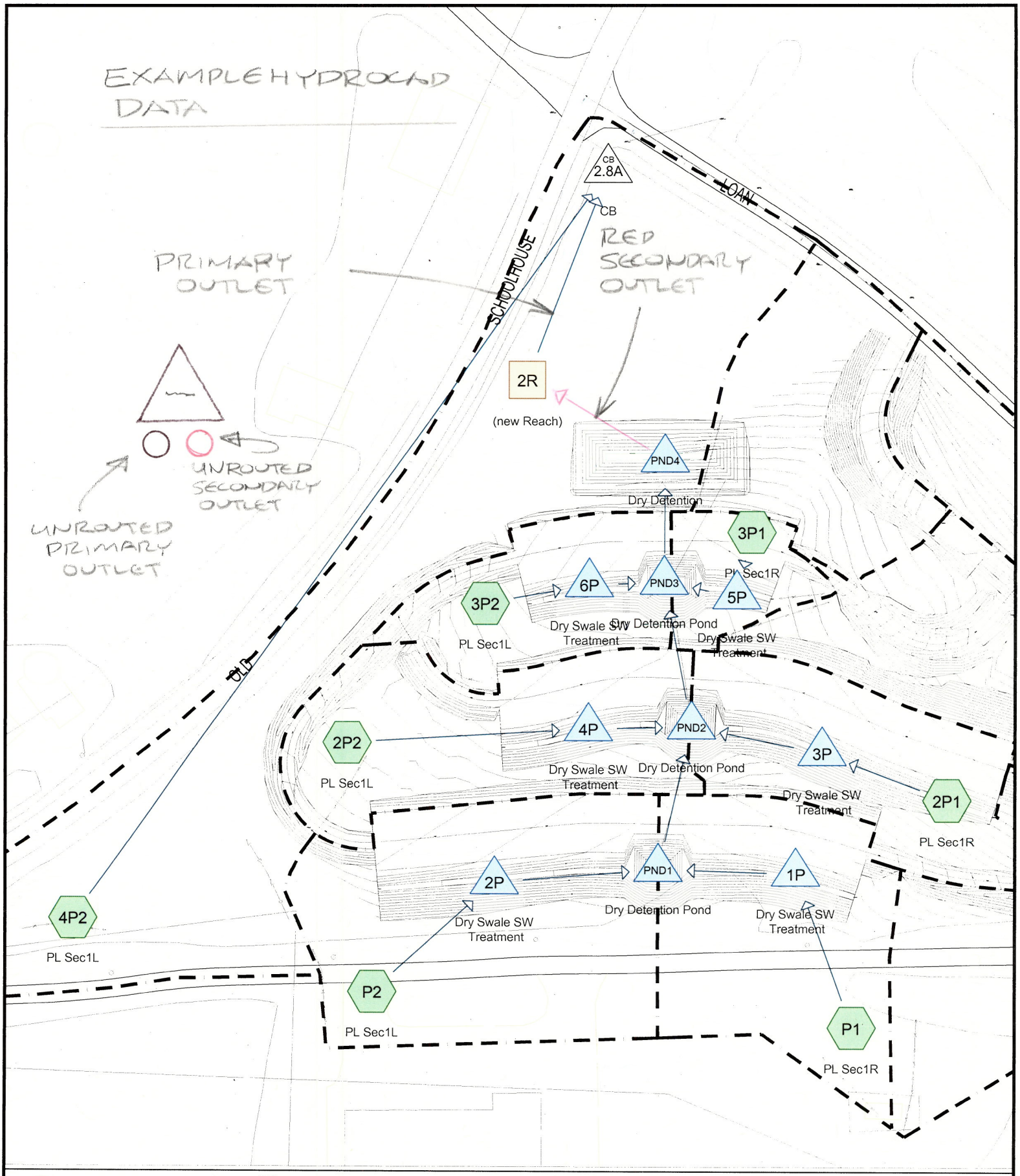
APPENDIX A - H&H MODEL DATA KEY



SUBCAT AREA

POND, CATCH BASIN, OCS

JOINS SMALLER MODELS THROUGH LINKING

Subcat | Reach | Pond | Link

Drainage Diagram for PR East Parking 051109 Tiered Area
Prepared by NYSDEC Operations, Printed 6/26/2009
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PR East Parking 051109 Tiered Area
Prepared by NYSDEC Operations
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.262	70	Woods, Good, HSG C (2P1,2P2,3P1,3P2,4P2)
3.196	74	grassland, good (2P1,2P2,3P1,3P2,4P2,P1,P2)
0.730	98	Paved parking 60x280 (2P2,3P2)
1.050	98	Paved parking 60x360 (4P2,P2)
0.360	98	Paved parking 60x400 (P1)
0.565	98	Paved parking 60x500 (2P1,3P1)
9.162		**TOTAL AREA**

PR East Parking 051109 Tiered Area
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Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
3.262	HSG C	2P1, 2P2, 3P1, 3P2, 4P2
0.000	HSG D	
5.900	Other	2P1, 2P2, 3P1, 3P2, 4P2, P1, P2
9.162		**TOTAL AREA**

PR East Parking 051109 Tiered Area
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NODE LISTING

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

PG

Subcatchment 2P1: PL Sec1R — Runoff Area=39,215 sf 50.00% Impervious Runoff Depth=4.41"
Flow Length=151' Tc=6.0 min CN=86 Runoff=6.72 cfs 0.331 af

Subcatchment 2P2: PL Sec1L — Runoff Area=46,548 sf 45.00% Impervious Runoff Depth=4.20"
Flow Length=228' Tc=10.6 min CN=84 Runoff=6.57 cfs 0.374 af

Subcatchment 3P1: PL Sec1R — Runoff Area=12,477 sf 40.00% Impervious Runoff Depth=4.20"
Flow Length=100' Slope=0.0400 '/' Tc=9.7 min CN=84 Runoff=1.82 cfs 0.100 af

Subcatchment 3P2: PL Sec1L — Runoff Area=27,128 sf 40.00% Impervious Runoff Depth=4.09"
Flow Length=211' Tc=6.5 min CN=83 Runoff=4.32 cfs 0.212 af

Subcatchment 4P2: PL Sec1L — Runoff Area=160,662 sf 15.00% Impervious Runoff Depth=3.28"
Flow Length=1,083' Tc=14.5 min CN=75 Runoff=15.97 cfs 1.009 af

Subcatchment P1: PL Sec1R — Runoff Area=47,567 sf 33.00% Impervious Runoff Depth=3.99"
Flow Length=264' Tc=8.0 min CN=82 Runoff=7.04 cfs 0.363 af

Subcatchment P2: PL Sec1L — Runoff Area=65,517 sf 33.00% Impervious Runoff Depth=3.99"
Flow Length=187' Tc=18.4 min CN=82 Runoff=6.93 cfs 0.500 af

Reach 2R: (new Reach)

Pond 1P: Dry Swale SW Treatment 8 — Peak Elev=1,930.42' Storage=0.106 af Inflow=7.04 cfs 0.363 af
Outflow=6.15 cfs 0.359 af

Pond 2.8A: CB — Peak Elev=1,894.97' Inflow=15.97 cfs 1.009 af
Outflow=15.97 cfs 1.009 af

Pond 2P: Dry Swale SW Treatment — Peak Elev=1,930.38' Storage=0.160 af Inflow=6.93 cfs 0.500 af
Outflow=5.49 cfs 0.493 af

Pond 3P: Dry Swale SW Treatment — Peak Elev=1,922.62' Storage=0.159 af Inflow=6.72 cfs 0.331 af
Outflow=2.80 cfs 0.323 af

Pond 4P: Dry Swale SW Treatment — Peak Elev=1,922.85' Storage=0.098 af Inflow=6.57 cfs 0.374 af
Outflow=6.06 cfs 0.370 af

Pond 5P: Dry Swale SW Treatment — Peak Elev=1,918.01' Storage=0.024 af Inflow=1.82 cfs 0.100 af
Outflow=1.73 cfs 0.099 af

Pond 6P: Dry Swale SW Treatment — Peak Elev=1,918.22' Storage=0.058 af Inflow=4.32 cfs 0.212 af
Outflow=3.99 cfs 0.210 af

Pond PND1: Dry Detention Pond — Peak Elev=1,930.80' Storage=12,371 cf Inflow=8.37 cfs 0.852 af
Outflow=1.34 cfs 0.797 af

Pond PND2: Dry Detention Pond — Peak Elev=1,920.34' Storage=5,628 cf Inflow=9.84 cfs 1.490 af
Outflow=4.45 cfs 1.435 af

Pond PND3: Dry Detention Pond — Peak Elev=1,916.13' Storage=6,135 cf Inflow=9.20 cfs 1.744 af
Primary=4.54 cfs 1.689 af Secondary=0.00 cfs 0.000 af Outflow=4.54 cfs 1.689 af

Pond PND4: Dry Detention — Peak Elev=1,914.13' Storage=645 cf Inflow=4.54 cfs 1.689 af
Outflow=4.47 cfs 1.689 af

TOTALS → **Total Runoff Area = 9.162 ac Runoff Volume = 2.888 af Average Runoff Depth = 3.78"**
70.48% Pervious = 6.458 ac 29.52% Impervious = 2.705 ac

SUBCATCHMENT EXAMPLE

PR East Parking 051109 Tiered Area
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Summary for Subcatchment 2P1: PL Sec1R

SUMMARY FOR EACH NODE

Runoff = 6.72 cfs @ 11.97 hrs, Volume= 0.331 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	19,608	98	Paved parking 60x500
*	17,646	74	grassland, good
	1,961	70	Woods, Good, HSG C
	39,215	86	Weighted Average
	19,607		Pervious Area
	19,608		Impervious Area

CN WEIGHING

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	72	0.0764	2.46		**Sheet Flow, SHT** Smooth surfaces n= 0.011 P2= 4.00"
0.2	79	0.0190	6.68	30.07	**Channel Flow, Roadside Drainage Ditch** Area= 4.5 sf Perim= 7.4' r= 0.61' n= 0.022 Earth, clean & straight
0.7	151	Total, Increased to minimum Tc = 6.0 min			

TC CALCULATION

Summary for Subcatchment 2P2: PL Sec1L

Runoff = 6.57 cfs @ 12.02 hrs, Volume= 0.374 af, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	20,947	98	Paved parking 60x280
*	11,637	74	grassland, good
	13,964	70	Woods, Good, HSG C
	46,548	84	Weighted Average
	25,601		Pervious Area
	20,947		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	38	0.0658	2.04		**Sheet Flow, Upper end SHT** Smooth surfaces n= 0.011 P2= 4.00"
9.9	62	0.0403	0.10		**Sheet Flow, SHT IN WOODS** Woods: Light underbrush n= 0.400 P2= 4.00"
0.3	71	0.0775	4.18		**Shallow Concentrated Flow, SCF** Grassed Waterway Kv= 15.0 fps
0.1	57	0.0614	10.57	47.57	**Channel Flow, OCF** Area= 4.5 sf Perim= 7.4' r= 0.61' n= 0.025 Earth, clean & winding
10.6	228	Total			

TC TOTAL

Summary for Subcatchment 3P1: PL Sec1R

Runoff = 1.82 cfs @ 12.01 hrs, Volume= 0.100 af, Depth= 4.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

POND EXAMPLE

PR East Parking 051109 Tiered Area
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Runoff = 6.93 cfs @ 12.10 hrs, Volume= 0.500 af, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr Q10 Rainfall=6.00"

	Area (sf)	CN	Description
*	21,621	98	Paved parking 60x360
*	43,896	74	grassland, good
	65,517	82	Weighted Average
	43,896		Pervious Area
	21,621		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	100	0.0034	0.09		**Sheet Flow, SHT** Grass: Short n= 0.150 P2= 4.00"
0.6	87	0.1379	2.60		**Shallow Concentrated Flow, SSC to DS** Short Grass Pasture Kv= 7.0 fps
18.4	187	Total			

Summary for Reach 2R: (new Reach)

[40] Hint: Not Described (Outflow=Inflow)

Routing by Stor-Ind+Trans method

Summary for Pond 1P: Dry Swale SW Treatment

Inflow Area = 1.092 ac, 33.00% Impervious, Inflow Depth = 3.99" for Q10 event
Inflow = 7.04 cfs @ 11.99 hrs, Volume= 0.363 af
Outflow = 6.15 cfs @ 12.04 hrs, Volume= 0.359 af, Atten= 13%, Lag= 2.6 min
Primary = 6.15 cfs @ 12.04 hrs, Volume= 0.359 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,930.42' @ 12.04 hrs Surf.Area= 0.061 ac Storage= 0.106 af
Flood Elev= 1,931.50' Surf.Area= 0.080 ac Storage= 0.182 af

Plug-Flow detention time= 252.6 min calculated for 0.359 af (99% of inflow)
Center-of-Mass det. time= 246.1 min (1,053.9 - 807.7)

STORAGE VOL

Volume	Invert	Avail.Storage	Storage Description
#1	1,927.50'	0.182 af	**5.00'W x 120.00'L x 4.00'H Prismatoid Z=2.5**

Device	Routing	Invert	Outlet Devices
#1	Primary	1,927.00'	**6.0" x 24.0' long Culvert** CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 1,926.50' S= 0.0208 '/' Cc= 0.900 n= 0.009 PVC, smooth interior
#2	Device 1	1,927.50'	**1.0" Horiz. Horizontal Orifice** Limited to weir flow C= 0.600
#3	Device 2	1,927.75'	**0.8" Vert. Vertical Orifice X 3.00 columns** X 4 rows with 3.0" cc spacing C= 0.600
#4	Primary	1,929.50'	**Rock Dam Custom Weir, C= 2.99** Head (feet) 0.00 1.00 2.00 Width (feet) 0.00 5.00 25.00

0.00 EL CORRESPONDS TO INVERT OF 1,929.50'

-OCS

Primary OutFlow Max=6.13 cfs @ 12.04 hrs HW=1,930.42' (Free Discharge)
- **1=Culvert** (Passes 0.04 cfs of 1.33 cfs potential flow)
  - **2=Horizontal Orifice** (Orifice Controls 0.04 cfs @ 8.23 fps)
    - **3=Vertical Orifice** (Passes 0.04 cfs of 0.30 cfs potential flow)
- **4=Rock Dam Custom Weir** (Weir Controls 6.09 cfs @ 2.87 fps)

LIMITING CONTROL FOR FLOW TO 2

1 2 3

FLOW ROUTING PATTERN; 3 FLOWS TO 2, 2 FLOWS TO 1 ILLUSTRATES

Belleayre UMP/DEIS Stormwater Management System - Calculations Table

Location: **Existing Mountain Areas Composite Curve Number "Cn" Calculations**
Pre-Development Conditions

Location: Existing Subcatchment Areas
Print: 12/2/2009
Rev: 12/1/09

MAY NEED REVISION

SUBCATCHMENT TABLE										
No.	A (Acres)	Cn (Weighted) (70Wds/74 Grs/98	% Woodlnd	Design Pt	Drainage Area (sf)	Drainage Area (ac)	Grass Area (sf) CN=74	Woods (sf) CN=70	Parking/Roofs (sf) CN=98	WQv @1.3" Acre-Ft
1.10	60.34	71	68		2,628,272.00	60.34	847,348.00	1,780,924.00		1.31
1.20	139.28	71	96		6,067,034.00	139.28	265,370.00	5,801,664.00	76,000.00	3.02
1.21	2.28	70	100		99,189.00	2.28	0.00	99,189.00		0.05
1.30	39.25	70	94		1,709,564.00	39.25	108,084.00	1,601,480.00		0.85
1.40	75.57	71	87		3,291,879.00	75.57	439,995.00	2,851,884.00		1.64
1.50	96.99	72	61		4,225,008.00	96.99	1,637,278.00	2,587,730.00		2.10
1.60	20.5	70	100		892,910.00	20.50	0.00	892,910.00		0.44
1.70	12.24	70	98		533,363.00	12.24	12,099.00	521,264.00		0.27
1.80	4.71	72	38		204,965.00	4.71	126,626.00	78,339.00		0.10
2.10	80.37	72	55	250	3,501,020.00	80.37	1,576,449.00	1,924,571.00		1.74
2.11	8.12	81	4	250	353,521.00	8.12	232,530.00	12,389.00	108,602.00	0.29
2.12	*36.19*	*71*	*92*	*250*	*1,036,240.00*	*23.79*	*73,348.00*	*951,192.00*	*11,700.00*	*0.52*
2.12.1	*12.94*	*71*	*95*		*563,460.00*	*12.94*	*17,979.00*	*534,749.00*	*10,732.00*	*0.28*
2.13	0.58	70	100	250	25,305.00	0.58	0.00	25,305.00		0.01
2.14	1.71	75	26	250	74,275.00	1.71	47,667.00	19,108.00	7,500.00	0.04
2.15	58.8	73	65	250	2,405,705.00	55.23	696,079.00	1,561,164.00	148,462.00	1.20
2.15.1	*3.98*	*70*	*100*		*173,277.00*	*3.98*	*0.00*	*173,277.00*		*0.09*
2.15.2	*3.89*	*70*	*100*		*169,522.00*	*3.89*	*0.00*	*169,522.00*	*0.00*	
2.15.3	*9.49*	*70*	*98*		*413,237.00*	*9.49*	*5,414.00*	*404,583.00*	*3,240.00*	*0.21*
2.16	3.57	89	0		155,443.00	3.57	61,473.00	0.00	93,970.00	0.23
2.20	593.28	71	72		25,843,401.00	593.28	7,138,503.00	18,704,898.00	40,000.00	12.85
2.30	148.44	57	58		6,465,901.00	148.44	1,396,913.00	3,781,494.00		3.22
2.40	2.92	73	17	250	127,326.00	2.92	105,174.00	22,152.00		0.06
2.50	13.04	93	31	250	568,039.00	13.04	393,316.00	174,723.00	118,233.00	0.34
2.51	0.64	70	96	250	27,663.00	0.64	1,000.00	26,663.00		0.01
2.60	17.56	71	74		765,066.00	17.56	198,492.00	566,574.00		0.38
2.70	7.12	71	83		310,311.00	7.12	53,263.00	257,048.00		0.15
2.80	7.58	71	80		330,377.00	7.58	65,500.00	264,877.00		0.16
2.90										
			REV: 12/1/2009							

Parking Lot Areas and Passengers per Lot Surface Area			
Area Description (1)	Passenge	Busses	Total Lot Area (SF) (2)
Overlook Lodge Upper Parking	312	--	103,897
Overlook Lodge Lower Parking	216	--	84,565
Tomahawk Parking	319	--	108,602
Overlook Road Shoulder Parking	175	--	135,583
Discovery Lodge Bus Parking	--	47	93,970
Discovery Lodge Parking	305		118,233
Total=	1,327	47	644,850
(2) used for [A paved/impervious] column			

Italic numbers indicate information updated on 12/01/09

Projects\03-2120\UMP Drawings 2008 Draft\[RJP UMP Drawing Data Link Spreadsheet.xls]Subcats

EXISTING AREAS
Cn CALCULATION