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July 31, 2026

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

SUBJECT: Fisk Lawnsapes (PPR2338)
Engineer's Certification Letter – Permanent Control Measures

Ladies and Gentlemen:

Drainage Permanent Control Measures (PCM's) for this project include one private Detention Basin (Pond A). The PCM(s) provide the required storage volume and meet the required release rates, storage areas, elevations, and outlet dimensions, as documented by the attached revised MHFD-Detention spreadsheet that shows the as-built conditions. 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



MHFD-Detention, Version 4.05 (January 2022)

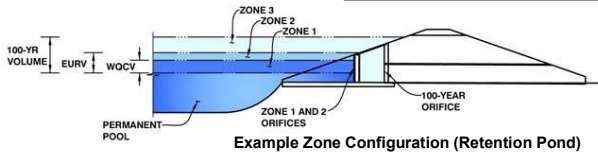
Basin ID: Full-Spectrum Detention Pond A - As-Built

DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.05 (January 2022)

Project: Fisk Lawnscape

Basin ID: Full-Spectrum Detention Pond A - As-Built



Example Zone Configuration (Retention Pond)

	Estimated Stage (ft)	Estimated Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	1.66	0.065	Orifice Plate
Zone 2 (EURV)	2.62	0.100	Orifice Plate
Zone 3 (100-year)	3.59	0.131	Weir&Pipe (Restrict)
Total (all zones)		0.295	

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

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

Calculated Parameters for Underdrain

Underdrain Orifice Area = ft²
Underdrain Orifice Centroid = 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)

Calculated Parameters for Plate

Centroid of Lowest Orifice = 0.00 ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Orifice Plate = 2.62 ft (relative to basin bottom at Stage = 0 ft)
Orifice Plate: Orifice Vertical Spacing = N/A inches
Orifice Plate: Orifice Area per Row = 0.44 sq. inches (diameter = 3/4 inch)

WQ Orifice Area per Row = 3.056E-03 ft²
Elliptical Half-Width = N/A feet
Elliptical Slot Centroid = N/A feet
Elliptical Slot Area = N/A ft²

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)	0.00	0.92	1.83					
Orifice Area (sq. inches)	0.44	0.44	0.44					

	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)

Calculated Parameters for Vertical Orifice

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

Vertical Orifice Area = Not Selected Not Selected ft²
Vertical Orifice Centroid = Not Selected Not Selected feet

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

Calculated Parameters for Overflow Weir

Overflow Weir Front Edge Height, H_o = Zone 3 Weir Not Selected ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length = 3.29 N/A feet
Overflow Weir Grate Slope = 4.00 N/A feet
Horiz. Length of Weir Sides = 0.00 N/A H:V
Overflow Grate Type = 2.50 N/A feet
Debris Clogging % = Type C Grate N/A %

Height of Grate Upper Edge, H_u = Zone 3 Weir Not Selected feet
Overflow Weir Slope Length = 3.29 N/A feet
Grate Open Area / 100-yr Orifice Area = 2.50 N/A feet
Overflow Grate Open Area w/o Debris = 27.66 N/A ft²
Overflow Grate Open Area w/ Debris = 6.96 N/A ft²
Overflow Grate Open Area w/ Debris = 3.48 N/A ft²

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

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

Depth to Invert of Outlet Pipe = Zone 3 Restrictor Not Selected ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter = 0.43 N/A inches
Restrictor Plate Height Above Pipe Invert = 18.00 N/A inches

Outlet Orifice Area = Zone 3 Restrictor Not Selected ft²
Outlet Orifice Centroid = 0.25 N/A feet
Half-Central Angle of Restrictor Plate on Pipe = 0.18 N/A radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Calculated Parameters for Spillway

Spillway Invert Stage = 4.00 ft (relative to basin bottom at Stage = 0 ft)
Spillway Crest Length = 2.00 feet
Spillway End Slopes = 4.00 H:V
Freeboard above Max Water Surface = 1.00 feet

Spillway Design Flow Depth = 0.64 feet
Stage at Top of Freeboard = 5.64 feet
Basin Area at Top of Freeboard = 0.22 acres
Basin Volume at Top of Freeboard = 0.68 acre-ft

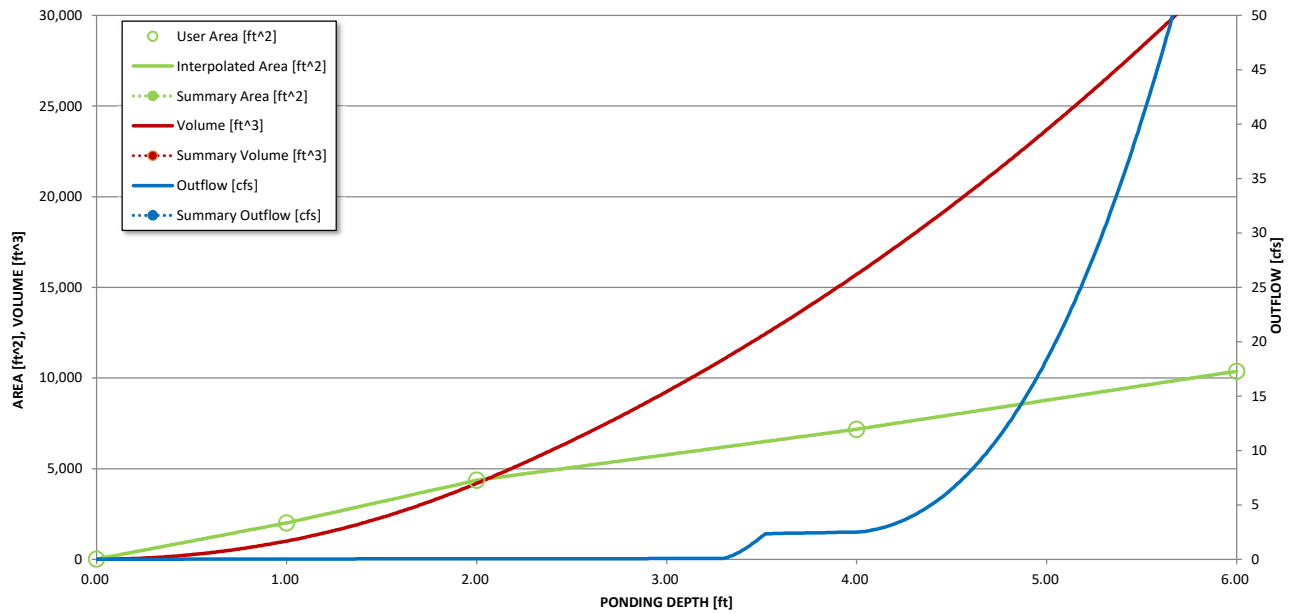
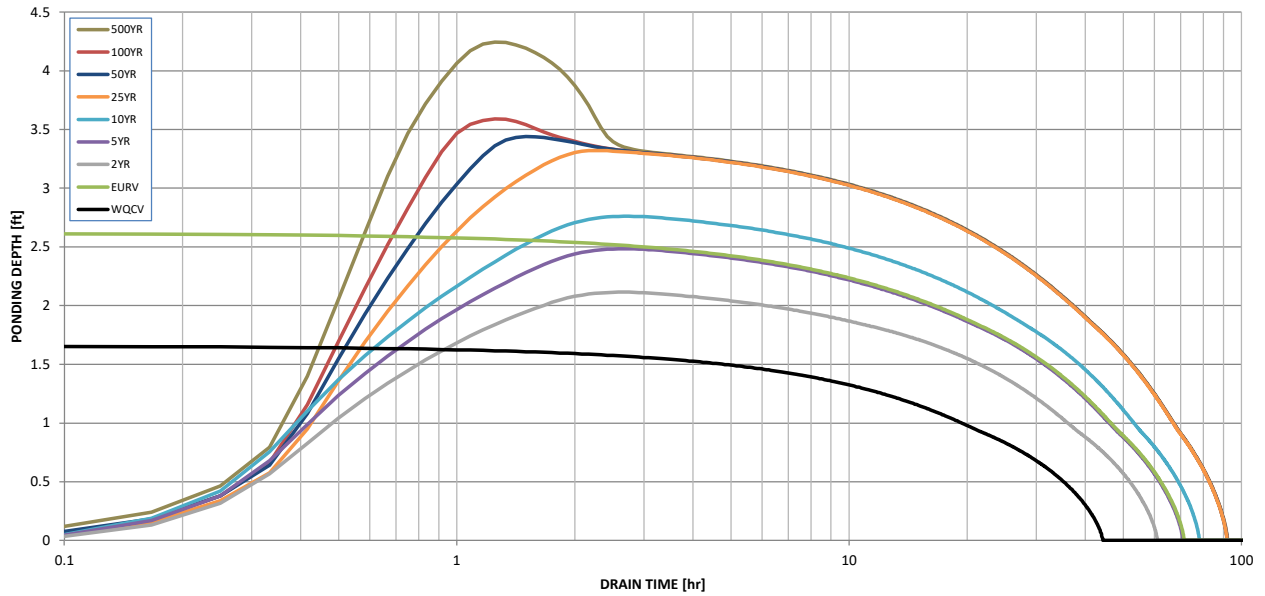
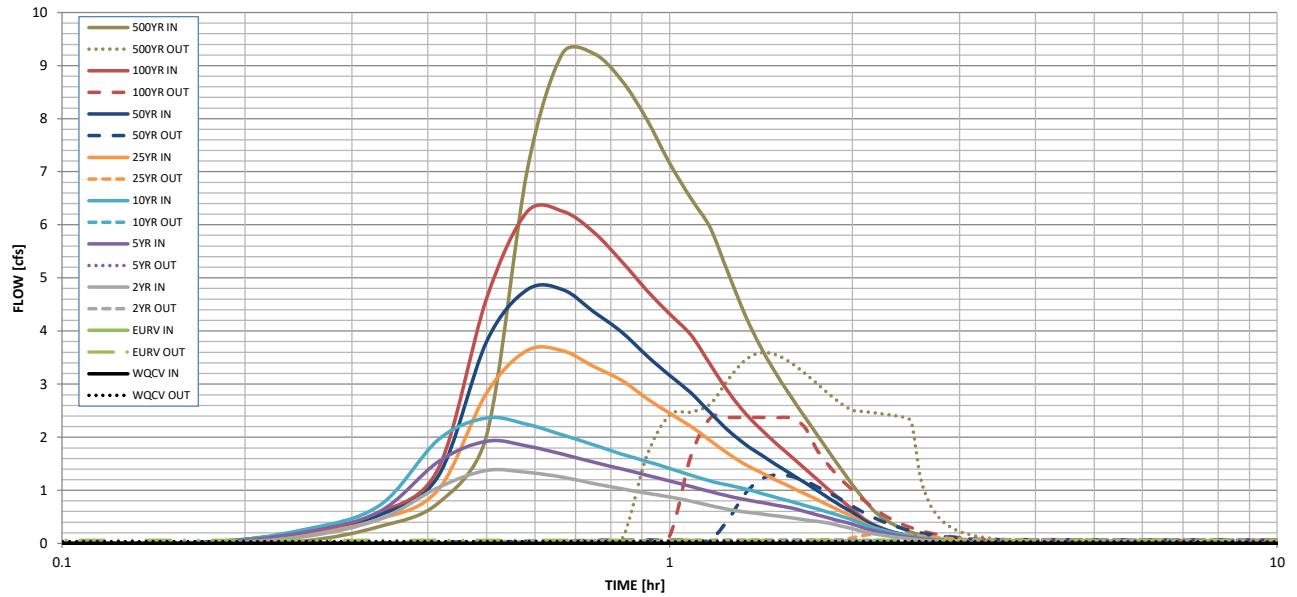
Routed Hydrograph Results

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

	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
Design Storm Return Period =	N/A	N/A	1.19	1.50	1.75	2.00	2.25	2.52	3.14
One-Hour Rainfall Depth (in) =	0.065	0.164	0.116	0.158	0.193	0.273	0.347	0.447	0.661
CUHP Runoff Volume (acre-ft) =	N/A	N/A	0.116	0.158	0.193	0.273	0.347	0.447	0.661
Inflow Hydrograph Volume (acre-ft) =	N/A	N/A	0.0	0.1	0.1	0.9	1.8	2.9	5.2
CUHP Predevelopment Peak Q (cfs) =	N/A	N/A							
OPTIONAL Override Predevelopment Peak Q (cfs) =	N/A	N/A							
Predevelopment Unit Peak Flow, q (cfs/acre) =	N/A	N/A	0.01	0.01	0.02	0.19	0.37	0.61	1.09
Peak Inflow Q (cfs) =	N/A	N/A	1.4	1.9	2.4	3.6	4.8	6.3	9.2
Peak Outflow Q (cfs) =	0.0	0.1	0.0	0.1	0.1	0.2	1.3	2.4	3.6
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	0.8	0.6	0.2	0.7	0.8	0.7
Structure Controlling Flow =	Plate	Plate	Plate	Plate	Plate	Overflow Weir 1	Overflow Weir 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	0.0	0.2	0.3	0.4
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	64	55	63	69	80	78	75	70
Time to Drain 99% of Inflow Volume (hours) =	43	68	58	68	74	87	86	85	82
Maximum Ponding Depth (ft) =	1.66	2.62	2.11	2.48	2.76	3.32	3.44	3.59	4.25
Area at Maximum Ponding Depth (acres) =	0.08	0.12	0.10	0.12	0.12	0.14	0.15	0.15	0.17
Maximum Volume Stored (acre-ft) =	0.065	0.164	0.107	0.148	0.181	0.256	0.274	0.296	0.401

DETENTION BASIN OUTLET STRUCTURE DESIGN

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S-A-V-D Chart Axis Override

minimum bound

maximum bound

X-axis	Left Y-Axis	Right Y-Axis

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.

Time Interval	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
	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	0.01	0.00	0.05
	0:15:00	0.00	0.00	0.13	0.21	0.26	0.18	0.22	0.22	0.32
	0:20:00	0.00	0.00	0.46	0.60	0.71	0.46	0.54	0.58	0.76
	0:25:00	0.00	0.00	1.06	1.54	1.96	1.02	1.28	1.42	2.04
	0:30:00	0.00	0.00	1.37	1.93	2.36	2.83	3.80	4.61	7.04
	0:35:00	0.00	0.00	1.34	1.83	2.24	3.63	4.78	6.25	9.22
	0:40:00	0.00	0.00	1.25	1.68	2.04	3.63	4.78	6.26	9.23
	0:45:00	0.00	0.00	1.13	1.53	1.86	3.33	4.36	5.86	8.73
	0:50:00	0.00	0.00	1.03	1.40	1.68	3.07	3.99	5.32	7.99
	0:55:00	0.00	0.00	0.95	1.29	1.54	2.73	3.54	4.77	7.16
	1:00:00	0.00	0.00	0.87	1.18	1.41	2.45	3.16	4.32	6.50
	1:05:00	0.00	0.00	0.80	1.07	1.29	2.21	2.84	3.93	5.94
	1:10:00	0.00	0.00	0.71	0.97	1.17	1.93	2.46	3.37	5.07
	1:15:00	0.00	0.00	0.64	0.89	1.10	1.68	2.12	2.85	4.28
	1:20:00	0.00	0.00	0.59	0.82	1.02	1.48	1.86	2.44	3.67
	1:25:00	0.00	0.00	0.55	0.77	0.94	1.33	1.66	2.14	3.18
	1:30:00	0.00	0.00	0.52	0.72	0.86	1.19	1.48	1.88	2.77
	1:35:00	0.00	0.00	0.48	0.67	0.79	1.06	1.31	1.64	2.39
	1:40:00	0.00	0.00	0.45	0.60	0.72	0.94	1.15	1.42	2.04
	1:45:00	0.00	0.00	0.41	0.54	0.65	0.82	0.99	1.20	1.71
	1:50:00	0.00	0.00	0.38	0.47	0.58	0.71	0.85	1.00	1.40
	1:55:00	0.00	0.00	0.33	0.42	0.51	0.60	0.71	0.81	1.10
	2:00:00	0.00	0.00	0.28	0.36	0.44	0.51	0.58	0.64	0.84
	2:05:00	0.00	0.00	0.22	0.29	0.36	0.38	0.44	0.47	0.62
	2:10:00	0.00	0.00	0.18	0.24	0.30	0.30	0.34	0.36	0.47
	2:15:00	0.00	0.00	0.15	0.20	0.25	0.24	0.27	0.27	0.36
	2:20:00	0.00	0.00	0.12	0.16	0.20	0.19	0.21	0.21	0.27
	2:25:00	0.00	0.00	0.10	0.13	0.16	0.15	0.17	0.17	0.21
	2:30:00	0.00	0.00	0.08	0.11	0.13	0.12	0.13	0.13	0.16
	2:35:00	0.00	0.00	0.07	0.09	0.11	0.10	0.11	0.10	0.12
	2:40:00	0.00	0.00	0.05	0.07	0.08	0.07	0.08	0.07	0.09
	2:45:00	0.00	0.00	0.04	0.05	0.07	0.06	0.06	0.06	0.07
	2:50:00	0.00	0.00	0.03	0.04	0.05	0.05	0.05	0.05	0.06
	2:55:00	0.00	0.00	0.03	0.03	0.04	0.04	0.04	0.04	0.04
	3:00:00	0.00	0.00	0.02	0.03	0.03	0.03	0.03	0.03	0.03
	3:05:00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.02
	3:10:00	0.00	0.00	0.01	0.01	0.02	0.01	0.02	0.01	0.02
	3:15:00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	3:20:00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	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