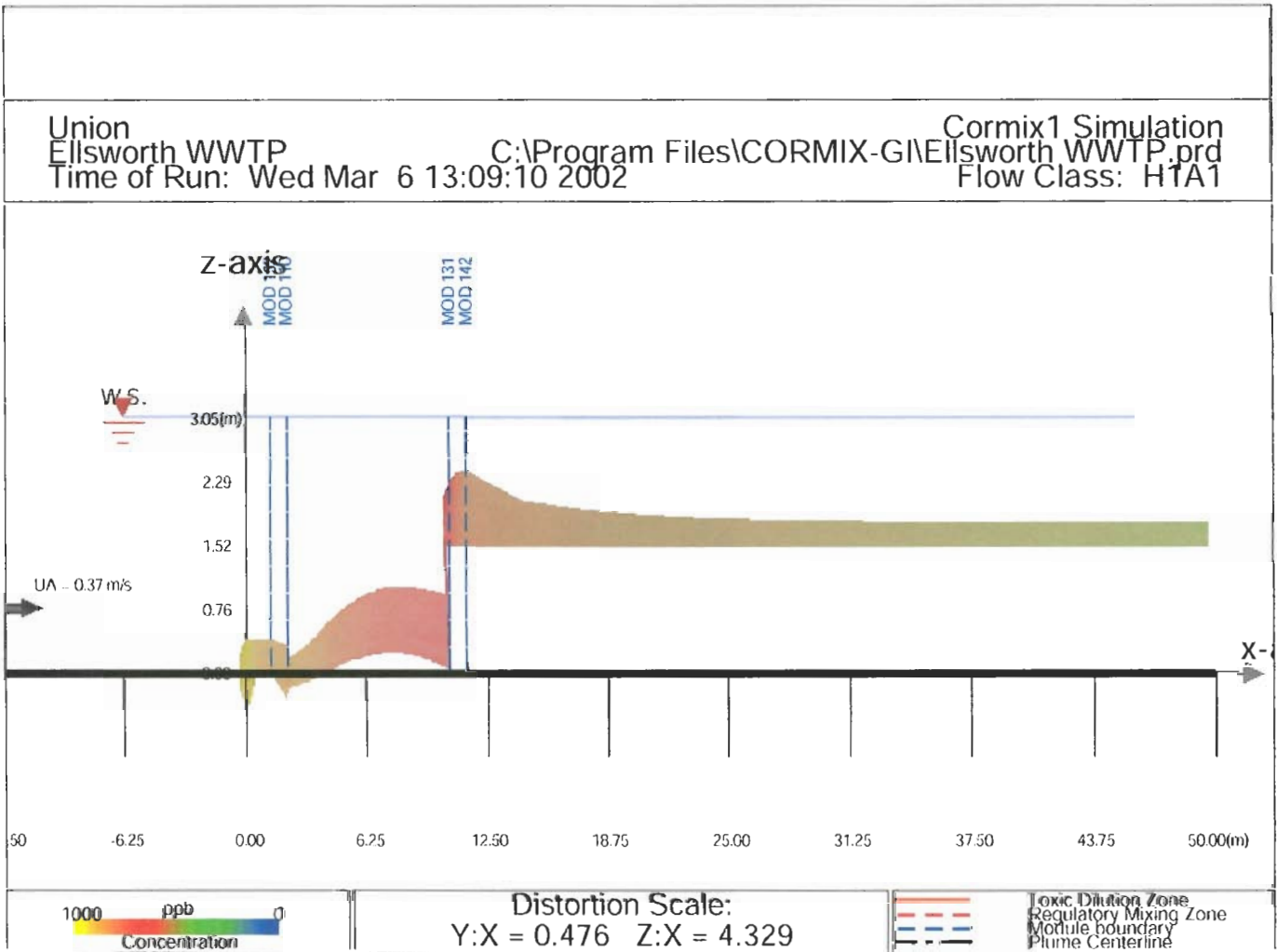
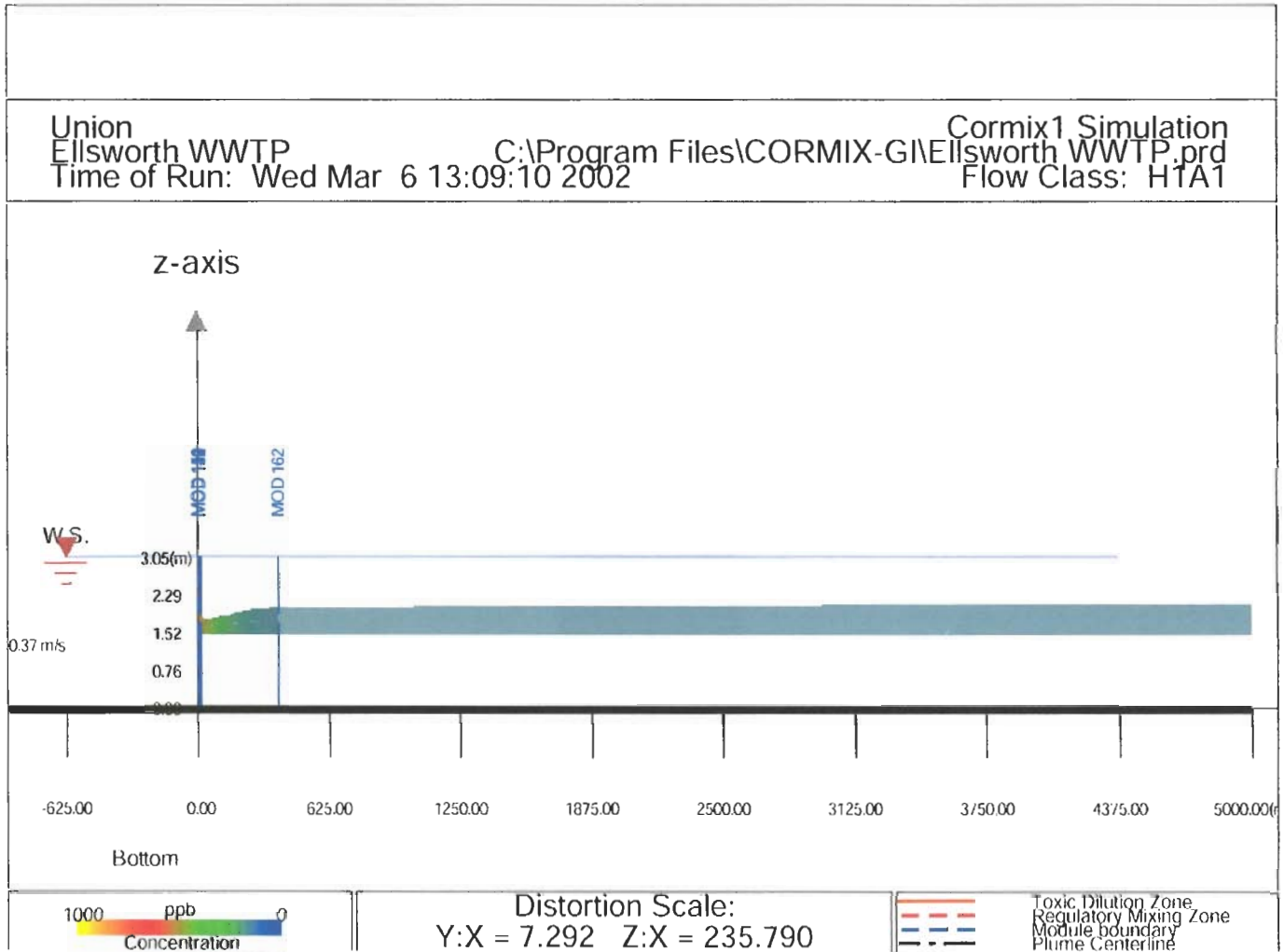


CORMIX near field profile view of the Ellsworth, Maine WWTP discharge plume



CORMIX far field profile view of the Ellsworth, Maine WWTP discharge plume



***** FLOW CLASS DESCRIPTION *****

The following description of flow class H1A1 applies to the LOWER LAYER ONLY of the specified ambient stratification condition C. Note that the lower layer will be overlaid by the surface layer of the ambient density stratification. The surface layer will remain undisturbed by the near field discharge flow (with the exception of some possible intrusion along the pycnocline).

Since the flow experiences bottom attachment, the description for the ACTUAL ATTACHED FLOW CLASS A1 is given below.

FLOW CLASS (..)A1

Irrespective of the buoyancy or direction of the discharge, the near-field of this flow configuration is dominated by wake attachment. The ambient crossflow effect is strong and/or the height of the discharge port above the bottom is too small. This leads to rapid attachment of the discharge flow to the bottom with a recirculation wake in the lee of the discharge structure. Following the recirculation the discharge flow will lift off from the bottom due to its strong buoyancy.

In the absence of wake attachment the dominant flow class would be given by the prefix (..). You may request detailed information on that flow class further below. Additional advice on how to prevent bottom attachment (e.g. by increasing the height of the discharge port) will be provided in the summary program element SUM.

The following flow zones exist:

- 1) Recirculation zone: The discharge flow becomes quickly deflected by the ambient flow and attaches to the bottom. A recirculation eddy exists in the lee of the discharge structure.
- 2) Lift-off: Because of the positive buoyancy the plume detaches from the bottom and starts to rise upward.
- 3) Strongly deflected plume in crossflow: The plume has been strongly deflected by the current and is slowly rising toward the surface.
- 4) Layer boundary approach: The bent-over submerged jet/plume approaches the layer boundary (water surface or pycnocline). Within a short distance the concentration distribution becomes relatively uniform across the plume width and thickness.

*** The zones listed above constitute the NEAR-FIELD REGION in which strong initial mixing takes place. ***

5) Buoyant spreading at layer boundary: The plume spreads laterally along the layer boundary (surface or pycnocline) while it is being advected by the ambient current. The plume thickness may decrease during this phase. The mixing rate is relatively small. The plume may interact with a nearby bank or shoreline.

6) Passive ambient mixing: After some distance the background turbulence in the ambient shear flow becomes the dominating mixing mechanism. The passive plume is growing in depth and in width. The

plume may interact with the channel bottom and/or banks.

*** Predictions will be terminated in zone 5 or 6 depending on
the definitions of the REGULATORY MIXING ZONE or the REGION OF
INTEREST. ***

END OF FLOW CLASS DESCRIPTION *****

22.86 m from the LEFT bank/shore.

X-axis points downstream, Y-axis points to left, Z-axis points upward.

NSTEP = 50 display intervals per module

BEGIN MOD101: DISCHARGE MODULE

WAKE ATTACHMENT immediately following the discharge.

X	Y	Z	S	C	B
0.00	0.00	0.00	1.0	0.100E+04	0.41

END OF MOD101: DISCHARGE MODULE

BEGIN MOD151: WAKE RECIRCULATION

Control volume inflow:

X	Y	Z	S	C	B
0.00	0.00	0.00	1.0	0.100E+04	0.41

Profile definitions:

BV = top-hat thickness, measured vertically

BH = top-hat half-width, measured horizontally in Y-direction

ZU = upper plume boundary (Z-coordinate)

ZL = lower plume boundary (Z-coordinate)

S = hydrodynamic average (bulk) dilution

C = average (bulk) concentration (includes reaction effects, if any)

X	Y	Z	S	C	BV	BH	ZU	ZL
0.00	-0.31	0.00	1.0	0.100E+04	0.41	0.41	0.41	0.00
0.14	-0.31	0.00	1.1	0.925E+03	0.41	0.41	0.41	0.00
0.27	-0.31	0.00	1.3	0.765E+03	0.41	0.41	0.41	0.00
0.41	-0.31	0.00	1.6	0.614E+03	0.41	0.41	0.41	0.00
0.54	-0.31	0.00	2.0	0.505E+03	0.41	0.41	0.41	0.00
0.68	-0.31	0.00	2.3	0.433E+03	0.41	0.41	0.41	0.00
0.81	-0.31	0.00	2.6	0.387E+03	0.41	0.41	0.41	0.00
0.95	-0.31	0.00	2.8	0.359E+03	0.41	0.41	0.41	0.00
1.08	-0.31	0.00	2.9	0.343E+03	0.41	0.41	0.41	0.00
1.22	-0.31	0.00	3.0	0.334E+03	0.41	0.41	0.41	0.00
1.35	-0.31	0.00	3.1	0.325E+03	0.41	0.41	0.41	0.00

Cumulative travel time = 4. sec

END OF MOD151: WAKE RECIRCULATION

BEGIN MOD152: LIFT OFF/FALL DOWN

Profile definitions:

B = Gaussian 1/e (37%) half-width, normal to trajectory

S = hydrodynamic centerline dilution

C = centerline concentration (includes reaction effects, if any)

Inflow (attached) and outflow (free) conditions:

X	Y	Z	S	C	B
1.35	-0.31	0.00	3.1	0.325E+03	0.41
2.17	-0.31	0.00	3.1	0.325E+03	0.32

Cumulative travel time = 6. sec

END OF MOD152: LIFT OFF/FALL DOWN

BEGIN CORJET (MOD110): JET/PLUME NEAR-FIELD MIXING REGION

Jet/plume transition motion in strong crossflow.
Plume-like motion after lift off/fall down.

The WIDTH PREDICTION B in the first entry below may exhibit some mismatch
(up to a factor of 1.5) relative to the last entry of the previous module.
This is unavoidable due to differences in the width definitions.
The actual physical transition will be smoothed out.

Profile definitions:

B = Gaussian 1/e (37%) half-width, normal to trajectory
S = hydrodynamic centerline dilution
C = centerline concentration (includes reaction effects, if any)

X	Y	Z	S	C	B
2.17	-0.31	0.00	3.1	0.325E+03	0.19
2.33	-0.31	0.00	3.1	0.325E+03	0.19
2.49	-0.31	0.01	3.1	0.325E+03	0.20
2.65	-0.31	0.03	3.1	0.325E+03	0.20
2.85	-0.31	0.05	3.1	0.325E+03	0.21
3.01	-0.31	0.07	3.1	0.325E+03	0.22
3.17	-0.31	0.10	3.1	0.325E+03	0.23
3.33	-0.31	0.12	3.3	0.303E+03	0.23
3.52	-0.31	0.16	3.6	0.279E+03	0.24
3.68	-0.31	0.18	3.8	0.261E+03	0.25
3.83	-0.31	0.21	4.1	0.244E+03	0.26
4.03	-0.31	0.25	4.4	0.227E+03	0.27
4.18	-0.31	0.28	4.7	0.214E+03	0.28
4.34	-0.31	0.31	5.0	0.202E+03	0.29
4.50	-0.31	0.33	5.2	0.191E+03	0.30
4.69	-0.31	0.36	5.6	0.180E+03	0.31
4.85	-0.31	0.39	5.8	0.172E+03	0.32
5.01	-0.31	0.42	6.1	0.164E+03	0.32
5.21	-0.31	0.44	6.4	0.156E+03	0.33
Level of buoyancy reversal in stratified ambient.					
5.37	-0.31	0.47	6.7	0.150E+03	0.34
5.53	-0.31	0.49	6.9	0.145E+03	0.35
5.69	-0.31	0.51	7.1	0.140E+03	0.35
5.88	-0.31	0.53	7.4	0.135E+03	0.36
6.04	-0.31	0.54	7.6	0.131E+03	0.37
6.20	-0.31	0.56	7.8	0.128E+03	0.37
6.39	-0.31	0.58	8.0	0.125E+03	0.38
6.56	-0.31	0.59	8.2	0.122E+03	0.38
6.72	-0.31	0.60	8.4	0.120E+03	0.38
6.88	-0.31	0.61	8.5	0.118E+03	0.39
7.07	-0.31	0.62	8.6	0.116E+03	0.39
7.23	-0.31	0.63	8.7	0.114E+03	0.39
7.39	-0.31	0.63	8.8	0.113E+03	0.40
7.56	-0.31	0.64	8.9	0.112E+03	0.40
7.75	-0.31	0.64	9.0	0.111E+03	0.40

Maximum jet height has been reached.

7.91	-0.31	0.64	9.0	0.111E+03	0.40
8.07	-0.31	0.64	9.1	0.110E+03	0.40
8.27	-0.31	0.63	9.2	0.109E+03	0.40
8.43	-0.31	0.63	9.2	0.108E+03	0.41
8.59	-0.31	0.63	9.3	0.107E+03	0.41
8.75	-0.31	0.62	9.4	0.106E+03	0.41
8.95	-0.31	0.61	9.6	0.104E+03	0.41
9.11	-0.31	0.60	9.7	0.103E+03	0.42
9.27	-0.31	0.59	9.9	0.101E+03	0.42
9.46	-0.31	0.58	10.1	0.994E+02	0.42
9.62	-0.31	0.57	10.2	0.978E+02	0.43
9.78	-0.31	0.56	10.4	0.962E+02	0.43
9.95	-0.31	0.55	10.6	0.947E+02	0.43
10.14	-0.31	0.53	10.8	0.928E+02	0.44
10.30	-0.31	0.52	11.0	0.913E+02	0.44
10.46	-0.31	0.51	11.1	0.898E+02	0.45
10.62	-0.31	0.50	11.3	0.884E+02	0.45

Terminal level in stratified ambient has been reached.
 Cumulative travel time = 26. sec

END OF CORJET (MOD110): JET/PLUME NEAR-FIELD MIXING REGION

BEGIN MOD131: LAYER BOUNDARY/TERMINAL LAYER APPROACH

Control volume inflow:

X	Y	Z	S	C	B
10.62	-0.31	0.50	11.3	0.884E+02	0.45

Profile definitions:

BV = top-hat thickness, measured vertically
 BH = top-hat half-width, measured horizontally in Y-direction
 ZU = upper plume boundary (Z-coordinate)
 ZL = lower plume boundary (Z-coordinate)
 S = hydrodynamic average (bulk) dilution
 C = average (bulk) concentration (includes reaction effects, if any)

X	Y	Z	S	C	BV	BH	ZU	ZL
10.17	-0.31	1.52	11.3	0.884E+02	0.00	0.00	1.52	1.52
10.31	-0.31	1.52	11.3	0.884E+02	0.56	0.28	2.09	1.52
10.44	-0.31	1.52	11.3	0.884E+02	0.67	0.40	2.19	1.52
10.58	-0.31	1.52	11.3	0.884E+02	0.74	0.49	2.26	1.52
10.71	-0.31	1.52	11.6	0.860E+02	0.79	0.57	2.31	1.52
10.85	-0.31	1.52	13.1	0.766E+02	0.82	0.63	2.35	1.52
10.98	-0.31	1.52	15.1	0.664E+02	0.85	0.70	2.38	1.52
11.12	-0.31	1.52	16.9	0.593E+02	0.87	0.75	2.40	1.52
11.25	-0.31	1.52	18.1	0.552E+02	0.89	0.80	2.41	1.52
11.39	-0.31	1.52	18.8	0.532E+02	0.90	0.85	2.42	1.52
11.52	-0.31	1.52	19.2	0.520E+02	0.90	0.90	2.42	1.52

Cumulative travel time - 28. sec

END OF MOD131: LAYER BOUNDARY/TERMINAL LAYER APPROACH

** End of NEAR-FIELD REGION (NFR) **

BEGIN MOD142: BUOYANT TERMINAL LAYER SPREADING

Profile definitions:

- BV = top-hat thickness, measured vertically
- BH = top-hat half-width, measured horizontally in Y-direction
- ZU = upper plume boundary (Z-coordinate)
- ZL = lower plume boundary (Z-coordinate)
- S = hydrodynamic average (bulk) dilution
- C = average (bulk) concentration (includes reaction effects, if any)

Plume Stage 1 (not bank attached):

X	Y	Z	S	C	BV	BH	ZU	ZL
11.52	-0.31	1.52	19.2	0.520E+02	0.90	0.90	2.42	1.52
14.46	-0.31	1.52	22.9	0.436E+02	0.54	1.79	2.06	1.52
17.40	-0.31	1.52	25.0	0.399E+02	0.43	2.43	1.96	1.52
20.33	-0.31	1.52	26.8	0.373E+02	0.38	2.96	1.90	1.52
23.27	-0.31	1.52	28.5	0.351E+02	0.35	3.44	1.87	1.52
26.21	-0.31	1.52	30.3	0.330E+02	0.33	3.89	1.85	1.52
29.14	-0.31	1.52	32.2	0.311E+02	0.31	4.31	1.84	1.52
32.08	-0.31	1.52	34.2	0.292E+02	0.30	4.72	1.83	1.52
35.02	-0.31	1.52	36.4	0.274E+02	0.30	5.12	1.82	1.52
37.95	-0.31	1.52	38.8	0.258E+02	0.30	5.51	1.82	1.52
40.89	-0.31	1.52	41.3	0.242E+02	0.29	5.90	1.82	1.52
43.82	-0.31	1.52	43.9	0.228E+02	0.29	6.28	1.82	1.52
46.76	-0.31	1.52	46.6	0.215E+02	0.29	6.67	1.82	1.52
49.70	-0.31	1.52	49.5	0.202E+02	0.29	7.05	1.82	1.52
52.63	-0.31	1.52	52.4	0.191E+02	0.30	7.44	1.82	1.52
55.57	-0.31	1.52	55.5	0.180E+02	0.30	7.83	1.82	1.52
58.51	-0.31	1.52	58.6	0.171E+02	0.30	8.22	1.82	1.52
61.44	-0.31	1.52	61.9	0.162E+02	0.30	8.61	1.83	1.52
64.38	-0.31	1.52	65.2	0.153E+02	0.30	9.01	1.83	1.52
67.32	-0.31	1.52	68.7	0.146E+02	0.31	9.40	1.83	1.52
70.25	-0.31	1.52	72.2	0.139E+02	0.31	9.81	1.83	1.52
73.19	-0.31	1.52	75.8	0.132E+02	0.31	10.21	1.84	1.52
76.13	-0.31	1.52	79.4	0.126E+02	0.31	10.62	1.84	1.52
79.06	-0.31	1.52	83.2	0.120E+02	0.32	11.03	1.84	1.52
82.00	-0.31	1.52	87.0	0.115E+02	0.32	11.44	1.84	1.52
84.94	-0.31	1.52	90.9	0.110E+02	0.32	11.86	1.85	1.52
87.87	-0.31	1.52	94.9	0.105E+02	0.32	12.28	1.85	1.52
90.81	-0.31	1.52	98.9	0.101E+02	0.33	12.70	1.85	1.52
93.75	-0.31	1.52	103.0	0.971E+01	0.33	13.12	1.85	1.52
96.68	-0.31	1.52	107.2	0.933E+01	0.33	13.55	1.86	1.52
99.62	-0.31	1.52	111.5	0.897E+01	0.33	13.98	1.86	1.52
102.55	-0.31	1.52	115.8	0.864E+01	0.34	14.42	1.86	1.52
105.49	-0.31	1.52	120.2	0.832E+01	0.34	14.85	1.86	1.52
108.43	-0.31	1.52	124.6	0.803E+01	0.34	15.29	1.87	1.52
111.36	-0.31	1.52	129.1	0.774E+01	0.34	15.74	1.87	1.52
114.30	-0.31	1.52	133.7	0.748E+01	0.35	16.18	1.87	1.52
117.24	-0.31	1.52	138.3	0.723E+01	0.35	16.63	1.87	1.52
120.17	-0.31	1.52	143.0	0.699E+01	0.35	17.08	1.88	1.52
123.11	-0.31	1.52	147.8	0.677E+01	0.35	17.53	1.88	1.52
126.05	-0.31	1.52	152.6	0.655E+01	0.36	17.99	1.88	1.52
128.98	-0.31	1.52	157.5	0.635E+01	0.36	18.45	1.88	1.52
131.92	-0.31	1.52	162.5	0.616E+01	0.36	18.91	1.88	1.52
134.86	-0.31	1.52	167.5	0.597E+01	0.36	19.37	1.89	1.52
137.79	-0.31	1.52	172.5	0.580E+01	0.36	19.84	1.89	1.52
140.73	-0.31	1.52	177.7	0.563E+01	0.37	20.31	1.89	1.52
143.67	-0.31	1.52	182.9	0.547E+01	0.37	20.78	1.89	1.52
146.60	-0.31	1.52	188.1	0.532E+01	0.37	21.25	1.90	1.52

149.54	-0.31	1.52	193.4	0.517E+01	0.37	21.73	1.90	1.52
152.48	-0.31	1.52	198.8	0.503E+01	0.38	22.21	1.90	1.52
155.41	-0.31	1.52	204.2	0.490E+01	0.38	22.69	1.90	1.52
158.35	-0.31	1.52	209.6	0.477E+01	0.38	23.17	1.90	1.52

Cumulative travel time = 430. sec

Plume is ATTACHED to LEFT bank/shore.

Plume width is now determined from LEFT bank/shore.

Plume Stage 2 (bank attached):

X	Y	Z	S	C	BV	BH	ZU	ZL
158.35	22.86	1.52	209.6	0.477E+01	0.38	46.34	1.90	1.52
162.94	22.86	1.52	217.3	0.460E+01	0.39	47.07	1.91	1.52
167.53	22.86	1.52	224.8	0.445E+01	0.39	47.82	1.92	1.52
172.12	22.86	1.52	232.2	0.431E+01	0.40	48.57	1.92	1.52
176.71	22.86	1.52	239.5	0.417E+01	0.41	49.35	1.93	1.52
181.30	22.86	1.52	246.8	0.405E+01	0.41	50.13	1.94	1.52
185.90	22.86	1.52	254.1	0.394E+01	0.42	50.92	1.94	1.52
190.49	22.86	1.52	261.3	0.383E+01	0.42	51.72	1.95	1.52
195.08	22.86	1.52	268.4	0.373E+01	0.43	52.54	1.95	1.52
199.67	22.86	1.52	275.6	0.363E+01	0.43	53.36	1.96	1.52
204.26	22.86	1.52	282.8	0.354E+01	0.44	54.19	1.96	1.52
208.85	22.86	1.52	289.9	0.345E+01	0.44	55.03	1.97	1.52
213.44	22.86	1.52	297.0	0.337E+01	0.45	55.87	1.97	1.52
218.03	22.86	1.52	304.2	0.329E+01	0.45	56.72	1.97	1.52
222.63	22.86	1.52	311.4	0.321E+01	0.45	57.58	1.98	1.52
227.22	22.86	1.52	318.5	0.314E+01	0.46	58.45	1.98	1.52
231.81	22.86	1.52	325.7	0.307E+01	0.46	59.32	1.98	1.52
236.40	22.86	1.52	332.9	0.300E+01	0.46	60.20	1.99	1.52
240.99	22.86	1.52	340.1	0.294E+01	0.47	61.08	1.99	1.52
245.58	22.86	1.52	347.4	0.288E+01	0.47	61.97	1.99	1.52
250.17	22.86	1.52	354.6	0.282E+01	0.47	62.86	2.00	1.52
254.76	22.86	1.52	361.9	0.276E+01	0.48	63.76	2.00	1.52
259.36	22.86	1.52	369.3	0.271E+01	0.48	64.66	2.00	1.52
263.95	22.86	1.52	376.6	0.266E+01	0.48	65.57	2.01	1.52
268.54	22.86	1.52	384.0	0.260E+01	0.48	66.48	2.01	1.52
273.13	22.86	1.52	391.4	0.255E+01	0.49	67.40	2.01	1.52
277.72	22.86	1.52	398.9	0.251E+01	0.49	68.32	2.01	1.52
282.31	22.86	1.52	406.3	0.246E+01	0.49	69.25	2.02	1.52
286.90	22.86	1.52	413.8	0.242E+01	0.49	70.17	2.02	1.52
291.49	22.86	1.52	421.4	0.237E+01	0.50	71.11	2.02	1.52
296.08	22.86	1.52	429.0	0.233E+01	0.50	72.04	2.02	1.52
300.68	22.86	1.52	436.6	0.229E+01	0.50	72.98	2.03	1.52
305.27	22.86	1.52	444.2	0.225E+01	0.50	73.93	2.03	1.52
309.86	22.86	1.52	451.9	0.221E+01	0.51	74.87	2.03	1.52
314.45	22.86	1.52	459.6	0.218E+01	0.51	75.82	2.03	1.52
319.04	22.86	1.52	467.4	0.214E+01	0.51	76.78	2.03	1.52
323.63	22.86	1.52	475.2	0.210E+01	0.51	77.74	2.04	1.52
328.22	22.86	1.52	483.0	0.207E+01	0.51	78.70	2.04	1.52
332.81	22.86	1.52	490.9	0.204E+01	0.52	79.66	2.04	1.52
337.41	22.86	1.52	498.8	0.200E+01	0.52	80.62	2.04	1.52
342.00	22.86	1.52	506.7	0.197E+01	0.52	81.59	2.04	1.52
346.59	22.86	1.52	514.7	0.194E+01	0.52	82.57	2.05	1.52
351.18	22.86	1.52	522.7	0.191E+01	0.52	83.54	2.05	1.52
355.77	22.86	1.52	530.8	0.188E+01	0.53	84.52	2.05	1.52
360.36	22.86	1.52	538.9	0.186E+01	0.53	85.50	2.05	1.52

364.95	22.86	1.52	547.0	0.183E+01	0.53	86.48	2.05	1.52
369.54	22.86	1.52	555.2	0.180E+01	0.53	87.47	2.06	1.52
374.14	22.86	1.52	563.4	0.177E+01	0.53	88.46	2.06	1.52
378.73	22.86	1.52	571.6	0.175E+01	0.54	89.45	2.06	1.52
383.32	22.86	1.52	579.9	0.172E+01	0.54	90.44	2.06	1.52
387.91	22.86	1.52	588.3	0.170E+01	0.54	91.44	2.06	1.52

Cumulative travel time = 1057. sec

Plume is LATERALLY FULLY MIXED at the end of the buoyant spreading regime.

END OF MOD142: BUOYANT TERMINAL LAYER SPREADING

BEGIN MOD162: PASSIVE AMBIENT MIXING IN STRATIFIED AMBIENT

Vertical diffusivity (initial value) = 0.205E-05 m²/s

Horizontal diffusivity (initial value) = 0.239E-01 m²/s

Profile definitions:

BV = Gaussian s.d.*sqrt(pi/2) (46%) thickness, measured vertically

= or equal to layer depth, if fully mixed

BH = Gaussian s.d.*sqrt(pi/2) (46%) half-width,

measured horizontally in Y-direction

ZU = upper plume boundary (Z-coordinate)

ZL = lower plume boundary (Z-coordinate)

S = hydrodynamic centerline dilution

C = centerline concentration (includes reaction effects, if any)

Plume Stage 2 (bank attached):

X	Y	Z	S	C	BV	BH	ZU	ZL
387.91	22.86	1.52	588.3	0.170E+01	0.54	91.44	2.06	1.52
480.15	22.86	1.52	589.9	0.170E+01	0.54	91.44	2.06	1.52
572.39	22.86	1.52	591.5	0.169E+01	0.54	91.44	2.07	1.52
664.63	22.86	1.52	593.2	0.169E+01	0.54	91.44	2.07	1.52
756.88	22.86	1.52	594.8	0.168E+01	0.55	91.44	2.07	1.52
849.12	22.86	1.52	596.4	0.168E+01	0.55	91.44	2.07	1.52
941.36	22.86	1.52	598.0	0.167E+01	0.55	91.44	2.07	1.52
1033.60	22.86	1.52	599.6	0.167E+01	0.55	91.44	2.07	1.52
1125.84	22.86	1.52	601.2	0.166E+01	0.55	91.44	2.08	1.52
1218.09	22.86	1.52	602.8	0.166E+01	0.55	91.44	2.08	1.52
1310.33	22.86	1.52	604.4	0.165E+01	0.55	91.44	2.08	1.52
1402.57	22.86	1.52	606.0	0.165E+01	0.56	91.44	2.08	1.52
1494.81	22.86	1.52	607.6	0.165E+01	0.56	91.44	2.08	1.52
1587.05	22.86	1.52	609.2	0.164E+01	0.56	91.44	2.08	1.52
1679.29	22.86	1.52	610.8	0.164E+01	0.56	91.44	2.08	1.52
1771.54	22.86	1.52	612.4	0.163E+01	0.56	91.44	2.09	1.52
1863.78	22.86	1.52	613.9	0.163E+01	0.56	91.44	2.09	1.52
1956.02	22.86	1.52	615.5	0.162E+01	0.56	91.44	2.09	1.52
2048.26	22.86	1.52	617.1	0.162E+01	0.57	91.44	2.09	1.52
2140.50	22.86	1.52	618.6	0.162E+01	0.57	91.44	2.09	1.52
2232.75	22.86	1.52	620.2	0.161E+01	0.57	91.44	2.09	1.52
2324.99	22.86	1.52	621.7	0.161E+01	0.57	91.44	2.09	1.52
2417.23	22.86	1.52	623.3	0.160E+01	0.57	91.44	2.10	1.52
2509.47	22.86	1.52	624.8	0.160E+01	0.57	91.44	2.10	1.52
2601.71	22.86	1.52	626.4	0.160E+01	0.57	91.44	2.10	1.52
2693.95	22.86	1.52	627.9	0.159E+01	0.58	91.44	2.10	1.52
2786.20	22.86	1.52	629.4	0.159E+01	0.58	91.44	2.10	1.52
2878.44	22.86	1.52	631.0	0.158E+01	0.58	91.44	2.10	1.52

Regulatory mixing zone = no
Region of interest = 5000 m downstream

HYDRODYNAMIC CLASSIFICATION:

| FLOW CLASS = H1A1 |

The specified ambient density stratification is important, the near field flow is confined to lower layer by ambient density jump at the pycnocline. The linearly stratified lower layer was represented by a uniform lower layer with density equal to mean lower layer density layer. Applicable layer depth = lower layer depth = 1.52 m

MIXING ZONE EVALUATION (hydrodynamic and regulatory summary):

X-Y-Z Coordinate system:

Origin is located at the bottom below the port center:
22.86 m from the left bank/shore.
Number of display steps NSTEP = 50 per module.

NEAR-FIELD REGION (NFR) CONDITIONS :

Note: The NFR is the zone of strong initial mixing. It has no regulatory implication. However, this information may be useful for the discharge designer because the mixing in the NFR is usually sensitive to the discharge design conditions.

Pollutant concentration at edge of NFR = 52.0032 ppb

Dilution at edge of NFR = 19.2

NFR Location: x = 11.52 m
(centerline coordinates) y = -0.31 m
z = 1.52 m

NFR plume dimensions: half-width = 0.90 m
thickness = 0.90 m

Buoyancy assessment:

The effluent density is less than the surrounding ambient water density at the discharge level.
Therefore, the effluent is POSITIVELY BUOYANT and will tend to rise towards the surface.

Stratification assessment:

The specified two layer ambient density stratification is dynamically important. The discharge near field flow will be confined to the lower layer by the ambient density stratification.
The linearly stratified lower layer will be represented by a uniform lower layer with density equal to mean lower layer density.

Benthic attachment:

For the present combination of discharge and ambient conditions, the discharge plume becomes attached to the channel bottom within the NFR immediately following the efflux. High benthic concentrations may occur.

FAR-FIELD MIXING SUMMARY:

Plume becomes laterally fully mixed at 387.91 m downstream.

PLUME BANK CONTACT SUMMARY:

Plume in bounded section contacts nearest bank at 158.35 m downstream.

Plume contacts second bank at 387.91 m downstream.
***** TOXIC DILUTION ZONE SUMMARY *****
No TDZ was specified for this simulation.
***** REGULATORY MIXING ZONE SUMMARY *****
No RMZ and no ambient water quality standard have been specified.
***** FINAL DESIGN ADVICE AND COMMENTS *****
REMINDER: The user must take note that HYDRODYNAMIC MODELING by any known
technique is NOT AN EXACT SCIENCE.
Extensive comparison with field and laboratory data has shown that the
CORMIX predictions on dilutions and concentrations (with associated
plume geometries) are reliable for the majority of cases and are accurate
to within about +-50% (standard deviation).
As a further safeguard, CORMIX will not give predictions whenever it judges
the design configuration as highly complex and uncertain for prediction.