



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

26 FEDERAL PLAZA

NEW YORK, NEW YORK 10007

Addendum to ES001:

Verification of Model for New York Harbor

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As an illustration of the applicability of ES001 to an actual estuarine system, a model of the New York Harbor Complex has been constructed.

Based primarily on the Hydrosience report¹ and the work of O'Connor and Mancini,¹¹ the program was applied to the study area shown in Figure NY-1. By considering the physical and biological aspects of the system as well as the waste loads (See Table NY-1) the segmentation scheme of Figure NY-2 was developed.

Using the waste loads and the system parameters (Table NY-2) a verification run for average July-August conditions from 1954 to 1964 was run. The results of this run are presented in Figures NY-3 and NY-4.*

As an illustration of the use of the model as a planning tool, the effect of changes in treatment procedures can be investigated. For instance figure NY-5 depicts the effect of collecting the raw uniform waste discharges along the west side of New York City in a single treatment facility at mile point -9.6 of the Hudson River (junction UPT). Then, the effect of various levels of treatment can be input to the model and the results can be compared with alternative treatment proposals. O'Connor and Mancini¹¹ have done a much broader analysis and their work gives an excellent idea of the degree of applicability of a model such as ES001 to water quality planning.

As stated previously, however, care must always be taken to consider all the underlying assumption of the model when applying it to a specific situation. For instance, in some cases, the one dimensional approach of ES001 would be inapplicable.

The high temperatures near the point of a thermal discharge from a power plant might be significantly minimized by assuming that the estuary is instantaneously mixed vertically and laterally. In such a case a "near field" model which actually attempts to describe the plume of heated water in fine detail might be required to answer questions as to the effect of the discharge or the ecology.

In other cases, the steady-state, tidally averaged approach of the model would not be sufficient to answer real-time** questions. Daily and Harlemann have considered the treatment alternative of discharging of

*as well, at the end of this appendix all input and output are included for reference.

**real time: time within the tidal cycle which allows the effects of tidal oscillation on water quality to be depicted explicitly.

waste only on the ebb tide in Cork Harbor, Ireland so that the waste is more efficiently flushed to the ocean. To do this they used a one-dimensional, time variable model. Such an alternative cannot be considered using ES001.

In conclusion, it must be stressed that the management questions being asked and the physical system being modeled in a given situation will essentially determine the modeling approach which is applicable. In no case can it even be construed that one approach or one model will supply THE answer to any and every water quality problem. With this in mind it can be reiterated that ES001 is an excellent tool for many situations in the analysis of water quality in estuaries.

References

1. Hydrosience, Inc.: Mathematical Models for Water Quality for the Hudson-Champlain and Metropolitan Coastal Water Pollution Control Project, FWPCA. Hydrosience, Inc., Westwood, N.J., April 1968.
11. O'Connor, D. J. and Mancini, J. "Water Quality Analysis of the New York Harbor Complex" Journal WPCF, November 1972.

TABLE NY-1 - New York Harbor Waste Inputs

Source	River Location (miles)	Carbonaceous BOD (1,000 lb/day)	Nitrogenous BOD (1,000 lb/day)	Ultimate Oxygen Demand (1,000 lb/day)
Yonkers	16(N)*	50	20.9	118.6
Bronx	12.9-16.1(N)	2/mile	0.6/mile	6.9/mile
Edgewater	9(N)	5	2.1	10.6
North Bergen	7(N)	2.5	1.0	5.25
West New York	5(N)	12.7	5.3	27.1
Hoboken	2(N)	20.7	8.3	43.5
Jersey City	0(N)	25.4	10.4	53.6
Passaic Valley	-4(H)*	623	75.0	1074
Bayonne	-4(H)	17.9	7.4	38.1
Port Richmond	-4(H)	7.0	2.8	14.7
Owls Head	-4(H)	80	48	262
Manhattan	2.7-5.4(N)	30/mile	9/mile	58.5/mile
	5.4-12.9(N)	30/mile	9/mile	58.5/mile
Wards Island	9.4	47.6	40	131.5
Bowery Bay	10(E)	29.3	17.6	70.5
Hunts Point	12(E)*	12.9	10.8	35.6
Tallmans	14(E)	5.1	4.3	14.5
Walcott Street	-0.4(H)	17.0	5.1	33.2
Kane Street	0.4(E)	7.0	2.1	13.65
Manhattan East River	0-7.0(E)	15/mile	4.5/mile	29.25/mile
Joralemon to Wallabout	0.8-2.9(E)	9.38/mile	2.8/mile	18.2/mile
Wallabout to Newton	2.9-4.8(E)	27.7/mile	8.3/mile	54/mile
Newton Creek	4.8(E)	30.73	9.2	59.8
Red Hook	1.5(H)	35.0	10.5	68.3
Hess	9.59(A)**			7190
Chevron				
Kopps Wood	6.75(A)			770
U.S. Metals				
FMC	3.45(A)			42207
American Cyanamid, Linden				
Citgo				
General Anilene				
DuPont				
Grasselli	1.38(A)			72400
Humble Oil				
Archer Daniels	.625(A)			12200
Procter & Gamble				
Domestic Plant	1.166(A)			172500
"	2.528(A)			64525
"	7.758(A)			77250
"	8.048(A)			7045
"	11.828(A)			7500

*N = North River input; E = East River input, and H = harbor input. (mile point zero at Battery).

**A = Arthur Kill input (mile point zero at 1800 yards East of Shooters Island)

Note: Miles X 1.61 = km; lb/day X 0.454 = kg/day.

	E (mi ² /day)	RK,DK* (1/day)	AK* (1/day)	Cross Section Area (sq. ft)	Tidal Exchange (1/day)	Volume (Cuft)	Fresh Water Flow** (cfs)
North River (1,2,3,4)	20	0.25	0.10	135000			7290
Upper New York Harbor (5,6,7)	24	0.25	0.07	340000			7290
Harlem River (8,9)	15	0.25	0.30	6800			
Lower East River (11,12)	10	0.25	0.09	80000			
Upper East River (10)	10	0.25	0.08	100000			
(20)	10	0.25	0.08	150000			
Kill Van Kull (13,14)	10	0.25	0.125	50000			
Arthur Kill (15)	10	0.25	0.15	26500			
(16)	10	0.25	0.15	28000			
(17)	10	0.25	0.15	35000			
(22)	10	0.25	0.15	50000			
Lower New York Bay (19)	24	0.25	0.07	340000	0.35	1.2X10 ¹⁰	7290
Newark Bay (21)	10	0.26	0.30	68000		1.2X10 ⁹	

* @ 20°C

** Average fresh water discharge at New York from the Hudson River for July and August from 1954 to 1964.

Note - numbers in parenthesis refer to sections.

Table NY - 2 Parameters for New York Harbor
Model verification

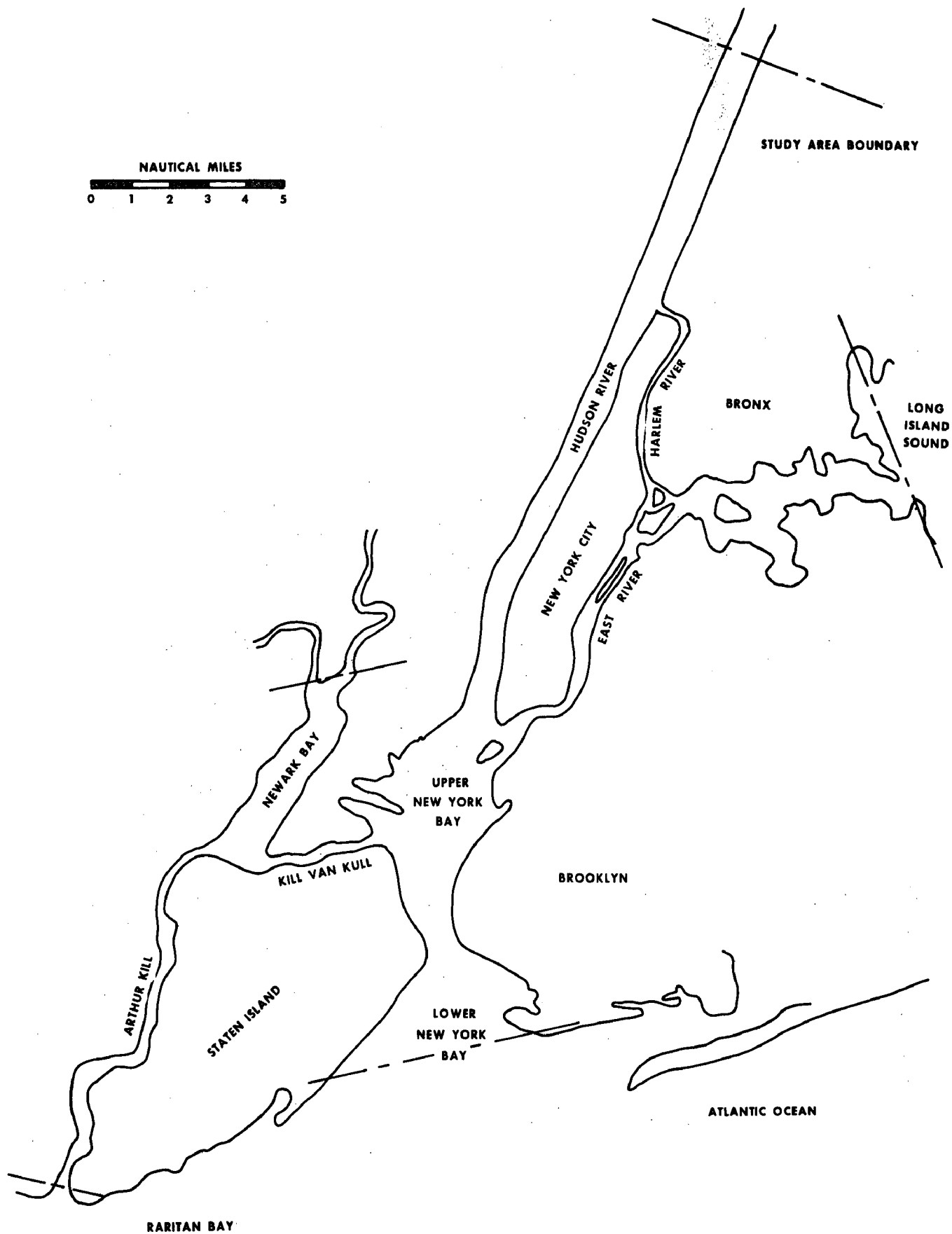


Figure NY-1
STUDY AREA OF MODEL OF NEW YORK HARBOR

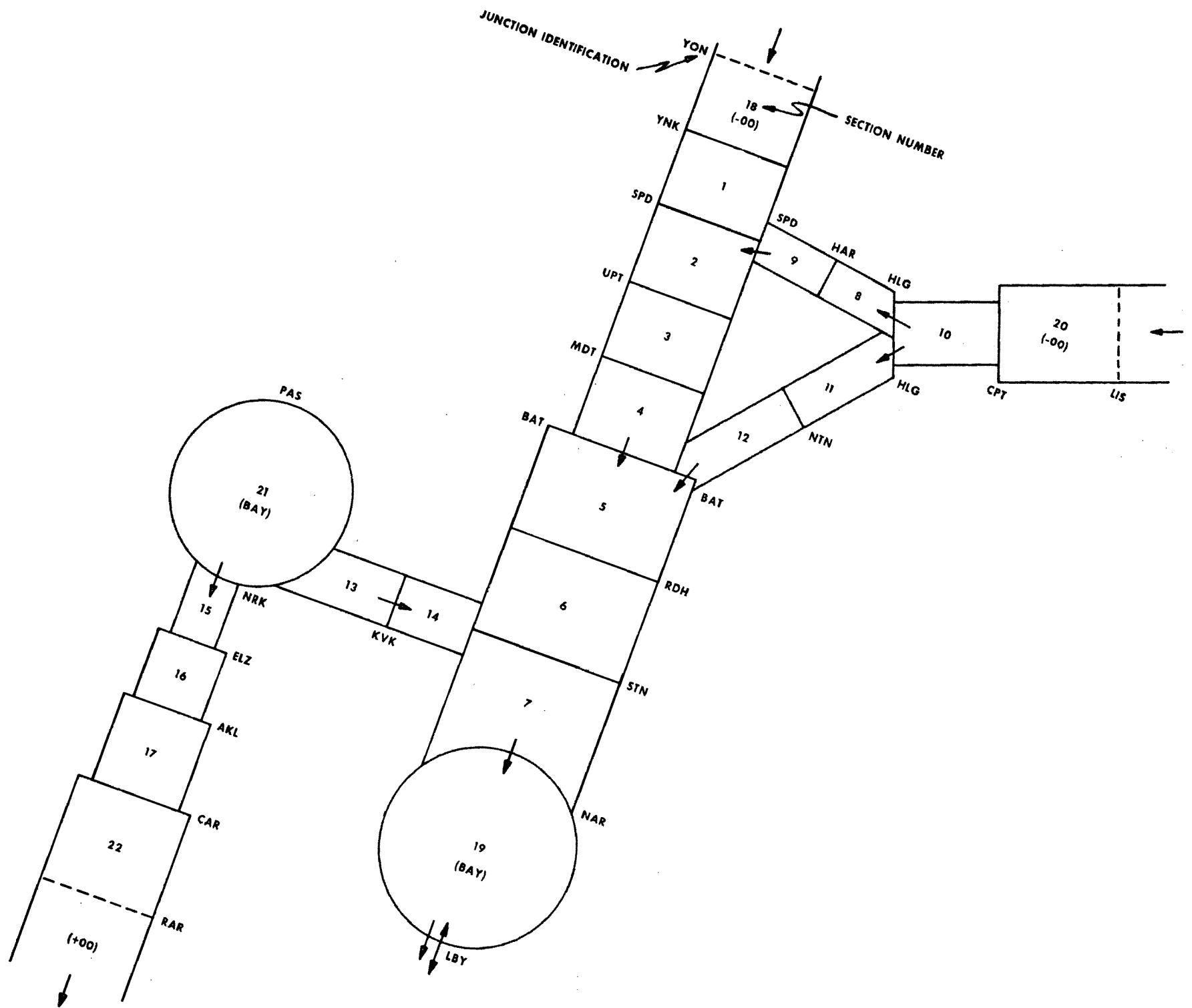


Figure NY-2
SEGMENTATION SCHEME FOR NEW YORK HARBOR COMPLEX

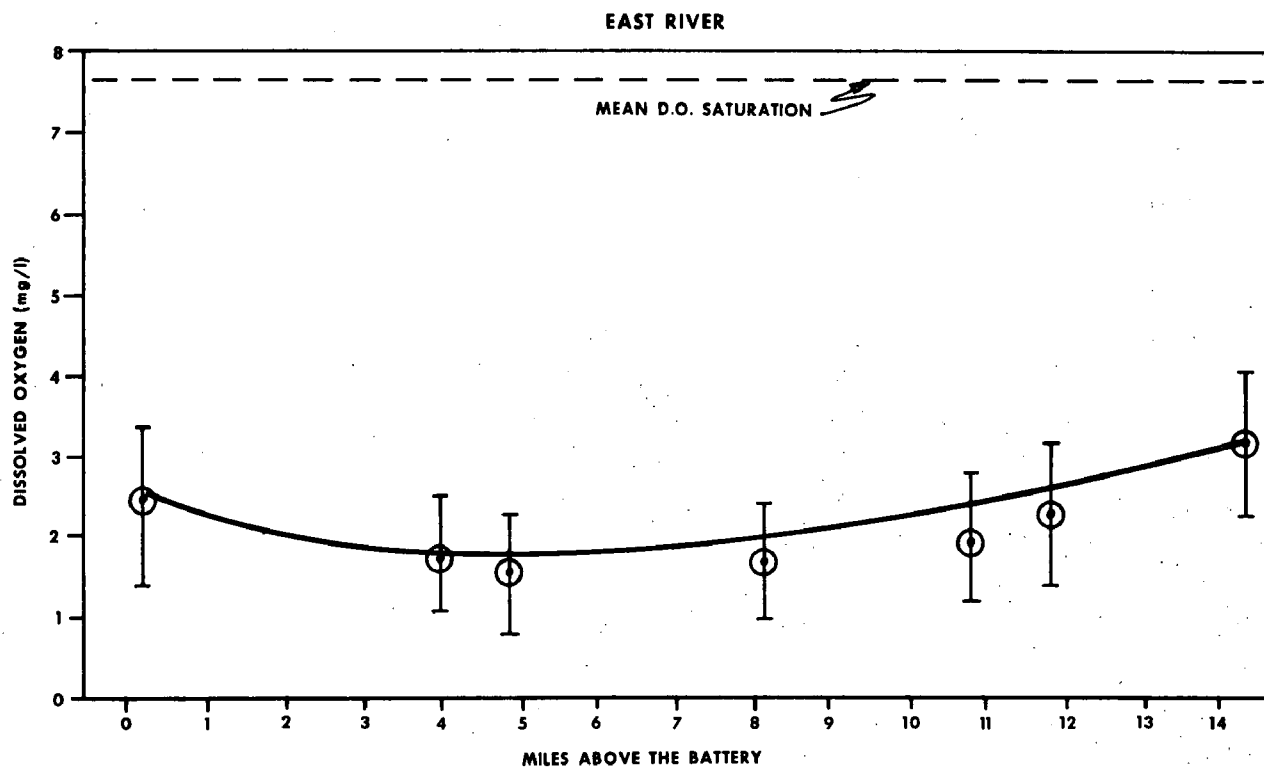
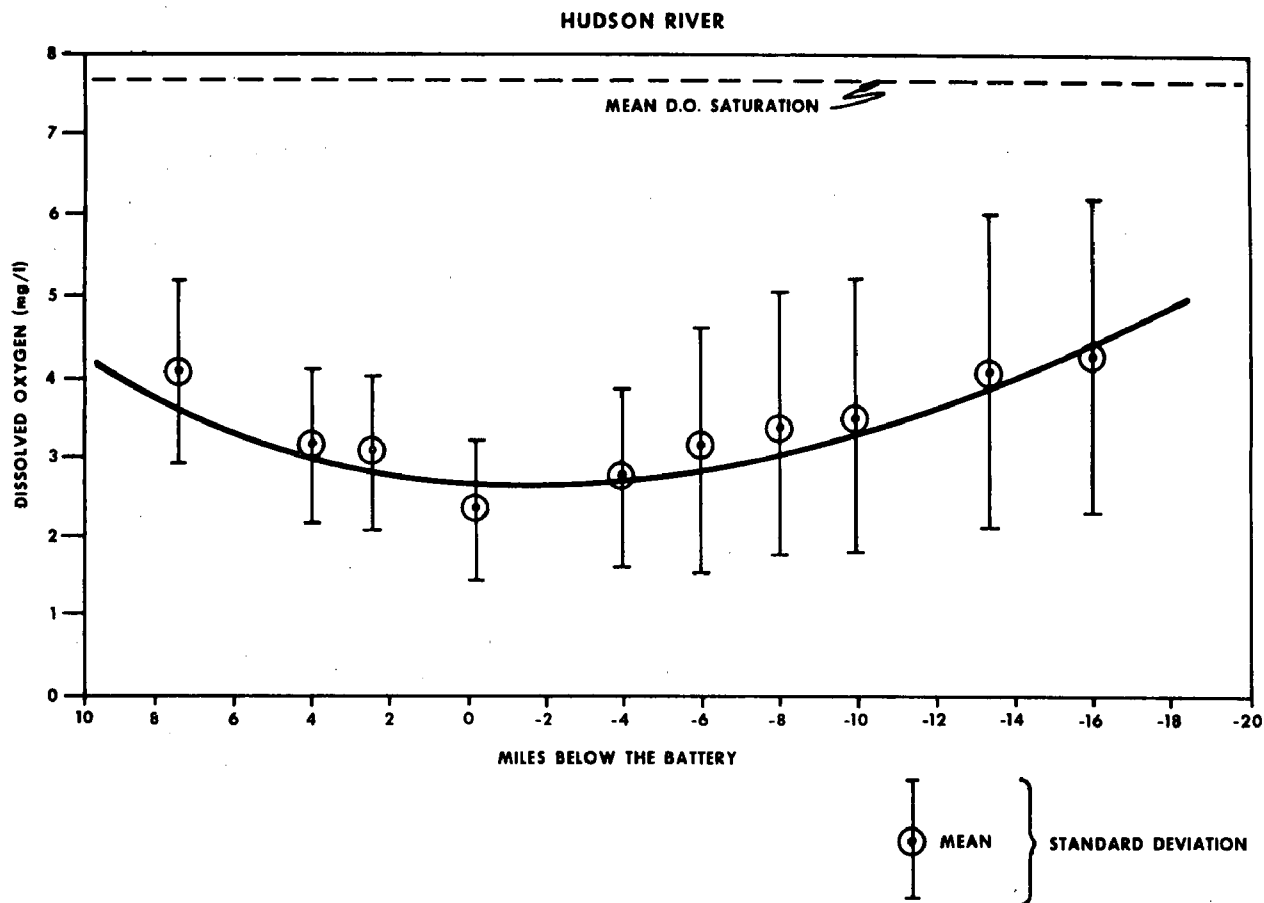
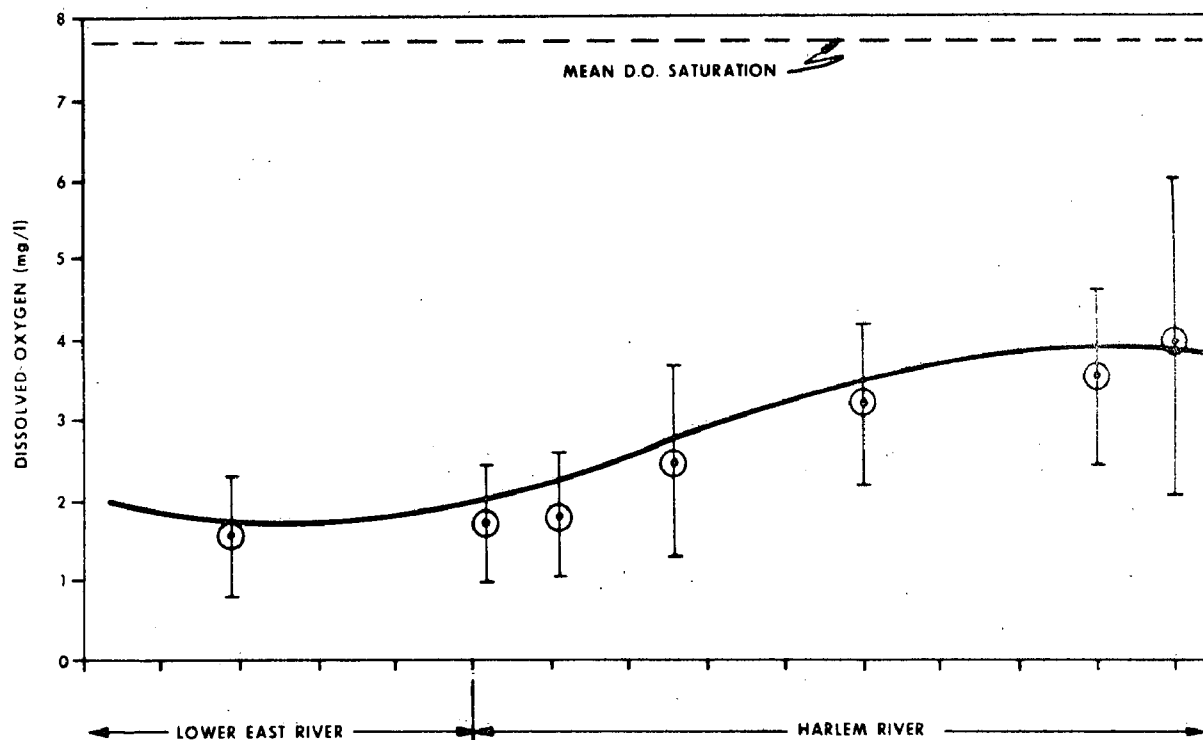


Figure NY-3
NEW YORK MODEL VERIFICATION

HARLEM RIVER



ARTHUR KILL, NEWARK BAY, KILL VAN KULL

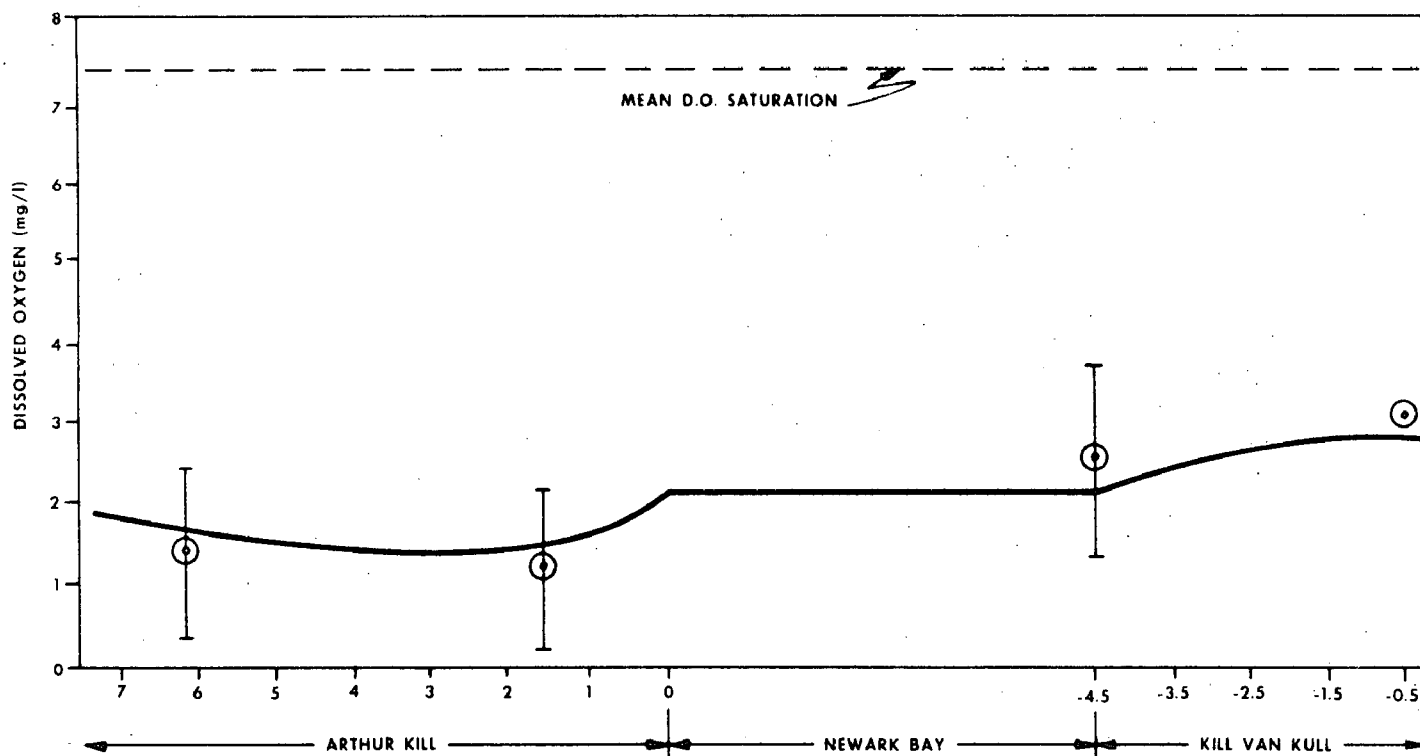


Figure NY-4

NEW YORK MODEL VERIFICATION

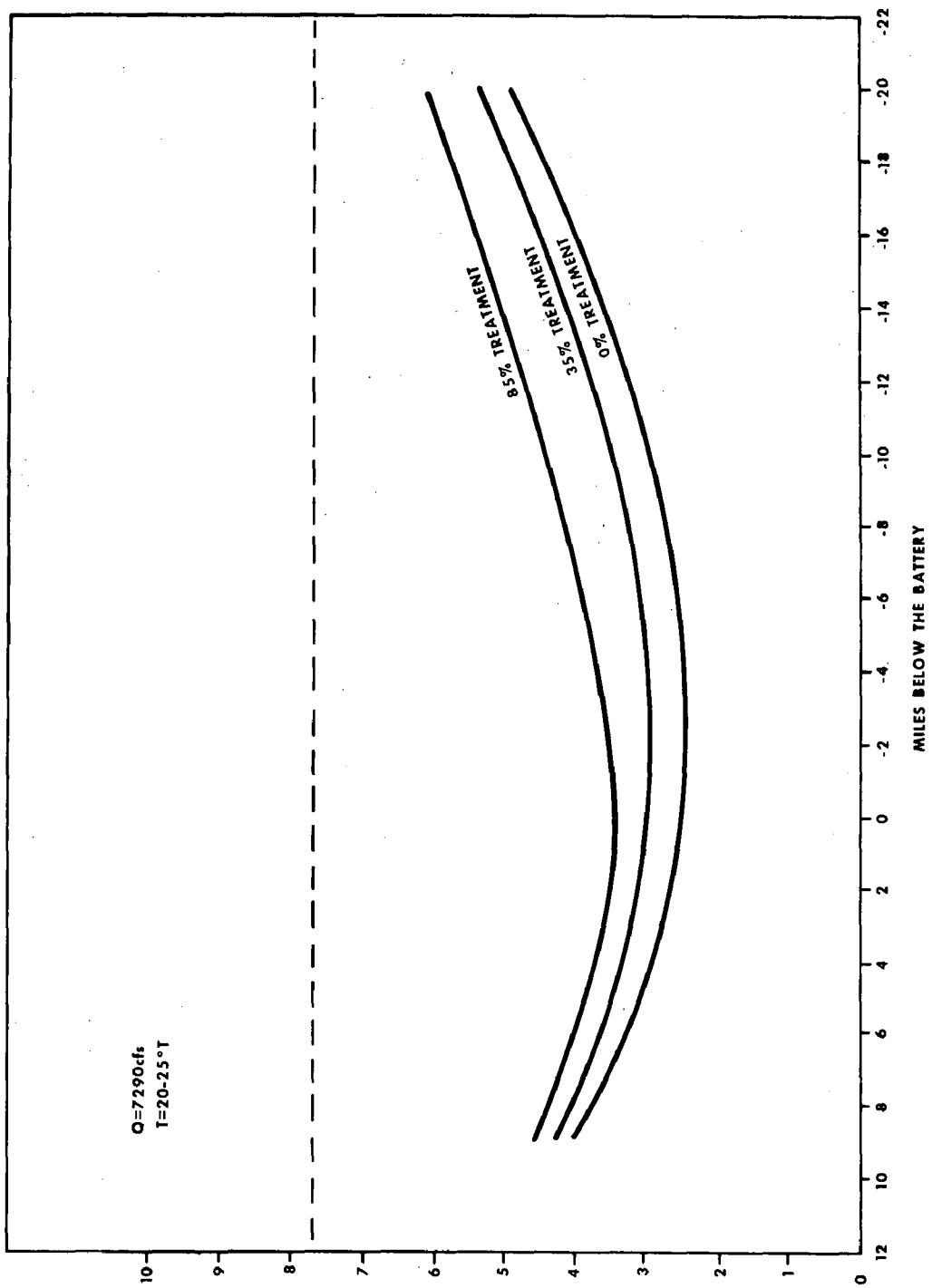


Figure NY-5
EFFECT OF HYPOTHETICAL TREATMENT PLANT ON NORTH RIVER

JOB ID AND DATE CARD

NYHR 0672 17 5 0 0 0 1.020 1.040 1.040 NY HARBOR TEST RUN
INPUT SECTION CARD LISTING

0	1	0	YHK	-15.900	135000.0	0.250	0.100	1.000	7287.0	0.0	0.690E 04	0.0	NYHR
0	1	1	SPD	-13.000	0.0	0.250	20.000	23.370	0.0	35.000	0.0	1.000	RVDL
0	2	0	SPD	-13.000	135000.0	0.250	0.100	1.000	7287.0	0.0	0.585E 05	0.0	NYHR
0	2	1	UPT	-9.600	0.0	0.250	20.000	23.370	0.0	32.000	0.0	1.000	GWBR
0	3	0	UPT	-9.600	135000.0	0.250	0.100	1.000	7287.0	0.0	0.585E 05	0.0	NYHR
0	3	1	MDT	-5.200	0.0	0.250	20.000	23.370	0.0	50.000	0.0	1.000	MDTN
0	4	0	MDT	-5.200	135000.0	0.250	0.100	1.000	7287.0	0.0	0.293E 05	0.0	NYHR
0	4	1	BAT	0.0	0.0	0.250	20.000	23.370	0.0	50.000	0.0	1.000	DNMT
0	5	0	BAT	0.0	340000.0	0.250	0.070	1.000	7287.0	0.0	0.0	0.0	NYHR
0	5	1	RDH	1.500	0.0	0.250	24.000	22.070	0.0	49.000	0.0	1.000	GVIS
0	6	0	RDH	1.500	340000.0	0.250	0.070	1.000	7287.0	0.0	0.0	0.0	NYHR
0	6	1	STN	4.100	0.0	0.250	24.000	22.070	0.0	56.000	0.0	1.000	UPBY
0	7	0	STN	4.100	340000.0	0.250	0.070	1.000	7287.0	0.0	0.0	0.0	NYHR
0	7	1	NAR	9.000	0.0	0.250	24.000	22.070	0.0	35.000	0.0	1.000	NARR
0	8	0	HLG	-7.000	6800.0	0.250	0.300	1.000	0.0	0.0	0.0	0.0	NYHR
0	8	1	HAR	-4.000	0.0	0.250	15.000	23.250	0.0	20.000	0.0	1.000	UHRL
0	9	0	HAR	-4.000	6800.0	0.250	0.300	1.000	0.0	0.0	0.0	0.0	NYHR
0	9	1	SPD	0.0	0.0	0.250	15.000	23.250	0.0	18.000	0.0	1.000	LHRL
0	10	0	CPT	5.000	100000.0	0.250	0.080	1.000	0.0	0.0	0.0	0.0	NYHR

0	10	1	HLC	9.200	0.0	0.250	10.000	21.940	0.0	60.000	0.0	1.000	RIKI
0	11	0	HLC	-7.700	80000.0	0.250	0.090	1.000	0.0	0.0	0.398E 05	0.0	NYHR
0	11	1	NTN	-4.100	0.0	0.250	10.000	22.470	0.0	40.000	0.0	1.000	UPER
0	12	0	NTN	-4.100	80000.0	0.250	0.090	1.000	0.0	0.0	0.544E 05	0.0	NYHR
0	12	1	BAT	0.0	0.0	0.250	10.000	22.470	0.0	33.000	0.0	1.000	LWER
0	13	0	NRK	-3.000	50000.0	0.250	0.125	1.000	0.0	0.0	0.0	0.0	NYHR
0	13	1	KVK	-1.500	0.0	0.250	10.000	23.420	0.0	35.000	0.0	1.000	UKVK
0	14	0	KVK	-1.500	50000.0	0.250	0.125	1.000	0.0	0.0	0.0	0.0	NYHR
0	14	1	STN	0.0	0.0	0.250	10.000	23.420	0.0	35.000	0.0	1.000	LKVK
0	15	0	NRK	0.0	26500.0	0.250	0.150	1.000	0.0	0.0	0.0	0.0	NYHR
0	15	1	ELZ	1.000	0.0	0.250	10.000	24.680	0.0	35.000	0.0	1.000	UAKL
0	16	0	ELZ	1.000	28000.0	0.250	0.150	1.000	0.0	0.0	0.0	0.0	NYHR
0	16	1	AKL	3.000	0.0	0.250	10.000	24.680	0.0	35.000	0.0	1.000	MAKL
0	17	0	AKL	3.000	35000.0	0.250	0.150	1.000	0.0	0.0	0.0	0.0	NYHR
0	17	1	CAR	7.500	0.0	0.250	10.000	24.680	0.0	35.000	0.0	1.000	LAKL
0	18	0	YOM	-20.000	135000.0	0.250	0.100	1.000	7287.0	0.0	0.0	0.0	NYHR
0	18	2	YNK	-15.900	0.0	0.250	20.000	23.370	0.0	40.000	0.0	1.000	YONK
0	19	0	NAR	9.000	340000.0	0.250	0.070	1.000	7287.0	0.0	0.0	0.350	NYHR
0	19	4	LBY	13.000	0.0	0.250	24.000	20.820	0.0	35.000	0.120E 11	1.000	LWBY
0	20	0	LIS	0.0	150000.0	0.250	0.080	1.000	0.0	0.0	0.0	0.0	NYHR

0	20	2	CPT	5.000	0.0	0.250	10.000	940	0.0	65.000	0.0	1.000	LISD
0	21	0	PAS	-2.000	68000.0	0.250	0.300	1.000	0.0	0.0	0.0	0.0	NYHR
0	21	4	NRK	0.0	0.0	0.250	10.000	24.000	0.0	20.000	0.120E 10	1.000	NWKB
0	22	0	CAR	7.500	50000.0	0.250	0.150	1.000	0.0	0.0	0.326E 04	0.0	NYHR
0	22	3	RAN	12.000	0.0	0.250	10.000	24.680	0.0	35.000	0.0	1.000	RARN
SECTION	1	15	DBLE										
SECTION	2	15	DBLE										
SECTION	3	15	DBLE										
SECTION	4	15	DBLE										
SECTION	5	15	DBLE										
SECTION	6	15	DBLE										
SECTION	7	15	DBLE										
SECTION	8	15	DBLE										
SECTION	9	15	DBLE										
SECTION	10	15	DBLE										
SECTION	11	15	DBLE										
SECTION	12	15	DBLE										
SECTION	13	15	DBLE										
SECTION	14	15	DBLE										
SECTION	15	15	DBLE										
SECTION	16	15	DBLE										

SECTION 17 15 DBLE

SECTION 18 15 S NI

SECTION 19 15 S CM

SECTION 20 15 S NI

SECTION 21 15 S CM

SECTION 22 15 S PI

INPUT JUNCTION CARD LISTING

1 YNK	2	18	-15.90	1	-15.90	0	0.0	118600.0	0.0	0.0	0.0	NYHR
2 YNK	6	18	-15.90	1	-15.90	0	0.0	118600.0	0.0	0.0	0.0	NYHR
3 SPD	1	1	-13.00	2	-13.00	0	0.0	0.0	0.0	0.0	0.0	NYHR
4 SPD	1	9	0.0	2	-13.00	0	0.0	0.0	0.0	0.0	0.0	NYHR
5 SPD	9	1	-13.00	2	-13.00	9	0.0	0.0	0.0	0.0	0.0	NYHR
6 UPT	1	2	-9.60	3	-9.60	0	0.0	0.0	0.0	0.0	0.0	NYHR
7 UPT	5	2	-9.60	3	-9.60	0	0.0	0.0	0.0	0.0	0.0	NYHR
8 MDT	1	3	-5.20	4	-5.20	0	0.0	86450.0	0.0	0.0	0.0	NYHR
9 MDT	5	3	-5.20	4	-5.20	0	0.0	86450.0	0.0	0.0	0.0	NYHR
10 BAT	1	4	0.0	5	0.0	0	0.0	100450.0	0.0	0.0	0.0	NYHR
11 BAT	1	12	0.0	5	0.0	0	0.0	100450.0	0.0	0.0	0.0	NYHR
12 BAT	9	4	0.0	5	0.0	12	0.0	100450.0	0.0	0.0	0.0	NYHR
13 RDH	1	5	1.50	6	1.50	0	0.0	68300.0	0.0	0.0	0.0	NYHR

14	RDH	5	5	1.50	6	1.50	0	0.0	68300.0	0.0	0.0	0.0	NYHR
15	STN	1	6	4.10	7	4.10	0	0.0	*****	0.0	0.0	0.0	NYHR
16	STN	1	14	0.0	7	4.10	0	0.0	*****	0.0	0.0	0.0	NYHR
17	STN	9	14	0.0	7	4.10	6	4.10	*****	0.0	0.0	0.0	NYHR
18	NAR	4	7	9.00	19	9.00	0	0.0	0.0	0.0	0.0	0.0	NYHR
19	NAR	13	7	9.00	19	9.00	0	0.0	0.0	0.0	0.0	0.0	NYHR
20	CPT	2	20	5.00	10	5.00	0	0.0	121000.0	0.0	0.0	0.0	NYHR
21	CPT	6	20	5.00	10	5.00	0	0.0	121000.0	0.0	0.0	0.0	NYHR
22	HLC	1	10	9.20	8	-7.00	0	0.0	131500.0	0.0	0.0	0.0	NYHR
23	HLC	1	10	9.20	11	-7.70	0	0.0	131500.0	0.0	0.0	0.0	NYHR
24	HLC	8	10	9.20	8	-7.00	11	-7.70	131500.0	0.0	0.0	0.0	NYHR
25	HAR	1	8	-4.00	9	-4.00	0	0.0	0.0	0.0	0.0	0.0	NYHR
26	HAR	5	8	-4.00	9	-4.00	0	0.0	0.0	0.0	0.0	0.0	NYHR
27	NTN	1	11	-4.10	12	-4.10	0	0.0	59800.0	0.0	0.0	0.0	NYHR
28	NTN	5	11	-4.10	12	-4.10	0	0.0	59800.0	0.0	0.0	0.0	NYHR
29	NRK	4	13	-3.00	21	0.0	0	0.0	0.0	0.0	0.0	0.0	NYHR
30	NRK	4	15	0.0	21	0.0	0	0.0	0.0	0.0	0.0	0.0	NYHR
31	NRK	12	13	-3.00	15	0.0	21	0.0	0.0	0.0	0.0	0.0	NYHR
32	KVK	1	13	-1.50	14	-1.50	0	0.0	0.0	0.0	0.0	0.0	NYHR
33	KVK	5	13	-1.50	14	-1.50	0	0.0	0.0	0.0	0.0	0.0	NYHR
34	ELZ	1	15	1.00	16	1.00	0	0.0	257100.0	0.0	0.0	0.0	NYHR

35 ELZ	5	15	1.00	16	1.00	0	0.0	257100.0	0.0	0.0	0.0	NYHR
36 AKL	1	16	3.00	17	3.00	0	0.0	106732.0	0.0	0.0	0.0	NYHR
37 AKL	5	16	3.00	17	3.00	0	0.0	106732.0	0.0	0.0	0.0	NYHR
38 CAR	3	17	7.50	22	7.50	0	0.0	85065.0	0.0	0.0	0.0	NYHR
39 CAR	7	17	7.50	22	7.50	0	0.0	85065.0	0.0	0.0	0.0	NYHR

EQUATION	1 OF TYPE	2	C DN	(18,S NI	)	(1,DBLE	)	(0,	)	PASS
EQUATION	2 OF TYPE	6	M DN	(18,S NI	)	(1,DBLE	)	(0,	)	PASS
EQUATION	3 OF TYPE	1	C 2D	(1,DBLE	)	(2,DBLE	)	(0,	)	PASS
EQUATION	4 OF TYPE	1	C 2D	(9,DBLE	)	(2,DBLE	)	(0,	)	PASS
EQUATION	5 OF TYPE	9	M3D2	(1,DBLE	)	(2,DBLE	)	(9,DBLE	)	PASS
EQUATION	6 OF TYPE	1	C 2D	(2,DBLE	)	(3,DBLE	)	(0,	)	PASS
EQUATION	7 OF TYPE	5	M 2D	(2,DBLE	)	(3,DBLE	)	(0,	)	PASS
EQUATION	8 OF TYPE	1	C 2D	(3,DBLE	)	(4,DBLE	)	(0,	)	PASS
EQUATION	9 OF TYPE	5	M 2D	(3,DBLE	)	(4,DBLE	)	(0,	)	PASS
EQUATION	10 OF TYPE	1	C 2D	(4,DBLE	)	(5,DBLE	)	(0,	)	PASS
EQUATION	11 OF TYPE	1	C 2D	(12,DBLE	)	(5,DBLE	)	(0,	)	PASS
EQUATION	12 OF TYPE	9	M3D2	(4,DBLE	)	(5,DBLE	)	(12,DBLE	)	PASS
EQUATION	13 OF TYPE	1	C 2D	(5,DBLE	)	(6,DBLE	)	(0,	)	PASS
EQUATION	14 OF TYPE	5	M 2D	(5,DBLE	)	(6,DBLE	)	(0,	)	PASS
EQUATION	15 OF TYPE	1	C 2D	(6,DBLE	)	(7,DBLE	)	(0,	)	PASS
EQUATION	16 OF TYPE	1	C 2D	(14,DBLE	)	(7,DBLE	)	(0,	)	PASS
EQUATION	17 OF TYPE	9	M3D2	(14,DBLE	)	(7,DBLE	)	(6,DBLE	)	PASS
EQUATION	18 OF TYPE	4	C DC	(7,DBLE	)	(19,S CM	)	(0,	)	PASS
EQUATION	19 OF TYPE	13	M1CM	(7,DBLE	)	(19,S CM	)	(0,	)	PASS
EQUATION	20 OF TYPE	2	C DN	(20,S NI	)	(10,DBLE	)	(0,	)	PASS
EQUATION	21 OF TYPE	6	M DN	(20,S NI	)	(10,DBLE	)	(0,	)	PASS
EQUATION	22 OF TYPE	1	C 2D	(10,DBLE	)	(8,DBLE	)	(0,	)	PASS

EQUATION	23 OF TYPE	1	C 2D	(10,DBLE	)	(11,DBLE	)	(0,	)	PASS
EQUATION	24 OF TYPE	8	M3D1	(10,DBLE	)	(8,DBLE	)	(11,DBLE	)	PASS
EQUATION	25 OF TYPE	1	C 2D	(8,DBLE	)	(9,DBLE	)	(0,	)	PASS
EQUATION	26 OF TYPE	5	M 2D	(8,DBLE	)	(9,DBLE	)	(0,	)	PASS
EQUATION	27 OF TYPE	1	C 2D	(11,DBLE	)	(12,DBLE	)	(0,	)	PASS
EQUATION	28 OF TYPE	5	M 2D	(11,DBLE	)	(12,DBLE	)	(0,	)	PASS
EQUATION	29 OF TYPE	4	C DC	(13,DBLE	)	(21,S' CM	)	(0,	)	PASS
EQUATION	30 OF TYPE	4	C DC	(15,DBLE	)	(21,S CM	)	(0,	)	PASS
EQUATION	31 OF TYPE	12	MCM2	(13,DBLE	)	(15,DBLE	)	(21,S CM	)	PASS
EQUATION	32 OF TYPE	1	C 2D	(13,DBLE	)	(14,DBLE	)	(0,	)	PASS
EQUATION	33 OF TYPE	5	M 2D	(13,DBLE	)	(14,DBLE	)	(0,	)	PASS
EQUATION	34 OF TYPE	1	C 2D	(15,DBLE	)	(16,DBLE	)	(0,	)	PASS
EQUATION	35 OF TYPE	5	M 2D	(15,DBLE	)	(16,DBLE	)	(0,	)	PASS
EQUATION	36 OF TYPE	1	C 2D	(16,DBLE	)	(17,DBLE	)	(0,	)	PASS
EQUATION	37 OF TYPE	5	M 2D	(16,DBLE	)	(17,DBLE	)	(0,	)	PASS
EQUATION	38 OF TYPE	3	C DP	(17,DBLE	)	(22,S PI	)	(0,	)	PASS
EQUATION	39 OF TYPE	7	M DP	(17,DBLE	)	(22,S PI	)	(0,	)	PASS

MODEL RUN NYHR COMPUTED 0672 NY HARBOR TEST RUN
DATA GIVEN IN ORIGINAL UNITS

SECTION	KFO	JUNCTION ID AND DISTANCE AT ENDS		HK REM.RATE (1/DAY)	AK REA.RATE (1/DAY)	DK DEO.RATE (1/DAY)	E DISP.RATE (MI2/DAY)	FF ULT/5DAY	TEMP (CENT)	POEL MILE-INCR (MI)
1 KVDL DBLE	1	(SPD, -13.0)	(YNK, -15.9)	0.250	0.100	0.250	20.000	1.000	23.370	1.000
2 GWBR DBLE	1	(UPT, -9.6)	(SPD, -13.0)	0.250	0.100	0.250	20.000	1.000	23.370	1.000
3 MDTN DBLE	1	(MDT, -5.2)	(UPT, -9.6)	0.250	0.100	0.250	20.000	1.000	23.370	1.000
4 DNTN DBLE	1	(BAT, 0.0)	(MDT, -5.2)	0.250	0.100	0.250	20.000	1.000	23.370	1.000
5 GVIS DBLE	1	(RDH, 1.5)	(BAT, 0.0)	0.250	0.070	0.250	24.000	1.000	22.070	1.000
6 UPRY DBLE	1	(STN, 4.1)	(RDH, 1.5)	0.250	0.070	0.250	24.000	1.000	22.070	1.000
7 NARR DBLE	1	(NAR, 9.0)	(STN, 4.1)	0.250	0.070	0.250	24.000	1.000	22.070	1.000
8 UHRL DBLE	1	(HAR, -4.0)	(HLG, -7.0)	0.250	0.300	0.250	15.000	1.000	23.250	1.000
9 LHRL DBLE	1	(SPD, 0.0)	(HAR, -4.0)	0.250	0.300	0.250	15.000	1.000	23.250	1.000
10 RIKI DBLE	1	(HLG, 9.2)	(CPT, 5.0)	0.250	0.080	0.250	10.000	1.000	21.940	1.000
11 UPER DBLE	1	(NTN, -4.1)	(HLG, -7.7)	0.250	0.090	0.250	10.000	1.000	22.470	1.000
12 LWER DBLE	1	(BAT, 0.0)	(NTN, -4.1)	0.250	0.090	0.250	10.000	1.000	22.470	1.000
13 UKVK DBLE	1	(KVK, -1.5)	(NRK, -3.0)	0.250	0.125	0.250	10.000	1.000	23.420	1.000
14 LKVK DBLE	1	(STN, 0.0)	(KVK, -1.5)	0.250	0.125	0.250	10.000	1.000	23.420	1.000
15 UAKL DBLE	1	(ELZ, 1.0)	(NRK, 0.0)	0.250	0.150	0.250	10.000	1.000	24.680	1.000
16 MAKL DBLE	1	(AKL, 3.0)	(ELZ, 1.0)	0.250	0.150	0.250	10.000	1.000	24.680	1.000
17 LAKL DBLE	1	(CAR, 7.5)	(AKL, 3.0)	0.250	0.150	0.250	10.000	1.000	24.680	1.000
18 YONK S NI	2	(YNK, -15.9)	(YON, -20.0)	0.250	0.100	0.250	20.000	1.000	23.370	1.000
19 LWBY S CM	4	(LBY, 13.0)	(NAR, 9.0)	0.250	0.070	0.250	24.000	1.000	20.820	1.000
20 LISD S NI	2	(CPT, 5.0)	(LIS, 0.0)	0.250	0.080	0.250	10.000	1.000	21.940	1.000
21 NWKH S CM	4	(NRK, 0.0)	(PAS, -2.0)	0.250	0.300	0.250	10.000	1.000	24.000	1.000
22 RARN S PI	3	(RAR, 12.0)	(CAR, 7.5)	0.250	0.150	0.250	10.000	1.000	24.680	1.000

SECTION	CROSS SEC-AREA (FT**2)	Q FLOW (CFS)	BD BENTHL-DMD (GMS/HZ-DAY)	PR PHOTO-RESP (MG/L-DAY)	TIDE1 TIDE-COEF	HT DEPTH (FT.)	VOL VOLUME (FT**3)	WU UNF-LOAD (LBS/DAY-MI)
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1	RVOL DBLE	0.135E 06	0.729E 04	0.0	0.0	0.0	0.350E 02	0.0	0.690E 04
2	GWBR DBLE	0.135E 06	0.729E 04	0.0	0.0	0.0	0.320E 02	0.0	0.585E 05
3	MDTN DBLE	0.135E 06	0.729E 04	0.0	0.0	0.0	0.500E 02	0.0	0.585E 05
4	DNTN DBLE	0.135E 06	0.729E 04	0.0	0.0	0.0	0.500E 02	0.0	0.293E 05
5	GVIS DBLE	0.340E 06	0.729E 04	0.0	0.0	0.0	0.490E 02	0.0	0.0
6	UPDY DBLE	0.340E 06	0.729E 04	0.0	0.0	0.0	0.560E 02	0.0	0.0
7	NARR DBLE	0.340E 06	0.729E 04	0.0	0.0	0.0	0.350E 02	0.0	0.0
8	UHRL DBLE	0.680E 04	0.0	0.0	0.0	0.0	0.200E 02	0.0	0.0
9	LMRL DBLE	0.680E 04	0.0	0.0	0.0	0.0	0.180E 02	0.0	0.0
10	RIKI DBLE	0.100E 06	0.0	0.0	0.0	0.0	0.600E 02	0.0	0.0
11	UPER DBLE	0.800E 05	0.0	0.0	0.0	0.0	0.400E 02	0.0	0.398E 05
12	LWER DBLE	0.800E 05	0.0	0.0	0.0	0.0	0.330E 02	0.0	0.544E 05
13	UKVK DBLE	0.500E 05	0.0	0.0	0.0	0.0	0.350E 02	0.0	0.0
14	LKVK DBLE	0.500E 05	0.0	0.0	0.0	0.0	0.350E 02	0.0	0.0
15	UAKL DBLE	0.265E 05	0.0	0.0	0.0	0.0	0.350E 02	0.0	0.0
16	MAKL DBLE	0.280E 05	0.0	0.0	0.0	0.0	0.350E 02	0.0	0.0
17	LAKL DBLE	0.350E 05	0.0	0.0	0.0	0.0	0.350E 02	0.0	0.0
18	YONK S NI	0.135E 06	0.729E 04	0.0	0.0	0.0	0.400E 02	0.0	0.0
19	LWBY S CM	0.340E 06	0.729E 04	0.0	0.0	0.350E 00	0.350E 02	0.120E 11	0.0
20	LISD S NI	0.150E 06	0.0	0.0	0.0	0.0	0.650E 02	0.0	0.0
21	NWKB S CM	0.680E 05	0.0	0.0	0.0	0.0	0.200E 02	0.120E 10	0.0
22	KARN S PI	0.500E 05	0.0	0.0	0.0	0.0	0.350E 02	0.0	0.326E 04

EQUATION	JUNCTION ID, SECTIONS MEETING AT JUNCTION, AND DISTANCE	W PT-LOAD (LBS/DAY)	JD FLOW-DAM (CFS)	DD DEF-DAM (MG/L)	BDD BOD-DAM (MG/L)
1	2 C DN YNK (18-15.9)(1-15.9)(0 0.0)	118600.00000	0.0	0.0	0.0
2	6 M DN YNK (18-15.9)(1-15.9)(0 0.0)	118600.00000	0.0	0.0	0.0
3	1 C 2D SPD (1-13.0)(2-13.0)(0 0.0)	0.0	0.0	0.0	0.0
4	1 C 2D SPD (9 0.0)(2-13.0)(0 0.0)	0.0	0.0	0.0	0.0
5	9 M302 SPD (1-13.0)(2-13.0)(9 0.0)	0.0	0.0	0.0	0.0
6	1 C 2D UPT (2 -9.6)(3 -9.6)(0 0.0)	0.0	0.0	0.0	0.0

7	5	M	2D	UPT	(	2	-9.6)	(	3	-9.6)	(	0	0.0)	0.0	0.0	0.0	0.0
8	1	C	2D	MDT	(	3	-5.2)	(	4	-5.2)	(	0	0.0)	86450.00000	0.0	0.0	0.0
9	5	M	2D	MDT	(	3	-5.2)	(	4	-5.2)	(	0	0.0)	86450.00000	0.0	0.0	0.0
10	1	C	2D	BAT	(	4	0.0)	(	5	0.0)	(	0	0.0)	100450.00000	0.0	0.0	0.0
11	1	C	2D	BAT	(	12	0.0)	(	5	0.0)	(	0	0.0)	100450.00000	0.0	0.0	0.0
12	9	M3D2	BAT	(	4	0.0)	(	5	0.0)	(	12	0.0)	100450.00000	0.0	0.0	0.0	0.0
13	1	C	2D	RDH	(	5	1.5)	(	6	1.5)	(	0	0.0)	68300.00000	0.0	0.0	0.0
14	5	M	2D	RDH	(	5	1.5)	(	6	1.5)	(	0	0.0)	68300.00000	0.0	0.0	0.0
15	1	C	2D	STN	(	6	4.1)	(	7	4.1)	(	0	0.0)	*****	0.0	0.0	0.0
16	1	C	2D	STN	(	14	0.0)	(	7	4.1)	(	0	0.0)	*****	0.0	0.0	0.0
17	9	M3D2	STN	(	14	0.0)	(	7	4.1)	(	6	4.1)	*****	0.0	0.0	0.0	0.0
18	4	C	DC	NAR	(	7	9.0)	(	19	9.0)	(	0	0.0)	0.0	0.0	0.0	0.0
19	13	M1CM	NAR	(	7	9.0)	(	19	9.0)	(	0	0.0)	0.0	0.0	0.0	0.0	0.0
20	2	C	DN	CPT	(	20	5.0)	(	10	5.0)	(	0	0.0)	121000.00000	0.0	0.0	0.0
21	6	M	DN	CPT	(	20	5.0)	(	10	5.0)	(	0	0.0)	121000.00000	0.0	0.0	0.0
22	1	C	2D	HLC	(	10	9.2)	(	8	-7.0)	(	0	0.0)	131500.00000	0.0	0.0	0.0
23	1	C	2D	HLC	(	10	9.2)	(	11	-7.7)	(	0	0.0)	131500.00000	0.0	0.0	0.0
24	8	M3D1	HLC	(	10	9.2)	(	8	-7.0)	(	11	-7.7)	131500.00000	0.0	0.0	0.0	0.0
25	1	C	2D	HAR	(	8	-4.0)	(	9	-4.0)	(	0	0.0)	0.0	0.0	0.0	0.0
26	5	M	2D	HAR	(	8	-4.0)	(	9	-4.0)	(	0	0.0)	0.0	0.0	0.0	0.0
27	1	C	2D	NTN	(	11	-4.1)	(	12	-4.1)	(	0	0.0)	59800.00000	0.0	0.0	0.0
28	5	M	2D	NTN	(	11	-4.1)	(	12	-4.1)	(	0	0.0)	59800.00000	0.0	0.0	0.0
29	4	C	DC	NRK	(	13	-3.0)	(	21	0.0)	(	0	0.0)	0.0	0.0	0.0	0.0
30	4	C	DC	NRK	(	15	0.0)	(	21	0.0)	(	0	0.0)	0.0	0.0	0.0	0.0
31	12	MCM2	NRK	(	13	-3.0)	(	15	0.0)	(	21	0.0)	0.0	0.0	0.0	0.0	0.0
32	1	C	2D	KVK	(	13	-1.5)	(	14	-1.5)	(	0	0.0)	0.0	0.0	0.0	0.0
33	5	M	2D	KVK	(	13	-1.5)	(	14	-1.5)	(	0	0.0)	0.0	0.0	0.0	0.0
34	1	C	2D	ELZ	(	15	1.0)	(	16	1.0)	(	0	0.0)	257100.00000	0.0	0.0	0.0
35	5	M	2D	ELZ	(	15	1.0)	(	16	1.0)	(	0	0.0)	257100.00000	0.0	0.0	0.0
36	1	C	2D	AKL	(	16	3.0)	(	17	3.0)	(	0	0.0)	106732.00000	0.0	0.0	0.0
37	5	M	2D	AKL	(	16	3.0)	(	17	3.0)	(	0	0.0)	106732.00000	0.0	0.0	0.0

38	3	C	DP	CAR	(	17	7.5)	(	22	7.5)	(	0	0.0)	85065.00000	0.0	0.0	0.0
39	7	M	DP	CAR	(	17	7.5)	(	22	7.5)	(	0	0.0)	85065.00000	0.0	0.0	0.0

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MODEL RUN NYHR COMPUTED 0672 NY HARBOR TEST RUN
DATA GIVEN IN COMPATIBLE UNITS

SECTION	KFO	JUNCTION ID AND DISTANCE AT ENDS		HK REM.RATE (1/DAY)	AK REA.RATE (1/DAY)	OK DED.RATE (1/DAY)	E DISP.RATE (MI2/DAY)	FF ULT/5DAY	TEMP (CENT)	POEL MILE-INCR (MI)
1 RVDL DBLE	1	(SPD, -13.0)	(YVK, -15.9)	0.285	0.107	0.285	20.000	1.000	23.370	1.000
2 GWBR DBLE	1	(UPT, -9.6)	(SPD, -13.0)	0.285	0.107	0.285	20.000	1.000	23.370	1.000
3 MDTN DBLE	1	(MDT, -5.2)	(UPT, -9.6)	0.285	0.107	0.285	20.000	1.000	23.370	1.000
4 DNTN DBLE	1	(BAT, 0.0)	(MDT, -5.2)	0.285	0.107	0.285	20.000	1.000	23.370	1.000
5 GVIS DBLE	1	(RDH, 1.5)	(BAT, 0.0)	0.271	0.073	0.271	24.000	1.000	22.070	1.000
6 UPBY DBLE	1	(STN, 4.1)	(RDH, 1.5)	0.271	0.073	0.271	24.000	1.000	22.070	1.000
7 NARR DBLE	1	(NAR, 9.0)	(STN, 4.1)	0.271	0.073	0.271	24.000	1.000	22.070	1.000
8 UHRL DBLE	1	(HAR, -4.0)	(HLG, -7.0)	0.284	0.320	0.284	15.000	1.000	23.250	1.000
9 LHRL DBLE	1	(SPD, 0.0)	(HAR, -4.0)	0.284	0.320	0.284	15.000	1.000	23.250	1.000
10 RIKI DBLE	1	(HLG, 9.2)	(CPT, 5.0)	0.270	0.083	0.270	10.000	1.000	21.940	1.000
11 UPER DBLE	1	(NTN, -4.1)	(HLG, -7.7)	0.275	0.095	0.275	10.000	1.000	22.470	1.000
12 LWER DBLE	1	(BAT, 0.0)	(NTN, -4.1)	0.275	0.095	0.275	10.000	1.000	22.470	1.000
13 UKVK DBLE	1	(KVK, -1.5)	(NRK, -3.0)	0.286	0.134	0.286	10.000	1.000	23.420	1.000
14 LKVK DBLE	1	(STN, 0.0)	(KVK, -1.5)	0.286	0.134	0.286	10.000	1.000	23.420	1.000
15 UAKL DBLE	1	(ELZ, 1.0)	(NRK, 0.0)	0.300	0.165	0.300	10.000	1.000	24.680	1.000
16 MAKL DBLE	1	(AKL, 3.0)	(ELZ, 1.0)	0.300	0.165	0.300	10.000	1.000	24.680	1.000
17 LAKL DBLE	1	(CAR, 7.5)	(AKL, 3.0)	0.300	0.165	0.300	10.000	1.000	24.680	1.000
18 YONK S NI	2	(YVK, -15.9)	(YUN, -20.0)	0.285	0.107	0.285	20.000	1.000	23.370	1.000
19 LWBY S CM	4	(LBY, 13.0)	(NAR, 9.0)	0.258	0.071	0.258	24.000	1.000	20.820	1.000
20 LISD S NI	2	(CPT, 5.0)	(LIS, 0.0)	0.270	0.083	0.270	10.000	1.000	21.940	1.000
21 NWKB S CM	4	(NRK, 0.0)	(PAS, -2.0)	0.292	0.325	0.292	10.000	1.000	24.000	1.000
22 RARN S PI	3	(RAR, 12.0)	(CAR, 7.5)	0.300	0.165	0.300	10.000	1.000	24.680	1.000

SECTION	CROSS SEC-AREA (MI**2)	Q FLOW (MI**3/DAY)	RD BENTHL-DMD (GMS/M2-DAY)	PR PHOTO-RESP (MG/L-DAY)	TIDE1 TIDE-COEF	HT DEPTH (MTRS)	VOL VOLUME (MI**3)	NU/AREA*RK UNF-LOAD (MG/L)
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1	RVDL DBLE	0.484E-02	0.428E-02	0.0	0.0	0.0	0.107E 02	0.0	0.751E-03
2	GWRR DBLE	0.484E-02	0.428E-02	0.0	0.0	0.0	0.975E 01	0.0	0.637E-02
3	MDTN DBLE	0.484E-02	0.428E-02	0.0	0.0	0.0	0.152E 02	0.0	0.637E-02
4	DNTN DBLE	0.484E-02	0.428E-02	0.0	0.0	0.0	0.152E 02	0.0	0.318E-02
5	GVIS DBLE	0.122E-01	0.428E-02	0.0	0.0	0.0	0.149E 02	0.0	0.0
6	UPBY DBLE	0.122E-01	0.428E-02	0.0	0.0	0.0	0.171E 02	0.0	0.0
7	NARR DBLE	0.122E-01	0.428E-02	0.0	0.0	0.0	0.107E 02	0.0	0.0
8	UHRL DBLE	0.244E-03	0.0	0.0	0.0	0.0	0.610E 01	0.0	0.0
9	LHRL DBLE	0.244E-03	0.0	0.0	0.0	0.0	0.549E 01	0.0	0.0
10	RIKI DBLE	0.359E-02	0.0	0.0	0.0	0.0	0.183E 02	0.0	0.0
11	UPER DBLE	0.287E-02	0.0	0.0	0.0	0.0	0.122E 02	0.0	0.433E-02
12	LWER DBLE	0.287E-02	0.0	0.0	0.0	0.0	0.101E 02	0.0	0.592E-02
13	UKVK DBLE	0.179E-02	0.0	0.0	0.0	0.0	0.107E 02	0.0	0.0
14	LKVK DBLE	0.179E-02	0.0	0.0	0.0	0.0	0.107E 02	0.0	0.0
15	UAKL DBLE	0.951E-03	0.0	0.0	0.0	0.0	0.107E 02	0.0	0.0
16	MAKL DBLE	0.100E-02	0.0	0.0	0.0	0.0	0.107E 02	0.0	0.0
17	LAKL DBLE	0.126E-02	0.0	0.0	0.0	0.0	0.107E 02	0.0	0.0
18	YONK S NI	0.484E-02	0.428E-02	0.0	0.0	0.0	0.122E 02	0.0	0.0
19	LWHY S CM	0.122E-01	0.428E-02	0.0	0.0	0.350E 00	0.107E 02	0.815E-01	0.0
20	LISD S NI	0.538E-02	0.0	0.0	0.0	0.0	0.198E 02	0.0	0.0
21	NWKB S CM	0.244E-02	0.0	0.0	0.0	0.0	0.610E 01	0.815E-02	0.0
22	RARN S PI	0.179E-02	0.0	0.0	0.0	0.0	0.107E 02	0.0	0.355E-03

SECTION	U	S	V	SD	VD	B	C	G	H	ZZ	FAC
1	RVDL DBLE	0.88327	0.14355	-0.09938	0.09845	-0.05429	10.54405	0.04686	19.21931	-0.04218	1.45 -1.60
2	GWRR DBLE	0.88327	0.14355	-0.09938	0.09845	-0.05429	-0.25954	-0.61092	-3.13409	-5.54147	12.30 -1.60
3	MDTN DBLE	0.88327	0.14355	-0.09938	0.09845	-0.05429	-0.25953	-0.61091	-3.13406	-5.54146	12.30 -1.60
4	DNTN DBLE	0.88327	0.14355	-0.09938	0.09845	-0.05429	0.88562	0.43995	1.00239	0.00695	6.15 -1.60
5	GVIS DBLE	0.35071	0.11385	-0.09923	0.06291	-0.04830	1.44112	2.18923	3.30737	6.69994	0.0 -1.37
6	UPBY DBLE	0.35071	0.11385	-0.09923	0.06291	-0.04830	1.34062	2.32759	3.02304	7.03589	0.0 -1.37

7	NARK DBLE	0.35071	0.11385	-0.09923	0.06291	-0.04830	-0.22085	6.06827	-2.13043	15.16661	0.0	-1.37
8	UHRL DBLE	0.0	0.13760	-0.13760	0.14605	-0.14605	0.98118	1.36448	-6.29290	-8.40562	0.0	7.90
9	LHRL DBLE	0.0	0.13760	-0.13760	0.14605	-0.14605	0.98118	1.36448	-6.29287	-8.40561	0.0	7.90
10	KIKI DBLE	0.0	0.16425	-0.16425	0.09118	-0.09118	0.81348	1.19246	4.61569	1.37646	0.0	-1.45
11	UPER DBLE	0.0	0.16596	-0.16596	0.09722	-0.09722	0.07329	-0.43086	-7.13412	-4.41807	15.96	-1.52
12	LWER DBLE	0.0	0.16596	-0.16596	0.09722	-0.09722	-3.26220	-0.59393	-16.42650	-6.22028	21.82	-1.52
13	UKVK DBLE	0.0	0.16908	-0.16908	0.11565	-0.11565	1.18651	2.50113	2.85627	8.71378	0.0	-1.88
14	LKVK DBLE	0.0	0.16908	-0.16908	0.11565	-0.11565	1.18651	2.50113	2.85625	8.71378	0.0	-1.88
15	UAKL DBLE	0.0	0.17331	-0.17331	0.12828	-0.12828	9.12211	-4.25399	29.58304	-13.61738	0.0	-2.21
16	MAKL DBLE	0.0	0.17331	-0.17331	0.12828	-0.12828	2.03637	5.76725	7.37567	15.08534	0.0	-2.21
17	LAKL DBLE	0.0	0.17331	-0.17331	0.12828	-0.12828	0.44899	10.25771	1.90665	26.89362	0.0	-2.21
18	YONK S NI	0.88327	0.14355	-0.09938	0.09845	-0.05429	18.10229	0.0	29.84416	0.0	0.0	-1.60
19	LWBY S CM	0.35071	0.11128	-0.09667	0.06224	-0.04763	1.86892	0.0	3.51024	0.0	0.0	-1.38
20	LISD S NI	0.0	0.16425	-0.16425	0.09118	-0.09118	1.04422	0.0	5.16876	0.0	0.0	-1.45
21	NWKB S CM	0.0	0.17102	-0.17102	0.18020	-0.18020	4.86811	0.0	5.19846	0.0	0.0	9.06
22	RARN S PI	0.0	0.17331	-0.17331	0.12828	-0.12828	0.0	13.88085	0.0	32.98453	1.20	-2.21

EQUATION	JUNCTION ID, SECTIONS MEETING AT JUNCTION, AND DISTANCE	PT-LOAD (MI**3/DAY)(MG/L)	QD FLOW-DAM (MI**3/DAY)	QD DEF-DAM (MG/L)	BDD BDD-DAM (MG/L)
1	2 C DN YNK (18-15.9)(1-15.9)(0 0.0)	0.01291	0.0	0.0	0.0
2	6 M DN YNK (18-15.9)(1-15.9)(0 0.0)	0.01291	0.0	0.0	0.0
3	1 C 2D SPD (1-13.0)(2-13.0)(0 0.0)	0.0	0.0	0.0	0.0
4	1 C 2D SPD (9 0.0)(2-13.0)(0 0.0)	0.0	0.0	0.0	0.0
5	9 M3D2 SPD (1-13.0)(2-13.0)(9 0.0)	0.0	0.0	0.0	0.0
6	1 C 2D UPT (2 -9.6)(3 -9.6)(0 0.0)	0.0	0.0	0.0	0.0
7	5 M 2D UPT (2 -9.6)(3 -9.6)(0 0.0)	0.0	0.0	0.0	0.0
8	1 C 2D MDT (3 -5.2)(4 -5.2)(0 0.0)	0.00941	0.0	0.0	0.0
9	5 M 2D MDT (3 -5.2)(4 -5.2)(0 0.0)	0.00941	0.0	0.0	0.0
10	1 C 2D BAT (4 0.0)(5 0.0)(0 0.0)	0.01094	0.0	0.0	0.0
11	1 C 2D BAT (12 0.0)(5 0.0)(0 0.0)	0.01094	0.0	0.0	0.0
12	9 M3D2 BAT (4 0.0)(5 0.0)(12 0.0)	0.01094	0.0	0.0	0.0

13	1	C	2D	RDH	(	5	1.5)	(	6	1.5)	(	0	0.0)	0.00744	0.0	0.0	0.0
14	5	M	2D	RDH	(	5	1.5)	(	6	1.5)	(	0	0.0)	0.00744	0.0	0.0	0.0
15	1	C	2D	STN	(	6	4.1)	(	7	4.1)	(	0	0.0)	0.15133	0.0	0.0	0.0
16	1	C	2D	STN	(	14	0.0)	(	7	4.1)	(	0	0.0)	0.15133	0.0	0.0	0.0
17	9	M3D2	STN	(	14	0.0)	(	7	4.1)	(	6	4.1)	0.15133	0.0	0.0	0.0	0.0
18	4	C	DC	NAR	(	7	9.0)	(	19	9.0)	(	0	0.0)	0.0	0.0	0.0	0.0
19	13	M1CM	NAR	(	7	9.0)	(	19	9.0)	(	0	0.0)	0.0	0.0	0.0	0.0	0.0
20	2	C	DN	CPT	(	20	5.0)	(	10	5.0)	(	0	0.0)	0.01317	0.0	0.0	0.0
21	6	M	DN	CPT	(	20	5.0)	(	10	5.0)	(	0	0.0)	0.01317	0.0	0.0	0.0
22	1	C	2D	HLG	(	10	9.2)	(	8	-7.0)	(	0	0.0)	0.01432	0.0	0.0	0.0
23	1	C	2D	HLG	(	10	9.2)	(	11	-7.7)	(	0	0.0)	0.01432	0.0	0.0	0.0
24	8	M3D1	HLG	(	10	9.2)	(	8	-7.0)	(	11	-7.7)	0.01432	0.0	0.0	0.0	0.0
25	1	C	2D	HAR	(	8	-4.0)	(	9	-4.0)	(	0	0.0)	0.0	0.0	0.0	0.0
26	5	M	2D	HAR	(	8	-4.0)	(	9	-4.0)	(	0	0.0)	0.0	0.0	0.0	0.0
27	1	C	2D	NTN	(	11	-4.1)	(	12	-4.1)	(	0	0.0)	0.00651	0.0	0.0	0.0
28	5	M	2D	NTN	(	11	-4.1)	(	12	-4.1)	(	0	0.0)	0.00651	0.0	0.0	0.0
29	4	C	DC	NRK	(	13	-3.0)	(	21	0.0)	(	0	0.0)	0.0	0.0	0.0	0.0
30	4	C	DC	NRK	(	15	0.0)	(	21	0.0)	(	0	0.0)	0.0	0.0	0.0	0.0
31	12	MCM2	NRK	(	13	-3.0)	(	15	0.0)	(	21	0.0)	0.0	0.0	0.0	0.0	0.0
32	1	C	2D	KVK	(	13	-1.5)	(	14	-1.5)	(	0	0.0)	0.0	0.0	0.0	0.0
33	5	M	2D	KVK	(	13	-1.5)	(	14	-1.5)	(	0	0.0)	0.0	0.0	0.0	0.0
34	1	C	2D	ELZ	(	15	1.0)	(	16	1.0)	(	0	0.0)	0.02779	0.0	0.0	0.0
35	5	M	2D	ELZ	(	15	1.0)	(	16	1.0)	(	0	0.0)	0.02779	0.0	0.0	0.0
36	1	C	2D	AKL	(	16	3.0)	(	17	3.0)	(	0	0.0)	0.01162	0.0	0.0	0.0
37	5	M	2D	AKL	(	16	3.0)	(	17	3.0)	(	0	0.0)	0.01162	0.0	0.0	0.0
38	3	C	DP	CAR	(	17	7.5)	(	22	7.5)	(	0	0.0)	0.00926	0.0	0.0	0.0
39	7	M	DP	CAR	(	17	7.5)	(	22	7.5)	(	0	0.0)	0.00926	0.0	0.0	0.0

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
1	RVOL	-15.9	1.8471	3.2837	YNK
1	RVOL	-14.9	1.9517	3.4734	
1	RVOL	-13.9	2.1639	3.6616	
1	RVOL	-13.0	2.3457	3.8284	SPD

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
2	GWBR	-13.0	2.3457	3.8284	SPD
2	GWBR	-12.0	2.5499	4.0048	
2	GWBR	-11.0	2.7332	4.1739	
2	GWBR	-10.0	2.8974	4.3336	
2	GWBR	-9.6	2.9580	4.3944	UPT

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
3	MDTN	-9.6	2.9581	4.3944	UPT
3	MDTN	-8.6	3.0980	4.5378	
3	MDTN	-7.6	3.2222	4.6672	
3	MDTN	-6.6	3.3318	4.7809	
3	MDTN	-5.6	3.4276	4.8774	
3	MDTN	-5.2	3.4623	4.9107	MDT

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
4	DNTN	-5.2	3.4623	4.9107	MDT
4	DNTN	-4.2	3.4573	4.9803	
4	DNTN	-3.2	3.4689	5.0299	
4	DNTN	-2.2	3.4981	5.0585	
4	DNTN	-1.2	3.5459	5.0650	
4	DNTN	-0.2	3.6141	5.0477	
4	DNTN	0.0	3.6304	5.0412	BAT

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
5	GVIS	0.0	3.6304	5.0412	BAT
5	GVIS	1.0	3.5973	4.9853	
5	GVIS	1.5	3.5959	4.9474	RDM

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
6	UPBY	1.5	3.5959	4.9474	RDH
6	UPBY	2.5	3.5982	4.8514	
6	UPBY	3.5	3.6415	4.7279	
6	UPBY	4.1	3.6876	4.6401	STN

NYHR

NY HARBOR TEST RUN
COMPUTED 06/2

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	O.D DEFICIT MG/L -----	JUNCTION ID -----
7	NARR	4.1	3.6876	4.6401	STN
7	NARR	5.1	3.2635	4.4545	
7	NARR	6.1	2.8703	4.2427	
7	NARR	7.1	2.5041	4.0081	
7	NARR	8.1	2.1609	3.7537	
7	NARR	9.0	1.8689	3.5103	NAR

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
8	UHRL	-7.0	3.9494	5.5655	HLG
8	UHRL	-6.0	3.5451	5.1909	
8	UHRL	-5.0	3.2080	4.8599	
8	UHRL	-4.0	2.9318	4.5719	HAR

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	DOU MG/L -----	O.O DEFICIT MG/L -----	JUNCTION ID -----
9	LHRL	-4.0	2.9318	4.5719	HAR
9	LHRL	-3.0	2.7111	4.3258	
9	LHRL	-2.0	2.5419	4.1207	
9	LHRL	-1.0	2.4208	3.9553	
9	LHRL	0.0	2.3457	3.8285	SPD

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
10	RIKI	5.0	2.3738	4.7229	CPT
10	RIKI	6.0	2.6245	4.9797	
10	RIKI	7.0	2.9461	5.2069	
10	RIKI	8.0	3.3473	5.3977	
10	RIKI	9.0	3.8391	5.5429	
10	RIKI	9.2	3.9494	5.5654	HLG

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
11	UPER	-7.7	3.9694	5.5654	HLG
11	UPER	-6.7	4.1896	5.7205	
11	UPER	-5.7	4.3943	5.8143	
11	UPER	-4.7	4.5691	5.8420	
11	UPER	-4.1	4.6617	5.8250	NTN

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
12	LWER	-4.1	4.6617	5.8250	NTN
12	LWER	-3.1	4.5428	5.7386	
12	LWER	-2.1	4.3427	5.5815	
12	LWER	-1.1	4.0558	5.3577	
12	LWER	-0.1	3.6741	5.0729	
12	LWER	0.0	3.6304	5.0414	BAT

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	O-D DEFICIT MG/L -----	JUNCTION ID -----
13	OKVK	-3.0	4.8681	5.1984	NRK
13	UKVK	-2.0	4.3536	5.0665	
13	UKVK	-1.5	4.1439	4.9785	KVK

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
14	LKVK	-1.5	4.1439	4.9785	KVK
14	LKVK	-0.5	3.8121	4.7644	
14	LKVK	0.0	3.6876	4.6400	STN

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
15	UAKL	0.0	4.8681	5.1984	NRK
15	UAKL	1.0	7.2713	5.5718	ELZ

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
16	MAKL	1.0	7.2713	5.5719	ELZ
16	MAKL	2.0	6.9579	5.8152	
16	MAKL	3.0	6.8540	5.9446	AKL

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SLCT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
17	LAKL	3.0	6.8540	5.9446	AKL
17	LAKL	4.0	6.0264	5.9549	
17	LAKL	5.0	5.3803	5.8816	
17	LAKL	6.0	4.8962	5.7431	
17	LAKL	7.0	4.5596	5.5515	
17	LAKL	7.5	4.4432	5.4382	CAR

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
18	YONK	-20.0	1.0254	2.5261	YON
18	YONK	-19.0	1.1837	2.7040	
18	YONK	-18.0	1.3664	2.8874	
18	YONK	-17.0	1.5773	3.0749	
18	YONK	-16.0	1.8208	3.2647	
18	YONK	-15.9	1.8471	3.2837	YNK

NYHR

NY HARBOR TEST RU
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
19	LWBY	9.0	1.8689	3.5102	NAR
19	LWBY	10.0	1.8689	3.5102	
19	LWBY	11.0	1.8689	3.5102	
19	LWBY	12.0	1.8689	3.5102	
19	LWBY	13.0	1.8689	3.5102	LBY

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
20	LISD	0.0	1.0442	3.6594	LIS
20	LISD	1.0	1.2306	3.8834	
20	LISD	2.0	1.4503	4.1064	
20	LISD	3.0	1.7092	4.3243	
20	LISD	4.0	2.0143	4.5320	
20	LISD	5.0	2.3738	4.7229	CPT

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
21	NWKB	-2.0	4.8681	5.1985	PAS
21	NWKB	-1.0	4.8681	5.1985	
21	NWKB	0.0	4.8681	5.1985	NRK

NYHR

NY HARBOR TEST RUN
COMPUTED 0672

SECT. NO. -----	SECT. NAME -----	DIST. MI -----	BOD MG/L -----	D.O DEFICIT MG/L -----	JUNCTION ID -----
22	RARN	7.5	4.4432	5.4382	CAR
22	RARN	8.5	3.8412	5.2526	
22	RARN	9.5	3.3349	5.0377	
22	RARN	10.5	2.9032	4.8053	
22	RARN	11.5	2.5512	4.5644	
22	RARN	12.0	2.3942	4.4430	RAR