphia Gas Works is available via their website at www.pgworks.com. Based on information received from PGW in response to our PA-One Call request, PGW maintains the following gas main infrastructure adjacent to the project site:

LOCATION	GAS MAIN FACILITIES
Packer Ave. from Darien St. to 7th St.	24" Steel HP Main (150 PSI); 6" Steel HP Main (35 PSI)
Darien St. from Packer Ave. to Hartranft St.	2" Steel HP Main (150 PSI)
7th St. from Hartranft St. to Packer Ave.	12" Steel HP Main (35 PSI)

Please refer to FIGURE 6 showing the existing gas mains adjacent to the project site. It is noted that the existing 6" steel HP gas main (35 PSI) in Darien Street from Packer Avenue to Hartranft Street solely provides service to the existing building structure at 700 Packer Avenue and as such we believe that this section of main should be abandoned in conjunction with the project. The abandonment of this main will also facilitate the sewer reconstruction described in the sewer section of this report.

In addition, to the gas mains described above, there is also an existing 3" steel HP gas service (35 PSI) extending from the 12" gas main in 7th Street approximately ninety (90) feet south of the drainage ROW that traverses the site that provides gas service to the former truck maintenance building that is located on the southerly side of the site. It is anticipated that the new gas service to the casino will be located to the north of this existing gas service

and will extend into the central plant of the new Hollywood Casino. The existing 3" steel HP gas service would then be abandoned.

In summary, we do not believe that any gas mains will need to be relocated to allow for the construction of the proposed Hollywood Casino and that gas service to the Casino can readily be supplied via existing adjacent PGW infrastructure. Gas demand projections for the project and details of the required gas service connections will be coordinated with PGW as the project is advanced.

f.) The PECO Energy Company (PECO), a division of Exelon Energy Corporation owns and maintains the electrical distribution system in the City of Philadelphia. These facilities include both aerial and underground electrical distribution and transmission infrastructure. At this time, PECO Energy has not responded to our PA-One Call request. We have obtained the following PECO infrastructure information from past records near the project site:

LOCATION	FACILITIES
Packer Ave. from Darien St. to 7th St.	20" x 21" Duct Bank; Aerial facilities.
Darien St. from Packer Ave. to Hartranft St.	Unknown
7th St. from Hartranft St. to Packer Ave.	Unknown

g.) Verizon generally owns and maintains the telephone and communications system in the City of Philadelphia. These facilities include both aerial and underground telephone and communications system infrastructure. The following is a summary of the Verizon infrastructure within the project area:

LOCATION	FACILITIES
Packer Ave. from Darien St. to 7th St.	9"x14"& 9" x 9" conduits

h.) Comcast Cable provides cable television and has not yet responded to our PA-One Call request. Therefore, they have not been identified as either having or not having existing facilities within the area.

i.) Zayo Broadband has been identified by PA-One Call as having fiber lines within close proximity to the project site. At this time, Zayo Broadband has not sent us detailed plans of their infrastructure showing size and depth of their line in the area. However, we were able to determine the presence of their fiber line from their website. The following is a summary of the Zayo Broadband facility within the project area:

LOCATION	FACILITIES
7th Street from Packer Ave. to Pattison Ave.	Size & Depth Unknown

j.) The Philadelphia Streets Department generally maintains underground and aerial traffic signal and street lighting infrastructure in the City of Philadelphia as well as the surface mounted street lights and traffic signal facilities. Based on our field view of the project site there are existing traffic signals and street lights facilities in the project area. In addition, we believe that there may be underground street lighting facilities along Packer Avenue, Darien Street, and Seventh Street since some of the existing street lights for those streets are mounted on lighting poles with no aerial feeds. These facilities may need to be relocated or adjusted as necessary to allow for the proposed development.

IV. Utility Relocation Approval Process

a.) As mentioned above, it will be necessary to relocate the existing 6'-0" x 7'-0" R.C. combined sewer and the 8" water main that are located within the Former Geary Street Drainage Right-of-Way that bisects the site from Darien Street to Seventh Street. In order to avoid the encumbrance of having a utility easement within the property, we have used public Right-of-Ways surrounding the property to relocate these lines. In order to reconstruct the 6'-0" x 7'-0" R.C. combined sewer in Packer Avenue, it will be necessary to shift the existing 60" R.C.P combined sewer further northward. This will provide the necessary trench width to construct twin 6'-0" x 7'-0" R.C. combined sewers. Furthermore, the existing 12" water main, in south side of Packer Avenue will be affected by the relocation and so this water main will require relocation as well. We have prepared conceptual utility relocation sketches showing the approximate route of each line as shown in FIGURES 4 and 5.

b.) Although the utility demands from the proposed development are unknown at this time, based on the historic industrial use of the site and area and the size of the existing adjacent utility line particularly the water, sewer and gas facilities, we anticipate that the utilities as they presently exist will be able to meet the demands of the site without significant required improvements. This will be confirmed with each respective utility owner during the design process.

c.) The relocation of any Philadelphia Water Department facilities requires the approval of the Department. If the facility is located within a city street or Philadelphia Water Department Right-of-Way, the Developer is responsible for the design and construction of the relocated facilities. The Philadelphia

Water Department refers to these projects as "Private Cost Contracts". The design of the facilities must be in accordance with Philadelphia Water Department requirement and procedures and the design plans and specifications must be approved by the Department. The general procedure for developing "Private Cost Contracts" is outlined in the attached Philadelphia Water Department publication last revised January 13, 2010 which is included as APPENDIX A.

d.) Once the contract documents are approved, the Developer must enter into a "Developer's Agreement" with the Department. A sample "Developer's Agreement" is included in APPENDIX B. The construction of the facilities must be performed by a contractor that is prequalified by the Department in accordance with the approved plans and specifications. The work is subject to inspection and approval of the Department.

e.) Once the Philadelphia Water Department sewer and water facilities are relocated out of the Former Geary Street Drainage Right-of-Way, the Right-of-Way can be stricken and vacated by ordinance of City Council.

f.) The relocation of any utility within existing street Right-of-Way will require the approval of the Philadelphia Department of Streets. If the facility is located within a city street or Right-of-Way, the Developer is responsible for the design and construction of the relocated facilities. The design of the facilities must be in accordance with Philadelphia Streets Department requirements and procedures, as well as the design requirements and procedures of the respective utility company being relocated. Plans and specifications must be approved by the Department. Also, the Department of Highway Supervisors, a division of the Streets Department must approve the relocation. The Highway Supervisors will review the effect that the relocation will have on other City and utility company facilities in the vicinity. A Highway Occupancy Permit will be issued indicating approval of the new utility location and permitting it to occupy the Right-of-Way.

V. Utility Availability & Service Connection Requirements:

a.) Storm Drainage:

1. As mentioned above, this section of the City has combined sewers which collect both sanitary and storm-water flows. The PWD is responsible for the operation and maintenance of the sewer lines in the vicinity of the site. These combined sewers capture and convey storm-water runoff from roadways and adjacent properties.

2. It is anticipated that any new development at the site would discharge into the existing PWD drainage system to the extent possible. Service connections to the PWD drainage system is allowed via permit. Such connections must comply with PWD regulations as well as the Philadelphia Plumbing Code.

3. Since we anticipate a change to the on-site grading and impervious area coverage, there could be a significant change in the storm-water run-off within the project area as a result of this development. Based on current storm-water management requirements implemented by the PWD as of January 2006, it is anticipated that on site storm-water management will be required. Essentially the regulations require that storm-water management be provided in the form of Water Quality, Channel Protection, Flood Control, and Nonstructural Site Design. The Water Quality and Nonstructural requirements must be met; whereas the other requirements may be exempt. For Water Quality runoff from the site, volume equal to 1" of precipitation over all impervious area must be infiltrated into the ground. For Flood Control, the existing site must provide storm-water detention. The PWD will require that measures be proposed to provide for Water Quality and Nonstructural Site Design such as green roof systems, disconnected impervious surface areas, etc. as means of providing for these criteria. Any waiver from the requirements of these criteria would first require review and approval from the PWD in early design meetings.

4. We anticipate that it would be unlikely that any existing on-site drainage facilities will be able to be re-used and incorporated into the new facility. If such reuse is considered, the condition and hydraulic capacity of these facilities should be investigated prior to any re-use. We suspect that the existing on site drainage systems may not be in optimal operating condition. It has been our experience that the inlets may be filled with debris and the current underground systems are usually silt laden and require cleaning and restoration to bring the operations up to an acceptable level. Therefore, the client should plan for new storm sewer inlets and piping within the site.

5. Any existing on-site drainage facilities that cannot be incorporated into the development plan will need to be abandoned or removed. Any new drainage facilities to be constructed will need to be in accordance with PWD standards and/ or the Philadelphia Plumbing Code.

3. Domestic and fire service connections to the PWD potable water system are allowed via permit. Such connections must comply with PWD regulations as well as the Philadelphia Plumbing Code. Generally once the permit fee is paid, PWD forces will make the connection to the PWD mains for the developer.

4. Proper water meters and backflow prevention facilities will also need to be installed in accordance with PWD regulations, including the Cross-Connection Control Manual. Due to the close proximity of the proposed building structures to the existing mains, it is anticipated that the required meters and backflow prevention facilities will be housed within the building envelop and not within separate meter pits and backflow prevention enclosures on the property.

5. At this time, the static pressure of the adjacent PWD water distribution system has not been confirmed through fire hydrant flow tests. The available flow and pressure would need to be confirmed with PWD prior to determining which main can best supply water for both the domestic and fire suppression needs of the site. Also, the system demands incurred by the site would need to be estimated to help in that determination. The PWD does not guarantee specific water pressures.

d.) Gas Service:

1. The current gas provider at the site is Philadelphia Gas Works (PGW).

2. As outlined above, PGW maintains high pressure 150 PSI and 35 PSI gas mains adjacent to the site. Most likely, gas service for the proposed development would be via the existing 12" steel, 35 PSI HP gas main in 7th Street and would extend into the proposed Central Plant on the site.

3. Presently, when determining reimbursable costs to provide service to a new development, PGW compares the initial construction cost to provide the service against the projected revenue based on the anticipated gas load (i.e. usage) in accordance with Rule 10. The initial cost to the developer to provide the gas service is then determined based on a pre-established formula.

4. If the pressure of the gas service will need to be reduced to approximately 5 psi, then flow through a new pressure regulation station will be necessary.

e.) Electric Service:

1. PECO Energy is the provider of electricity in the project vicinity. At this time, PECO Energy has not responded to our PA-One Call request. We were able to find PECO information for this area from past records. We will need to confirm the accuracy of this information with PECO prior to discussions pertaining to service of the proposed site. From our past records, it seems that PECO Energy may have a 20" x 21" duct bank in Packer Avenue. However, it is unclear if this duct bank is a distribution or transmission facility.

2. Service to the site may be from this duct. Service commitments and point of service availability would need to be determined based on meetings with PECO Energy. Currently, these meetings have not occurred. However, it is noted that the existing site facilities are provided electrical service by PECO.

3. A PECO Service and Meter Application will need to be completed in order to initiate the electrical service request.

f.) Telephone Service:

1. The current telephone service provider at the site is Verizon Communications. Ducts for local service area are present in Packer Avenue; however, the size and ability to service the site are yet unknown and require further investigation with Verizon to determine their availability to service the site. However, it is noted that the existing site facilities are provided telephone service by Verizon.

XI. Limitations and Conditions

a.) No on-site geotechnical field tests or investigations have been conducted at this time. Therefore, based on our past experience on nearby sites and available historical record information, we have made assumptions relative to the foundation support systems for the various utilities, particularly the Philadelphia Water Department's combined flow sewers.

b.) At this time, as noted above, we have not yet received PA-One Call responses from all of the utility companies.

c.) At this time, we have not yet convened any meetings with any of the involved utility companies to review and discuss their specific requirements for the project.

Appendix 35

Provide details of land acquisition costs.

REDACTED

Appendix 36

Provide details of a compulsive or problem gambling plan.

PA Gaming Ventures, LLC will develop and implement a comprehensive Responsible Gaming Plan that meets or exceeds all requirements of Pennsylvania law. An affiliate of the applicant, Mountainview Thoroughbred Racing Association, currently owns and manages a Category 1 casino facility in Grantville, PA. That facility has a comprehensive responsible gaming Plan in place that was most recently approved by the Pennsylvania Gaming Control Board on April 26, 2012 and is attached for your reference. PA Gaming Ventures, Inc. will develop a similar plan for the Hollywood Casino Philadelphia facility modified as necessary to account for differences in the facilities, layout, organization and amenities.

Hollywood Casino Philadelphia

Compulsive & Problem Gambling Plan

Prepared December 14, 2012

REDACTED

Table of Contents

INTRODUCTION **Page**

Goals of the Program 5
Timetable to Implement 5
Individuals Responsible for Implementation and Maintenance of the Plan 5

POLICIES AND PROCEDURES **Page**

Commitment to Train Appropriate Employees 6
Duties & Responsibilities of Employees Designated to Implement or Participate in the Plan 6
Responsibility of Patrons Regarding Responsible Gaming 8
Procedures to Identify Patrons/Employees with Suspected or Known Compulsive or Problem Gamblers Behavior 8
Procedures to Report Suspected or Known Compulsive or Problem Gamblers to Designated Management-Level Employees 8
Procedures for Providing Information to Individuals with Suspected Known Compulsive or Problem Gambling Behavior 9
Procedures to Respond to Patron Requests for Information Related Compulsive and Problem Gambling Behavior 10
Confidentiality of Identity of a Problem Gambler 10
Provision of printed materials educating Patrons about Compulsive and Problem Gambling And to Inform them about treatment services available to Such Gamblers and their families 11
Description of Employee Training Program, Including Materials used and Plan for Annual Periodic Reinforcement Training 11
Certification of Employee Training in Format Approved by the Board 12
Recordation of the Date of Annual Refresher Training for each Employee 12
Estimation of the Cost of Development, Implementation and Administration of the Plan 12
Identification of Treatment and Support Resources for Compulsive and Problem Gambling 13
Procedures to Prevent Underage Gambling 13
Procedures to Prevent an Excluded Person from Gambling 17
Procedures to Prevent a Self-Excluded Person from Gambling 22
Self Exclusion – General 24
Procedures to Prevent an Intoxicated Patron from Gambling General 27
Details of Outreach Program 29
Posting of Board-Approved signs 29
Other Policies and Procedures to Encourage Responsible Gambling 29

EMPLOYEE TRAINING PROGRAM **Page**
Tier I 30
Tier II & III 30
Training on Required Notifications 31
Training on the refusal of wagers and the denial of gaming privileges, including check cashing privileges and comps, to self-excluded individuals 32
Training on the prevention of targeted mailings and advertising to self-excluded individuals 32
Training on the dissemination of materials to patrons explaining self-exclusion options 32
Training on the responsibility to maintain an updated copy of the self-exclusion list and to distribute the list in a timely fashion 32
Confidentiality of self-exclusion list and individuals with suspected or known compulsive or problem gambling 32

SIGNAGE REQUIREMENTS **Page**
Signage Requirements 33

CHECK CASHING **Page**
Check Cashing 34

AMENDMENTS TO THE PLAN **Page**
Amendments 34

NOTIFICATION TO THE DIRECTOR OF THE OCPG **Page**
Notification to the Director of the OCPG 34

REPORTS - ANNUAL SUMMARY **Page**
Annual Summary 34

UNDERAGE GAMBLING/UNATTENDED MINORS **Page**
Access 35
Wagering Prohibitions 35
Forfeiture of Winnings 35
Procedures to Prevent Underage Gambling Including Signage 35
Unattended Minors 35

EXCLUDED PERSONS **Page**
Procedures to Prevent an Excluded Person from Gambling Including Distribution of and Updates to the Exclusion List 36
Individuals believed to meet the criteria for exclusion 37

ADVERTISING & PROMOTIONS **Page**
Advertising....37
Promotions....38
Required Notifications....38
Prohibited Activities....38

VOLUNTARY CREDIT SUSPENSION **Page**
Procedures to ensure that certain individuals may not obtain credit....38

Financial Restriction List **Page 39**

EXHIBITS **Exhibit #**
Responsible Gaming Training Manuals
Tier I....A-1
Tier II....A-2
Tier III....A-3
REDACTED User Guide – Self Exclusion....A-4
CV....A-5
Responsible Alcohol Service Training Programs
TiPS Training Manual....B-1
RAMP Training Manual....B-2
Responsible Gaming Brochures (Displayed on the Casino Floor):
CCGPs "A Message on Responsible Gaming" Brochure....C-1
PGCBs "Self-Exclusion Program" Brochure....C-2
HCP "Self-Exclusion" Brochure....C-3
HCP "Keeping It Fun – A Guide to Responsible Gaming" Brochure....C-4
Self Exclusion and Responsible Gaming Assistance Information:
Your First Step to Change....D-1
PA Department of Health's Gambling Responsibly – Guidelines to the Game....D-2
N.E.F.E. Personal Financial Strategies for the Loved Ones of Problem Gamblers....D-3
PGCB Request for Voluntary Self-Exclusion form....D-4
AGA's Guide to Understanding the Odds....D-5
PA Department of Health's treatment provider list....D-6
Gamblers Anonymous Pennsylvania Directory....D-7
GAM-ANON Pennsylvania Directory....D-8
Responsible Gaming Message Player Cards and Ticket Vouchers....E
Required Signage....F
Responsible Gaming Training Certificates of Completion....G
HCP Self Exclusion Forms....H

COMPULSIVE & PROBLEM GAMBLING PLAN INTRODUCTION

Goals of the program

The program's goal is:

(1) To enhance the employees' and patrons' awareness of problem/compulsive gambling, intoxicated gambling and gambling by underage, excluded and self-excluded individuals,

(2) To facilitate access to information regarding compulsive/problem gambling and treatment; intoxicated gambling; and gambling by underage, excluded and self-excluded individuals including information regarding the placement of an individual on a self-exclusion list,

(3) To establish procedures designed to reduce the chance that an individual with a gambling problem will wager at the facility,

(4) To establish procedures designed to prevent underage, visibly intoxicated, excluded and self-excluded individuals from wagering at the facility,

(5) To establish procedures to ensure that underage, excluded and self-excluded individuals do not receive check cashing privileges; are not rated as a player; do not receive any service, item or discount; and do not collect any winnings or recover any losses as a result of any gaming activity at HCP and

(6) To establish procedures designed to ensure the safety of unattended children within the facility or otherwise on the grounds of HCP.

Timetable to implement

A responsible gaming program has been in place prior to the start of gaming operations. The responsible gaming committee has continued to refine the program and will submit all amendments to the approved compulsive and problem gambling plan for board approval prior to implementation.

Identify individual responsible for implementation and maintenance of plan

As the chairman of Hollywood Casino Philadelphia's responsible gaming committee, the General Manager is responsible for the implementation and maintenance of the plan. The Compliance Manager will be the primary contact person for the Pennsylvania Gaming Control Board for issues related to problem gambling.

Hollywood Casino Philadelphia ("HCP") has established a responsible gaming committee. The committee is comprised of the following permanent members:

- General Manager (Chairman)
- VP of Casino Operations
- VP of Human Resources
- Director of Security
- Director of Food & Beverage
- VP/Chief Financial Officer
- Compliance Manager

Any other personnel the GM believes are necessary to accomplish the goals of the program will be included on the Committee on an ad-hoc basis. In addition to developing and implementing the program, the committee monitors compliance with and the effectiveness of the program.

POLICIES AND PROCEDURES

Commitment to train appropriate employees

As described below, all employees are trained at orientation and receive annual retraining. The orientation training for responsible gaming is a video based program. The annual retraining will either be live or video based. Front of the house employees receive additional training focused on responsible gaming policies and procedures. Security supervisors also receive training regarding how to provide and/or respond to patron requests for information regarding compulsive/problem gambling and treatment and the PGCB and HCP self-exclusion programs and processes and the proper manner to discuss the programs and processes with a patron. Procedural training will be provided within specific departments as is necessary to accomplish the goals of the plan. A copy of the Tier 1 training as well as outlines for the second and third-tier training are attached as **Exhibit A**.

All employees of HCP are expected to be knowledgeable of, and follow approved procedures consistent with, the approved plan. This includes reporting suspected or identified compulsive or problem gamblers to their supervisor or the Security Department ("Security"). Employees are required to keep the identity of an individual suspected of compulsive or problem gambling confidential.

Duties and responsibilities of employees designated to implement or participate in the plan

As noted above, HCP's responsible gaming committee develops, implements and monitors the program and plan. Specific departmental responsibilities are set forth below and throughout this Plan. Employees must be aware of the location of responsible gaming brochures, problem gambling brochures, information on treatment services and self-exclusion information for patrons who request information regarding problem gambling or are suspected of known compulsive or problem gambling, know the toll-free hotline for problem gambling related assistance, and understand reporting procedures. Samples of these brochures are attached as **Exhibit C** and samples of the self-exclusion information and assistance information are attached as **Exhibit D**.

Moreover, employees must refer a patron to a Security supervisor should the patron indicate he/she has a gambling problem. Employees also must contact their supervisor or a Security supervisor should they suspect a patron has a gambling problem based on the signs and symptoms exhibited by the patron. Security supervisors are responsible for knowing how to provide and/or respond to patron requests for information regarding compulsive/problem gambling and treatment and explaining the self-exclusion programs and process to a patron for facilitating the patron's placement on that list.

Specific departmental responsibilities are as follows:

a. ***Security Department*** Security is responsible for the enforcement and reporting of operational efforts which relate to the prevention of underage gambling, intoxicated gambling and gambling by excluded and self-excluded individuals. This includes identifying and removing intoxicated, underage, excluded and self-excluded individuals. Procedures for the Security Department are set forth in this plan.

b. ***Surveillance Department*** Surveillance is responsible for the electronic monitoring of all gaming areas, areas off the gaming floor where slot machine, banking table game or poker contests or tournaments are conducted, and limited portions of the food and beverage areas in the facility. The Director of Surveillance and all surveillance personnel are responsible for monitoring these areas for intoxicated individuals, individuals

appearing under the age of 21 who are on the gaming floor and/or are engaged in gaming activities, and attempting to visually identify excluded and self-excluded individuals. The Surveillance Supervisor or his designee is responsible for ensuring that excluded individuals are entered REDACTED , within 2 business days of HCP's receipt of the list from the PGCB and self-excluded individuals are entered into the REDACTED, and flagged, within 5 business days of HCP's receipt of the list from the PGCB. Procedures for the Surveillance Department are set forth in this plan.

c. ***Slots Department*** The Slots Department is responsible for attempting to recognize suspected compulsive or problem gambling behavior and identification of underage and intoxicated individuals and the prevention of underage and intoxicated gaming. Slot attendants are also responsible for verifying identification of individuals prior to payment of a hand paid jackpot exceeding $1,199, issuing a comp or issuing a players card to ensure that the individual is not underage or on a self-exclusion or exclusion list. Procedures for the Slots Department are set forth in this plan.

d. ***Table Games Department.*** The Table Games Department is responsible for attempting to recognize suspected compulsive or problem gambling behavior and identification of underage and intoxicated individuals and the prevention of underage and intoxicated gaming. Table Games supervisors are also responsible for verifying identification of individuals to ensure that an individual is not underage, and also prior to issuing a comp or players card to ensure that the individual is not on a self-exclusion or exclusion list. Procedures for the Table Games department are set forth in this plan.

e. ***Cashier's Cage/Credit Department/Player Services*** The Cashier's Cage/Credit/Player Services Department is responsible for preventing intoxicated persons and individuals who are underage or who are on the exclusion and self-exclusion lists from cashing checks and conducting transactions at the cage. The Cashier's Cage/Credit/Player Services Department is responsible for ensuring that individuals who are underage, or on the self-exclusion, exclusion, or voluntary credit suspension lists do not receive credit. Moreover, the Cashier's Cage/Credit/Player Services Department is responsible for not allowing a transaction to proceed where an individual cannot produce identification as required herein. The Cashier's Cage/Credit/Player Services Department is also responsible for ensuring underage, excluded, and self-excluded individuals do not receive player cards or player club privileges. Procedures for verification, identification and reporting are set forth in this plan.

f. ***Marketing*** The Marketing Department is responsible for ensuring that no individuals who are underage or who are on the excluded or self-excluded lists receive direct mail marketing materials or participate in marketing promotions. Procedures for Marketing are set forth in this plan.

g. ***Food and Beverage*** The Food and Beverage Department is responsible for preventing the serving of alcohol to visibly intoxicated and underage individuals and for notifying security to prevent persons from gaming after having been determined to be visibly intoxicated. Procedures for Food and Beverage are set forth in this plan.

Additionally, HCP has designated that certain positions must participate in responsible alcohol service training. These positions are:

a. All F&B personnel who serve alcohol or manage those who do
b. All Valet personnel
c. All Security personnel
d. Slot supervisors
e. Table Games supervisors

f. Any position authorized to approve or increase credit lines per HCP's credit policy

Administrative personnel are not included in the above listing. The company will use either RAMP or TIPS for responsible alcohol service training. The determination of which to use will be based on the availability of trainers and the number to be trained for any particular class. A copy of the TIPS training is attached as **Exhibit B-1**. RAMP training materials are attached as **Exhibit B-2**.

Responsibility of the patrons regarding responsible gaming

All patrons are responsible for ensuring that they gamble responsibly. Some strategies that patrons can use to assist themselves in gambling responsibly include:

- Gambling for entertainment purposes only.
- Treating the money lost as the cost of entertainment.
- Setting a dollar limit and sticking to it.
- Setting a time limit and sticking to it.
- Expecting to lose.
- Create balance in your life.
- Avoiding "chasing" lost money.
- Not gambling as a way to cope with emotional or physical pain.
- Becoming educated about the warning signs of problem gambling.

Procedures to identify patrons/employees with suspected or known compulsive and problem gambling behavior

Employees are advised through orientation and annual refresher training of significant behavioral characteristics that may be indicative of a gambling problem. Training materials used to identify patrons/employees with suspected or known compulsive and problem behavior are attached as **Exhibit A-1**

This training seeks to educate employees to be able to recognize some of the potential behavioral, verbal, social, legal, economic and emotional characteristics that may indicate that a patron may have a gambling problem, such as:

- Sudden increase in frequency or amount of play
- Unusual lack of care on maintaining personal appearance and hygiene
- Seeking loans from employees or other patrons
- Begins making irrational wagers, starts chasing losses
- Remains in the casino for very long periods of time
- Becomes emotionally upset
- Becomes self destructive or makes comments that could be in interpreted as suicidal

Compulsive gambling is often referred to as a hidden addiction and therefore, identification of compulsive and problem gambling behavior may be difficult for non-mental health personnel. The inaccurate identification of compulsive and problem gambling can lead to faulty assumptions, violations of privacy, or possibly the assignment of an inaccurate stigmatizing label by a non-professional so employees should not diagnose an individual as having a gambling problem. Employees should, however, be on the lookout for the outward signs of a potential gambling problem and should report any concerns to their supervisor or security personnel.

Procedures to report suspected or known compulsive or problem gamblers to designated management-level employees

If an HCP employee has identified a compulsive or problem gambler (the individual is on a self-exclusion list as verified through the REDACTED) he/she must contact Security immediately. Security will proceed pursuant to the procedures set forth in this plan.

Employees must refer a patron to a Security supervisor should the patron indicate he/she has a gambling problem.

Employees must contact their supervisor or Security immediately should they suspect a patron has a gambling problem. They should describe their specific concerns regarding the behavior exhibited or oral statements made. The report of concern should include (if possible) the patron's name. The concern should never be entered into the REDACTED. The supervisor or Security shall notify a Security supervisor of the matter who shall evaluate the facts and circumstances presented and make a determination if the patron needs to be approached based upon the factors discussed above and in **Exhibit A-1**.

If the Security supervisor believes that an approach is warranted, he shall personally and discreetly approach the patron to suggest a conversation in a private setting. This conversation shall be conducted in a manner that protects the privacy and dignity of the individual. Once in a discreet location, the Security supervisor will articulate the concern and offer alternatives for assistance such as written materials explaining self-exclusion (**Exhibit C**) and problem gambling treatment and assistance resources (**Exhibit D**). The Security Supervisor also is responsible for explaining the self-exclusion programs and processes to a patron and for referring the patron to a Casino Compliance Representative if the patron desires to be placed on the PGCB self-exclusion list. Such encounters will be documented on a security Incident Report.

Procedures for providing information to individuals with suspected or known compulsive or problem gambling behavior

HCP will display the following information at the Security Podium, and at Cashier Cage/Credit/Player Services:

a. CCGPs "A Message on Responsible Gaming" Brochure"(**Exhibit C-1**) (These brochures will also be located at all automated teller machines on property)
b. PGCB Self-Exclusion Program Brochure (**Exhibit C-2**)
c. HCP Self-Exclusion brochure (**Exhibit C-3**)
d. Keeping It Fun – A guide to Responsible Gaming **(Exhibit C-4)**
e. Voluntary Credit Suspension Brochure (Exhibit D-)

In addition to the materials displayed at the above locations, HCP will provide the following information at the Security Podium, Cashier Cage/Credit/Players Services:

a. Your First Step to Change **(Exhibit D-1)**
b. PA Department of Health's *Gambling Responsibly – Guidelines to the Game* (**Exhibit D-2**)
c. National Endowment for Financial Education's *Personal Financial Strategies for the Loved Ones of Problem Gamblers* (**Exhibit D-3**)
d. PGCB Request for Voluntary Self-Exclusion form (**Exhibit D-4**)
e. AGA's Guide to Understanding the Odds (**Exhibit D-5**)
f. PA Department of Health's treatment provider list (**Exhibit D-6**)
g. Gamblers Anonymous Pennsylvania Directory (**Exhibit D-7**)
h. GAM-ANON Pennsylvania Directory (**Exhibit D-8**)

Voluntary Credit Suspension Brochure (Exhibit D-)

i. All employees will be familiar with the location of the information and will be able to direct patrons to the information.

On the back side of all Player Cards and on the back side of all ticket vouchers, HCP shall print the phrase "Gambling problem? Call 1-877-565-2112 for help." (**Exhibit E**)

Security supervisors are responsible for explaining the statewide and HCP self-exclusion programs and processes to a patron and for facilitating the patron's placement on either or both of the lists. The patron will be encouraged to self-exclude through the statewide system. The patron also will be advised that if they choose to self-exclude through the HCP self-exclusion program, they may at any time elect to also be placed on the statewide self-exclusion list. A patron who is on the HCP self-exclusion list who then requests placement on the statewide program will remain on the HCP self-exclusion list until they request to be removed from that list in accordance with the HCP self-exclusion program rules as described in the Penn National Voluntary Self Exclusion brochure (see **Exhibit C-3**). The Security supervisors will direct patrons to the brochures and provide information regarding resources by which the patron may seek assistance regarding gambling problems (**Exhibits C and D**). Patrons opting to be placed on the HCP self exclusion list will be required to sign the completed Hollywood Casino Self Exclusion Form (**Exhibit H**).

Additionally, during orientation training, all employees are advised of the Employee Assistance Program. The EAP is part of each employee's benefits package and is a means by which the employee or any member of the employee's immediate family may seek assistance regarding personal difficulties, whether that difficulty be related financial, legal, marital, familial, psychological or addiction issues (including problem gambling). Through this service, employees and immediate family members may obtain advice and be referred to specific resources that may assist the employee or family member to address a personal issue. Of course, the problem gambling brochures described above also are available to our employees at the locations described herein and also shall be made available at Human Resources.

Procedures to respond to patron requests for information related to compulsive and problem gambling behavior

Employees must be aware of the location of responsible gaming brochures and information (as specified above) to patrons who request information regarding problem gambling. These brochures are available at the Security podium and at Cage/Credit/Players Services. Should a patron indicate they desire additional information, the employee will refer the patron to the Security podium where a Security supervisor will more fully explain the availability of resources referenced in the available brochures and information.

Confidentiality of identity of a problem gambler

Employees shall not discuss or disclose the identity of an individual that he or she suspects has a gambling problem except to the extent it is necessary to report problem or compulsive gambling concerns regarding the patron to a supervisor or as required by a PGCB employee.

Employees with access to the self-exclusion list REDACTED are required to keep the identity of individuals on the list confidential. Additionally, HCP has restricted the number of employees with access to the REDACTED, thereby limiting access to patrons' account information, including their status as a self-excluded individual (if applicable). In addition to the General Manager, Assistant General Manager, VP/Chief Financial Officer, employees of the Slots, Surveillance, Security and IT Departments and those members of the Marketing, Cage/Credit/Players Services, and Finance Departments with PGCB gaming credentials have access to the REDACTED while employees of the Surveillance and Security Departments have access to the REDACTED. Employees of Security, Surveillance, Marketing and the Cage/Credit/Players Services have access to the self-exclusion list, REDACTED

Moreover, our employees are specifically trained regarding the need to handle all such matters with courtesy and discretion and are directed to keep information related to a problem gambler as confidential.

Provision of printed materials educating patrons about compulsive and problem gambling and to inform them about treatment services available to such gamblers and their families.

As noted above, HCP will make available throughout the facility brochures related to problem and compulsive gambling. HCP will display the following information at the Security Podium and Cashier Cage/Credit/Players Services:

a. Keeping it Fun brochure (**Exhibit C-1**)
b. PGCB Self-Exclusion Program Brochure (**Exhibit C-2**)
c. HCP (property only) Self-Exclusion brochure (**Exhibit C-3**)
d. Keeping It Fun – A guide to Responsible Gaming (**Exhibit C-4**)
e. Voluntary Credit Suspension Brochure (Exhibit D-)

In addition to the materials displayed at the above locations, HCP will provide the following information at the Security Podium, Cashier Cage/Credit/Players Services:

a. Your First Step to Change (**Exhibit D-1**)
b. PA Department of Health's *Gambling Responsibly–Guidelines to the Game* (**Exhibit D-2**)
c. National Endowment for Financial Education's *Personal Financial Strategies for the Loved Ones of Problem Gamblers* (**Exhibit D-3**)
d. PGCB Request for Voluntary Self-Exclusion form (**Exhibit D-4**)
e. AGA's Guide to Understanding the Odds (**Exhibit D-5**)
f. PA Department of Health's treatment provider list (**Exhibit D-6**)
g. Gamblers Anonymous Pennsylvania Directory (**Exhibit D-7**)
h. GAM-ANON Pennsylvania Directory (**Exhibit D-8**)
i. Voluntary Credit Suspension Brochure (Exhibit D-)

Employees must be aware of the location of the information and will be able to direct patrons who request information regarding problem gambling to the information. The brochures contain information regarding problem gambling, available resources and self-exclusion options.

On the back side of all Player Cards and on the back side of all ticket vouchers, HCP shall print the phrase "Gambling problem? *Call 1-877-565-2112 for help*." printed on the back (**Exhibit E**). HCP will also post signage consistent with PGCB regulations and as approved in this Plan (**Exhibit F**).

Description of employee training program, including materials used and plan for annual periodic reinforcement training

As identified above and provided as an attachment hereto (**Exhibit A-1**), HCP, in conjunction with the Counsel on Compulsive Gambling in Pennsylvania (CCGP), has developed a Tier I responsible gaming training program for all newly hired employees. This training will be taught in person by a CCGP trainer or will be taught through the viewing of a previously recorded video tape of a live CCGP training program. This training protocol is tracked manually through sign-in sheets and electronically through a system called PolicyTech. Through PolicyTech, the date and type of training are recorded by the Manager of Training & Development or his or her designee. A signed copy of the certificate of completion is kept in a Responsible Gaming Certificate binder in Human Resources and the information recorded through Policy Tech is maintained within the system.

HCP conducts annual responsible gaming refresher training for all employees. The refresher training program will be the same program as is taught to newly hired employees in orientation. A signed copy of the certificate of completion for the annual refresher training is kept in a Responsible Gaming Certificate binder in Human Resources and the information recorded through Policy Tech is maintained within the system.

TIPS and/or RAMP training verification is placed in the employee files by the Manager of Training and Development.

Certification of employee training in format approved by the Board

A signed certificate reflecting successful completion of all responsible gaming training programs is placed in a Responsible Gaming Certificate binder by the Human Resources Department when the employee completes the training session. The certificates in the binder are in alphabetical order, and each year has a different binder; this allows for easy auditing of records. A sample of the certificate for each training tier (Tier 1, 2 & 3) is attached as **Exhibit G**.

Recordation of the date of annual refresher training for each employee

The annual refresher training will be delivered either in person by a CCGP trainer or through the viewing of a video tape of a previously recorded live CCGP training program. This training protocol is tracked manually through sign-in sheets and electronically through a system called PolicyTech. Through PolicyTech, the date and type of training are recorded by the Manager of Training & Development or his or her designee. A signed copy of the certificate of completion is placed in the above described Responsible Gaming Certificate binder by the Human Resources Department and the information is also recorded in Policy Tech

The Human Resources Training Department will monitor the system at least quarterly to ensure that all personnel have successfully completed the annual training.

Estimation of the cost of development, implementation and administration of the plan

As this property is just in the early development stage, total costs to develop, implement and administer the plan is not known for certain, however, based on experience in other jurisdictions we would expect such costs to be between $75,000 and $100,000.

Identification of treatment and support resources for compulsive and problem gambling

The signage posted and the brochures provided to patrons will contain many of the resources available to problem gamblers and their families. The primary resource will be the hotline number (1-877-565-2112), as well as contact information for the Council on Compulsive Gambling of Pennsylvania and the PGCB's website. Additionally, our website (TBD) the Penn National Gaming Inc. website (www.pngaming.com) have responsible gaming links that provide the links to national associations related to problem gambling. Further, the list of community, public and private treatment services, gamblers anonymous programs and similar treatment or addiction therapy programs designed to prevent, treat or monitor compulsive and problem gamblers and to counsel family members is attached as **Exhibit D**. The Compliance Manager will update these lists within two weeks of the start of each quarter if there have been any changes to the lists. Providing this list ***does not*** create a duty for HCP or its employees to refer compulsive and problem gamblers to qualified treatment professionals.

Procedures to prevent underage gambling

All personnel are responsible for identifying individuals who are on the gaming floor, engaging in gaming-related activities or consuming alcohol but appear to be under 21 years of age. All individuals will be carded by security prior to entering the gaming floor if they appear to be under the age of thirty and must produce valid, legally acceptable government issued identification. Security will be the first and primary source for identifying underage individuals entering onto the gaming floor. Security personnel will be at each of the entrances to the gaming floor and also will be assigned as rovers to specific sections of the floor. If patrons do not wish to be repeatedly asked to produce verification of their age/identification, they may elect to have a wristband placed on them by a security officer who has verified their age/identification. Rotating colored bands will be offered to patrons who are of legal age to gamble on the gaming floor and consume alcohol in the Commonwealth of Pennsylvania. HCP reserves the right to verify the ID of a patron even if they are wearing such a wristband.

Persons under the age of twenty-one are prohibited from playing or attempting to play a slot machine or table game at HCP. In addition, persons under the age of twenty-one are prohibited from entering any area of the gaming floor or areas off the gaming floor where slot machine, banking table game or poker contests or tournaments are conducted.

However, an individual 18 years of age or older employed by a slot machine licensee, a gaming service provider, the board or any other regulatory or emergency response agency may enter and remain in any such area while engaged in the performance of the individual's employment duties.

Legally acceptable identification must be government issued and include a photograph and date of birth. The following is a list of legally acceptable identification:

a. A valid photo driver's license issued by the Pennsylvania Department of Transportation or any other state.
b. A valid photo identification issued by the Pennsylvania Department of Transportation or any other state.
c. A valid Armed Forces identification card that contains the holder's photograph.
d. A valid passport or visa which contains the holder's photograph.
e. Any other form of valid government-issued identification containing a photograph of the holder that the Security Department deem sufficient to validate the age and identity of the holder.

Security will not permit an individual who appears to be under the age of thirty to enter or traverse the gaming floor without having presented a valid, legally acceptable form of identification showing that the individual is at least 21 years of age.

Any employee who suspects that an individual who is on the gaming floor, engaging in gaming-related activities or consuming alcohol is under 21 years of age will immediately notify their supervisor or Security. If a supervisor is notified, that person is responsible for immediately notifying Security. Security will enact the security procedures related to underage gambling as set forth below.

Specific departments have duties and responsibilities as set forth below:

a. ***Security Department*** *Security is responsible for the enforcement and reporting of* operational efforts which relate to the prevention of underage gambling.

    1) Prior to entering the gaming floor or areas off the gaming floor where slot machine, banking table game or poker contests or tournaments are conducted, all patrons who appear under the age of 30 will be asked, by security officers, to produce valid and legally acceptable verification of their age/identification.