JPS ENGINEERING
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June 22, 2026

El Paso County Planning and Community Development Department
2880 International Circle
Colorado Springs, CO 80910

SUBJECT: Araco Concrete (PPR-1950)
Engineer's Certification Letter – Permanent Control Measures

Ladies and Gentlemen:

Drainage Permanent Control Measures (PCM's) for this project include one private Detention Basin (Detention Basin A1). The constructed facilities provide the required storage volume and meet the required release rates, as documented by the attached MHFD design forms. The As-Built drawings accurately depict the installation of the PCM improvements and verify that adequate detention volume has been provided.

Based upon information gathered from periodic site visits to the project, JPS Engineering, Inc. is of the opinion that the Permanent Control Measures have been constructed in general compliance with the approved design plans as filed with El Paso County.

The site and adjacent properties (as affected by work performed under the County permit) appear to be stable with respect to settlement and subsidence, sloughing of cut and fill slopes, revegetation or other ground cover, and the improvements (public improvements, common development improvements, site grading and paving) meet or exceed the minimum design requirements.

Sincerely,
JPS Engineering, Inc.



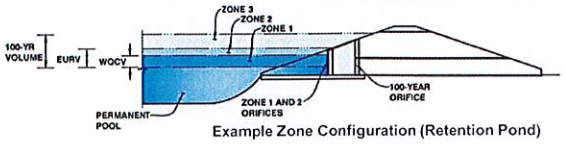
John P. Schwab, P.E.
Colorado P.E. No. 29891

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)

Project: ARACO CONCRETE

Basin ID: A1 - As-Built (5/26)



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.14	0.096	Orifice Plate
Zone 2 (EURV)	5.57	0.275	Orifice Plate
Zone 3 (100-year)	7.31	0.163	Weir&Pipe (Restrict)
Total (all zones)		0.534	

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)
Underdrain Orifice Diameter =	N/A	inches

Calculated Parameters for Underdrain

Underdrain Orifice Area =	N/A	ft^2
Underdrain Orifice Centroid =	N/A	feet

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate =	5.57	ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing =	N/A	inches
Orifice Plate: Orifice Area per Row =	N/A	inches

Calculated Parameters for Plate

WQ Orifice Area per Row =	N/A	ft^2
Elliptical Half-Width =	N/A	feet
Elliptical Slot Centroid =	N/A	feet
Elliptical Slot Area =	N/A	ft^2

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.07	1.93	3.78					
Orifice Area (sq. inches)	0.75	0.75	0.75					

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Not Selected	Not Selected	
Invert of Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	N/A	N/A	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Diameter =	N/A	N/A	inches

Calculated Parameters for Vertical Orifice

	Not Selected	Not Selected	
Vertical Orifice Area =	N/A	N/A	ft^2
Vertical Orifice Centroid =	N/A	N/A	feet

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir (and No Outlet Pipe)

	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	6.41	N/A	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	4.00	N/A	feet
Overflow Weir Grate Slope =	0.00	N/A	H:V
Horiz. Length of Weir Sides =	2.50	N/A	feet
Overflow Grate Type =	Type C Grate	N/A	
Debris Clogging % =	50%	N/A	%

Calculated Parameters for Overflow Weir

	Zone 3 Weir	Not Selected	
Height of Grate Upper Edge, H_t =	6.41	N/A	feet
Overflow Weir Slope Length =	2.50	N/A	feet
Grate Open Area / 100-yr Orifice Area =	93.40	N/A	
Overflow Grate Open Area w/o Debris =	6.96	N/A	ft^2
Overflow Grate Open Area w/ Debris =	3.48	N/A	ft^2

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.20	N/A	ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	18.00	N/A	inches
Restrictor Plate Height Above Pipe Invert =	1.56		inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Zone 3 Restrictor	Not Selected	
Outlet Orifice Area =	0.07	N/A	ft^2
Outlet Orifice Centroid =	0.08	N/A	feet
Half-Central Angle of Restrictor Plate on Pipe =	0.60	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	7.50	ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length =	3.00	feet
Spillway End Slopes =	0.00	H:V
Freeboard above Max Water Surface =	1.00	feet

Calculated Parameters for Spillway

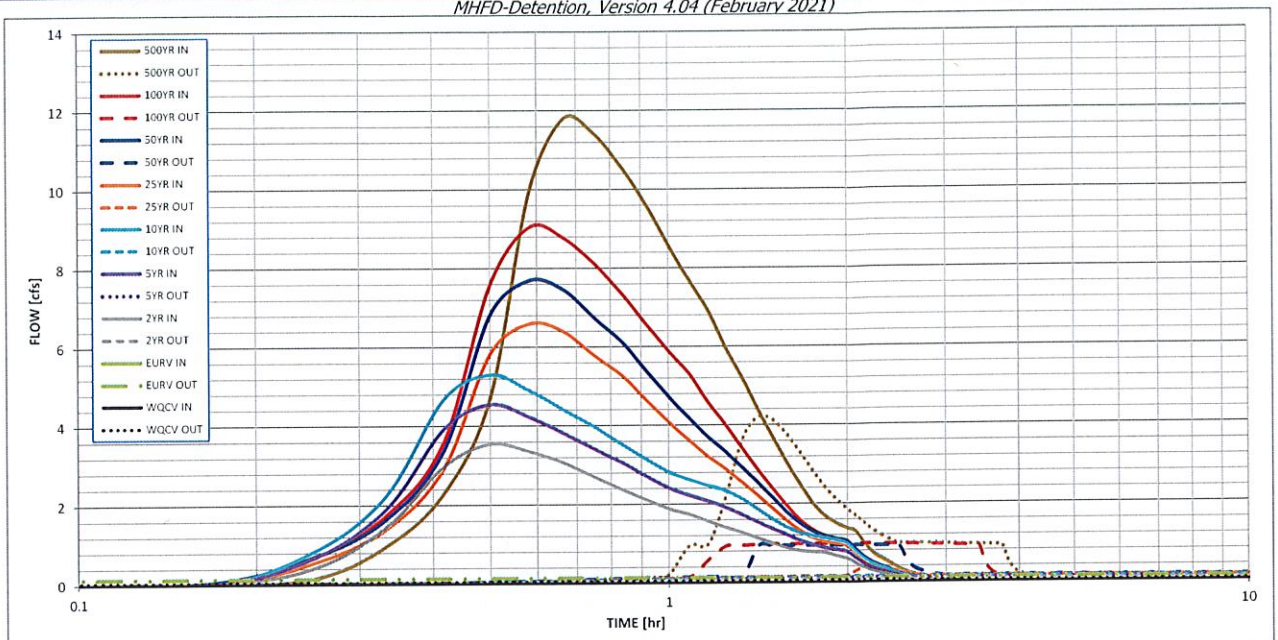
Spillway Design Flow Depth=	1.00	feet
Stage at Top of Freeboard =	9.50	feet
Basin Area at Top of Freeboard =	0.11	acres
Basin Volume at Top of Freeboard =	0.76	acre-ft

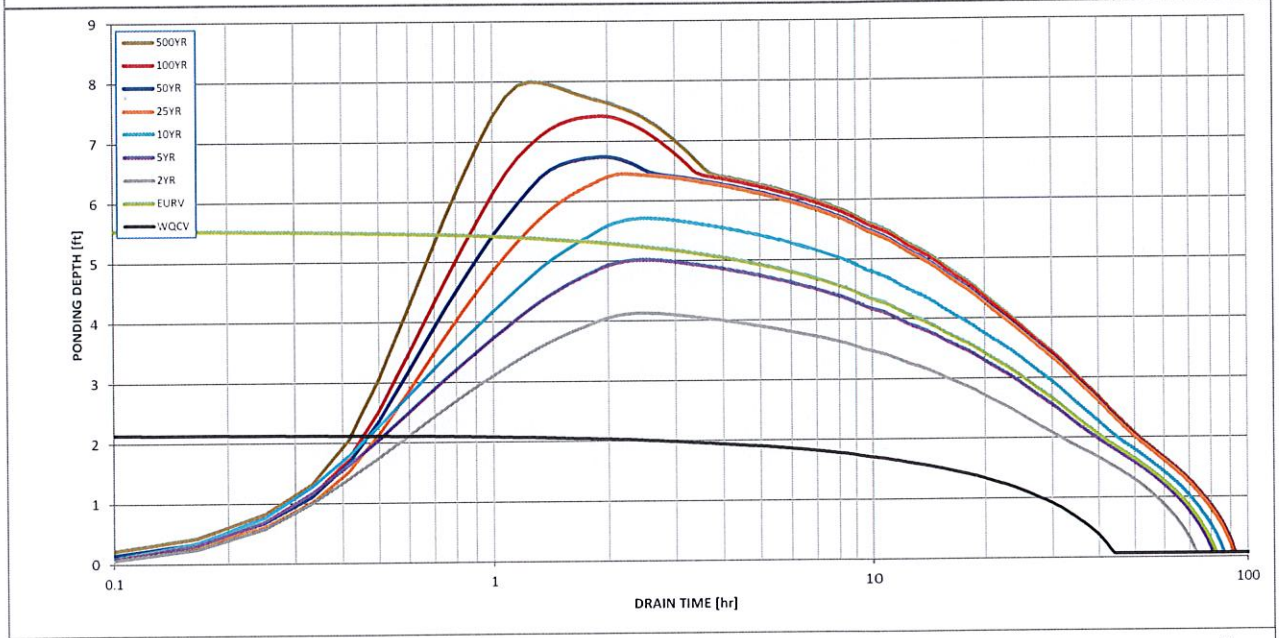
Routed Hydrograph Results — *The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).*

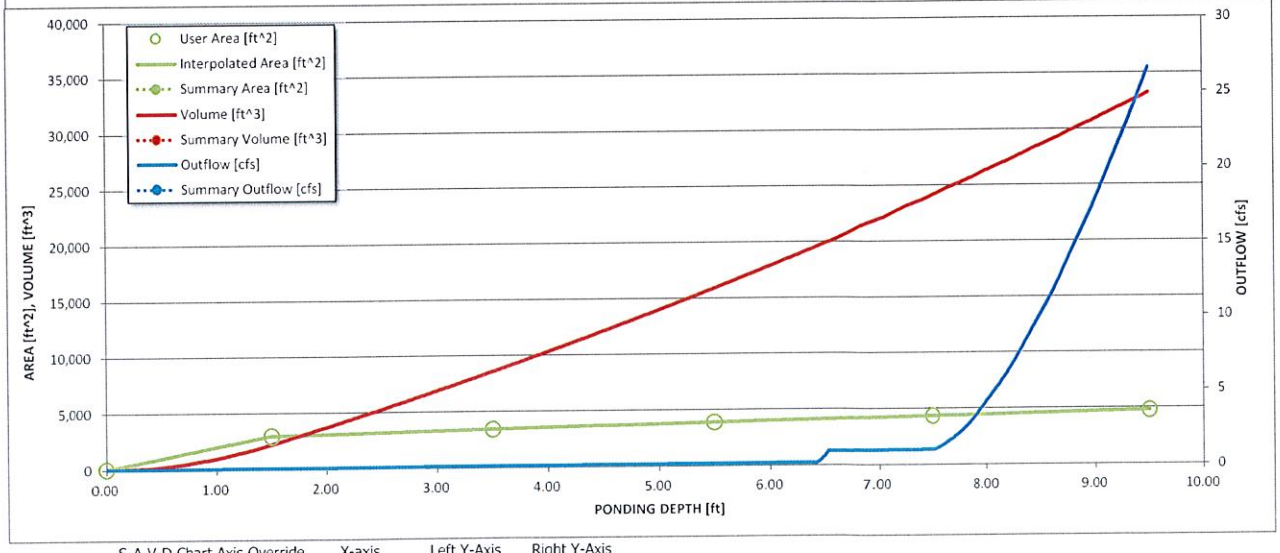
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.14
CUHP Runoff Volume (acre-ft) =	0.096	0.370	0.264	0.343	0.406	0.483	0.557	0.645	0.838
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.264	0.343	0.406	0.483	0.557	0.645	0.838
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A	0.0	0.0	0.1	0.5	0.9	1.5	2.8
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.00	0.01	0.01	0.12	0.25	0.41	0.76
Peak Inflow Q (cfs) =	N/A	N/A	3.5	4.6	5.3	6.6	7.7	9.1	11.8
Peak Outflow Q (cfs) =	0.0	0.1	0.1	0.1	0.1	0.4	0.9	1.0	4.2
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	3.5	2.8	0.8	1.0	0.6	1.5
Structure Controlling Flow =	Plate	Plate	Plate	Plate	Plate	Overflow Weir 1	Outlet Plate 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	0.1	0.1	0.1
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	40	73	66	72	76	80	79	78	76
Time to Drain 99% of Inflow Volume (hours) =	42	78	70	77	82	86	86	86	85
Maximum Ponding Depth (ft) =	2.15	5.56	4.13	5.02	5.71	6.46	6.74	7.42	8.00
Area at Maximum Ponding Depth (acres) =	0.07	0.09	0.08	0.09	0.09	0.09	0.10	0.10	0.10
Maximum Volume Stored (acre-ft) =	0.096	0.370	0.247	0.322	0.383	0.452	0.478	0.545	0.603

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.04 (February 2021)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename: _____

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.15
	0:15:00	0.00	0.00	0.41	0.67	0.83	0.56	0.69	0.68	0.97
	0:20:00	0.00	0.00	1.47	1.92	2.26	1.42	1.66	1.78	2.31
	0:25:00	0.00	0.00	2.99	3.94	4.69	2.95	3.40	3.63	4.74
	0:30:00	0.00	0.00	3.55	4.55	5.30	5.85	6.84	7.62	10.00
	0:35:00	0.00	0.00	3.34	4.23	4.89	6.61	7.70	9.06	11.81
	0:40:00	0.00	0.00	3.05	3.81	4.40	6.40	7.45	8.78	11.43
	0:45:00	0.00	0.00	2.70	3.41	3.96	5.80	6.74	8.13	10.60
	0:50:00	0.00	0.00	2.38	3.07	3.53	5.30	6.15	7.39	9.64
	0:55:00	0.00	0.00	2.11	2.72	3.14	4.67	5.41	6.60	8.61
	1:00:00	0.00	0.00	1.88	2.42	2.82	4.11	4.74	5.91	7.70
	1:05:00	0.00	0.00	1.73	2.22	2.62	3.63	4.18	5.32	6.94
	1:10:00	0.00	0.00	1.56	2.08	2.47	3.22	3.70	4.60	5.98
	1:15:00	0.00	0.00	1.40	1.91	2.33	2.89	3.32	4.02	5.21
	1:20:00	0.00	0.00	1.26	1.72	2.12	2.54	2.91	3.41	4.40
	1:25:00	0.00	0.00	1.12	1.53	1.85	2.22	2.53	2.87	3.69
	1:30:00	0.00	0.00	0.99	1.36	1.60	1.88	2.14	2.39	3.06
	1:35:00	0.00	0.00	0.88	1.22	1.40	1.58	1.79	1.96	2.50
	1:40:00	0.00	0.00	0.80	1.06	1.26	1.32	1.50	1.59	2.03
	1:45:00	0.00	0.00	0.76	0.95	1.18	1.15	1.30	1.35	1.70
	1:50:00	0.00	0.00	0.74	0.89	1.13	1.04	1.18	1.20	1.51
	1:55:00	0.00	0.00	0.66	0.83	1.07	0.98	1.10	1.10	1.38
	2:00:00	0.00	0.00	0.59	0.78	0.99	0.93	1.05	1.03	1.29
	2:05:00	0.00	0.00	0.47	0.61	0.78	0.74	0.83	0.80	1.00
	2:10:00	0.00	0.00	0.37	0.48	0.61	0.57	0.64	0.61	0.76
	2:15:00	0.00	0.00	0.28	0.37	0.47	0.44	0.49	0.46	0.58
	2:20:00	0.00	0.00	0.22	0.28	0.36	0.34	0.38	0.35	0.44
	2:25:00	0.00	0.00	0.17	0.22	0.27	0.26	0.29	0.27	0.33
	2:30:00	0.00	0.00	0.13	0.16	0.20	0.19	0.21	0.20	0.25
	2:35:00	0.00	0.00	0.09	0.12	0.15	0.14	0.16	0.15	0.19
	2:40:00	0.00	0.00	0.07	0.09	0.11	0.11	0.12	0.12	0.14
	2:45:00	0.00	0.00	0.05	0.06	0.08	0.08	0.09	0.08	0.11
	2:50:00	0.00	0.00	0.03	0.04	0.06	0.05	0.06	0.06	0.07
	2:55:00	0.00	0.00	0.02	0.03	0.04	0.04	0.04	0.04	0.05
	3:00:00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.03
	3:05:00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
	3:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00