APPENDIX F

Additional errors found in the 316(b).

Chapter 3

p. 3.2-3: There is no Figure 3.1-3 or any detailed illustration of the discharge structure as indicated below in Section 3.2.4.

> **3.2.4 Discharge Structure**
>
> The condenser cooling water from all four units is discharged to a common overflow canal, approximately 1,000 ft long with varying widths and constant bottom elevation (Figure 3.1-3). Just north of the East Front Street bridge, the overflow canal terminates at the recirculation gates. Here the heated effluent can be directed either south through the discharge canal (approximately 5,800 ft x 560 ft) to Lake Erie or north through the MacMillan Road canal (approximately 1,400 ft long by 160 ft wide) to the Raisin River.

Table 3.3-1: 2328 MW is given as the maximum net capacity. The table, however, lists several capacity values that exceed 2328 MW. It appears that the maximum is 2528 MW, not 2328 MW.

Table 3.3-3: The area of 1251.0 ft^2 given for calculating velocity in front of the screens is incorrect. (572.27-546.0)(8)(10) = 2101.6 ft^2. The velocity of 0.77 ft/sec is correct however.

TABLE 3.3-3 INTAKE VELOCITY CALCULATION AT EACH SCREENHOUSE, MONROE POWER PLANT

Mean April 1975-April 1976 water level	=	572.27 ft
Screen bottom elevation	=	546.0 ft
Skimmer wall bottom elevation	=	560.0 ft
Q = maximum flow possible/screenhouse	=	1,624.2 ft^3/sec
Number of screens	=	8
Screen width	=	10.0 ft
Screenwell width	=	11.17 ft

1. Calculation of Velocity Directly in Front of Screens

$$A = \text{Area of Intake } (ft^2) = \left(\text{Mean Water Level (ft)} - \text{Screen Bottom Elevation (ft)}\right)\left(\text{No. of Screens}\right)\left(\text{Screen Width (ft)}\right)$$

$$\longrightarrow A = (572.27 \text{ ft} - 546.0 \text{ ft})\,(8)\,(10 \text{ ft}) = 1{,}251.0 \text{ ft}^2$$

$$V = Q/A = \frac{1{,}624.2 \text{ ft}^3/\text{sec}}{1{,}251.0 \text{ ft}^2} = 0.77 \text{ ft/sec}$$

2. Calculation of Velocity Past Skimmer Wall

$$A = \text{Cross-section of screenwell (ft}^2\text{)} \times \left(\begin{array}{c}\text{Skimmer wall}\\ \text{Bottom}\\ \text{Elevation (ft)}\end{array} - \begin{array}{c}\text{Screen}\\ \text{Bottom}\\ \text{Elevation (ft)}\end{array}\right)\left(\begin{array}{c}\text{No.}\\ \text{of}\\ \text{Screenwells}\end{array}\right)\left(\begin{array}{c}\text{Screenwell}\\ \text{Width}\\ \text{(ft)}\end{array}\right)$$

$$A = (560 - 546)\ (8)\ (11.17\ \text{ft}) = 1251.0\ \text{ft}^2$$

$$V = Q/A = \frac{1,829.2\ \text{ft}^3/\text{sec}}{1,251.0\ \text{ft}^2} = 1.30\ \text{ft/sec.}$$

Chapter 4

p. 4.2-17: According to the Literature Cited section, the reference to "Hartman (b)" should be "Hartman (a)".

p. 4.2-26: Clupeid density in paragraph #1 is 900/100 m^3, not 900/m^3.

p. 4.2-27: The smelt data mentioned is not listed in Table 4.2-31.

p. 4.2-27: The Cole (1975a) reference is not listed in the Literature Cited section. The correct reference is evidently Cole (1976a).

p. 4.3-4: It is stated that:

> As indicated in Table 4.3-3, yellow perch impingement in 1972 was characterized by two peaks: in October (36,704), and in April (28,350).

whereas, Table 4.3-3 (shown below) indicates that impingement peaked in October and August.

TABLE 4.3-3 FISH IMPINGEMENT EXTRAPOLATIONS AT THE MONROE POWER PLANT, APRIL THROUGH DECEMBER 1972

Species	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Gizzard shad	45	40	828	99	114,793	6,540	148,831	195,030	233,275
Rainbow smelt		19					62	342	
Shiners	93,000	17,732	1,479		6,671	1,500			78
Walleye	3	12	12				12		
Yellow perch	28,350	12,245	7,530	7,440	19,691	14,460	36,704	15,360	4,185
White bass	12	353	42	99	378	1,140	422	108	16
Channel catfish	6	12			62		6		
Coho salmon			9				6	6	
Rock bass	12	56	15					12	16
Smallmouth bass		9					6	6	16
Freshwater drum	39	849	1,359	155	502	581	31	54	25
White crappie	90	202	6	16	6	90	68	12	6
Sunfish	120	87	21	53	19	81	87		
Northern pike	3	6	3			15	12	18	
Brown bullhead	54	12		9		30		78	341
Goldfish	1,800	1,333	108	31	87	30	31		87
Carp	3	6	12	16	7	9	38	6	
Steelhead trout	3								
Suckers	90	38				15	7		10
Others	27	87	3						
Totals	123,057	33,058	11,427	7,918	161,616	24,811	186,323	211,032	238,055

p. 4.4-2: The volume of the entrainment sampling pumps is listed as 2.016×10^6 gal/day. 530 l/min = 2.016×10^5 gal/day, not 2.016×10^6.

Table 4.1-1: According to 316(b) p. 4.1-5, this table lists "all species whose presence was noted one or more times during the monitoring period sampling effort" from 1972-1976.

TABLE 4.1-1 SPECIES OF FISH IDENTIFIED AT THE INTAKE OF THE MONROE POWER PLANT

Common name	Scientific name
Silver lamprey	Ichthyomyzon unicuspis
Sea lamprey	Petromyzon marinus
Longnose gar	Lepisosteus osseus
Bowfin	Amia calva
Alewife	Alosa pseudoharengus
Gizzard shad	Dorosoma cepedianum
Coho salmon	Oncorhynchus kisutch
Chinook salmon	Oncorhynchus tshawytscha
Rainbow trout	Salmo gairdneri
Rainbow smelt	Osmerus mordax
Central mudminnow	Umbra limi
Northern pike	Esox lucius
Goldfish	Carassius auratus
Carp	Cyprinus carpio
Golden shiner	Notemigonus crysoleucas
Emerald shiner	Notropis atherinoides
Spottail shiner	Notropis hudsonius
Bluntnose minnow	Pimephales notatus
Creek chub	Semotilus atromaculatus
Quillback	Carpiodes cyprinus
White sucker	Catostomus commersoni
Black bullhead	Ictalurus melas
Yellow bullhead	Ictalurus natalis
Brown bullhead	Ictalurus nebulosus
Channel catfish	Ictalurus punctatus
Stonecat	Noturus flavus
Tadpole madtom	Noturus gyrinus
Brindled madtom	Noturus miurus
Trout-perch	Percopsis omiscomaycus
Burbot	Lota lota
Brook silverside	Labidesthes sicculus
White perch	Morone americana
White bass	Morone chrysops
Rock bass	Ambloplites rupestris
Green sunfish	Lepomis cyanellus
Pumpkinseed	Lepomis gibbosus
Bluegill	Lepomis macrochirus
Smallmouth bass	Micropterus dolomieui
Largemouth bass	Micropterus salmoides
White crappie	Pomoxis annularis
Black crappie	Pomoxis nigromaculatus
Johnny darter	Etheostoma nigrum
Yellow perch	Perca flavescens
Logperch	Percina caprodes
Walleye	Stizostedion vitreum vitreum
Freshwater drum	Aplodinotus grunniens

Note: Species list includes fish impinged and entrained; also those removed by nets or by pump. For some collections, only group common names were used including crappie, black bass, gar, sucker, and sunfish. Because these group names were sometimes used, additions to the above species list are not possible.

Comparison of the table with the Monroe data base, however, revealed several discrepancies. For example, the creek chub is listed in the table, but neither the impingement nor the entrainment records show it occurring at the intake. According to the data base, the common shiner, muskellunge, and blue catfish were impinged, but these species are not listed in Table 4.4-1. Three additional species--shorthead redhorse, slimy sculpin, and silver chub--are listed in the 316(a) demonstration (Table 3-51, Cole 1976; Table 4.2-5, Detroit Edison 1976) but are not listed in the table.

Table 4.2-5: According to the Literature Cited section, the reference to "Hartman (b)" should be "Hartman (a)".

Table 4.2-8: 316(b) fails to indicate, as done in VanVooren et al., 1975, that the 1974 YOY yellow perch catch is heavily weighted. 98% of the catch for the entire season came from one tow at the Cedar Point station (personal communication, D. H. Davies, 9-6-77).

Table 4.2-9: The life stage labeled "young" should be "young-of-the-year".

Table 4.2-11: Gill net total catch for longnose gar is 3, not 0.

Table 4.2-13: The spring collection labeled as a gill net is really a trawl that was mislabeled. Most of the values, however, were added into the correct total column.

Table 4.2-13: Mean CPE for rainbow smelt is 0.6, not 0.8.

Table 4.2-13: Mean CPE for white crappie is 1.4, not 0.8.

Table 4.2-14: The yellow perch catches by age class for station 12 do not add up to 1283.

Table 4.2-14: On the computer printouts we received from the DNR, the freshwater drum total for station 14 had been changed from 390 to 410. This changes the CPE from 78 to 82, the catch over all age groups from 662 to 682, and the mean CPE from 66 to 68.

Table 4.2-14: One of the 1230 young-of-the-year gizzard shad in the station 14 trawl should be listed as a yearling or possibly an adult.

Table 4.2-14: All 54 smelt in station 12 trawl should be listed as YOY.

Table 4.2-15: All totals are displaced from the correct species by one line.

Table 4.2-15: Station 12 trawl data for smelt should include 10 adults not listed in the table.

Table 4.2-15: Station 14 trawl for smelt YOY should be 9, not 2. This yields a total catch of 9, not 2, and a CPE of 3.0, not 0.4. The totals and mean CPE over all age groups are therefore also wrong.

Table 4.2-15: 316(b) shows all 5 trout-perch in station 12 trawl as YOY. The DNR printouts show both YOY and yearlings.

Table 4.2-15: 25 trout-perch caught in station 14 trawl have been omitted. The trawl total thus is 30, not 5, and mean CPE is 4.7, not 0.5.

Table 4.2-16: 316(b) indicates no sampling was done in the fall. Cole's data, however, show that there was sampling done in the fall and that shiners and white bass were caught.

Table 4.2-19: The 1970 estimates are incorrect because of the mislabeling error in Table 4.2-10. Most of the 1970-75 means are therefore also wrong, but only by 1-4%.

Table 4.2-19: The 1973 smelt estimate is wrong (should be 61,000 not 70,000) because of the incorrect CPE value in Table 4.2-14.

Table 4.2-19: The 1974 estimate for freshwater drum is incorrect (should be 5,953,000 not 5,761,000) because of the error in Table 4.2-14.

Table 4.2-19: The 1975 smelt estimate is low (should be 532,000 not 419,000) because of the error made in Table 4.2-15.

Table 4.2-19: The 1975 trout-perch estimate is greatly underestimated (410,000 not 44,000) because of the 25 fish omitted in Table 4.2-15.

Table 4.2-20: 1974 freshwater drum estimate is incorrect (from Table 4.2-19).

Table 4.2-20: 1975 smelt estimate is incorrect (from Table 4.2-19).

Table 4.2-20: 1975 trout-perch estimate is wrong (from Table 4.2-19).

Table 4.2-20: There are several other errors in the age class divisions arising from errors in Tables 4.2-14 and 4.2-15.

Table 4.2-21: August 1-4 estimate for gizzard shad is reported by CLEAR as 9.5×10^5, not 9.5×10^9. The mean value, however, is correct. Peak shad population thus appears to be in early June instead of in August as reported on p. 4.2-25.

Table 4.2-25: July 2 count for station 8 (bottom) is 0.4, not 1.4.

Table 4.2-26: July 2 count for station 10 (surface) is 35.0, not 33.8.

Table 4.2-31: All data for station P-16 is displaced from the correct species column.

Figure 4.2-1: According to 316(b) Literature Cited, the reference should be Hartman (a), not Hartman (b).

Chapter 5

p. 5.2-1: Gizzard shad are said to make up 51.8% of the impingement loss.

Calculations of extrapolated impingement losses of fish at the Monroe Power Plant over a 12-month period are presented in Subsection 4.3.2. An estimated total of 861,000 fish were impinged during this time, of which 51.8 percent were gizzard shad and 14.2 percent were yellow perch. The third most frequently impinged fish were shiners, which comprised 12.7 percent of the calculated 12-month total.

However, according to p. 4.3-1 and Table 4.3-1, gizzard shad comprised 58.1% of impinged fish.

Impingement at the Monroe Power Plant was extrapolated to 861,000 fish during the period from June 1975 to May 1976 (Table 4.3-1). Of this total, 58.1 percent were gizzard shad, 14.2 percent were yellow perch, 12.7 percent were shiners (Notropis spp.), 7.0 percent were freshwater drum, and 4.3 percent were white bass. Other species were impinged less frequently.

TABLE 4.3-1 FISH IMPINGEMENT EXTRAPOLATIONS AT THE MONROE POWER PLANT, JUNE 1975 THROUGH MAY 1976

Species	1975 June	July	Aug.	Sept.	Oct.	Nov.	Dec.	1976 Jan.	Feb.	Mar.	Apr.	May	Totals	% of Total
Gizzard shad	71	17552	49814	18879	15801	29060	83239	100719	143463	25447	11359	4154	500560	65.1
Alewife	177	211	7	81	1258	627	76	9		472	1658	5583	10789	1.3
Rainbow smelt	122	53		8	1926	2840	644	227	609		158	522	6711	0.8
Shiners	14484	10184	11613	12831	12679	9056	8147	8590	9895	2585	8958	5348	109507	12.7
Trout-perch	183	37	56	120	233	96	15	616	948	601	1966	47	5471	0.6
Logperch	47	52	37	140	369	221	39	4		6	53	134	1144	0.1
Walleye	5	104	121	98	6	38	14		51	8	12	3	459	<0.1
Yellow perch	47381	8834	3555	12942	4164	1974	1348	1436	3378	992	3777	459	122301	14.2
White bass	206	3685	13452	12921	5229	734	366	122	224	23	180	74	37235	4.3
Channel catfish	60	66	64	204	31	10	186	79	364	15	29	20	1128	0.1
Coho salmon	2												2	<0.1
Rock bass	64	28	21	27	15	5	29		5	43	83	56	380	<0.1
Smallmouth bass			3	4	2	16					3	6	34	<0.1
Freshwater drum	3704	3187	14021	17709	16348	1504	2458	487	1227	124	738	1051	60448	7.0
White crappie	4		31	25	31	23	55	25	34	2	40	19	259	<0.1
Sunfish	73	129	37	61	83	74	169	38	20	36	34	29	783	0.1
Northern pike	30	30		11			3		7	7	15	6	106	<0.1
Brown bullhead	4	2										2	8	<0.1
Yellow bullhead				4		3		24	10	16	9	9	75	<0.1
Goldfish	73	77	102	53	10	8	95	484	639	685	436	92	2754	0.3
Largemouth bass	2		3		6		7					6	24	<0.1
Chinook salmon	3	1				3				3			10	<0.1
Carp		2		11		2	8	36	641	35	14	3	752	0.1
Suckers		5		21	2					5	3	5	41	<0.1
Others	3			8	2					5	17	2	37	<0.1
Totals	71911	44303	129875	76248	52232	43045	96898	110898	161509	32213	29572	17427	861231	

p. 5.3-3: Maximum standing crop of gizzard shad is 2.9×10^9, not 9.5×10^9, due to error in Table 4.2-21.

p. 5.3-4: Minimum percent of gizzard shad larvae lost is 0.3, not 0.1, due to error in Table 4.2-21.

Table 5.2-2: Ohio fall 1974 estimate for shiners is overestimated (46,343,000 instead of 82,913,000) by an apparent error in Table 4.2-18.

Table 5.2-2: Most of the Michigan 1970-75 means are incorrect because of transfer from Table 4.2-19.

Table 5.2-2: Michigan fall 1975 estimates for trout-perch and smelt are incorrect by transfer from Table 4.2-20.

Table 5.2-2: Michigan fall 1975 estimate for shiners is not the same as listed in Table 4.2-20 from which it supposedly came.

Table 5.2-3: Estimates listed for smelt and freshwater drum are incorrect by transfer from Table 5.2-2. The percentage impinged is therefore incorrect for these 2 species.

Table 5.3-1: CLEAR weekly maximum for shad is 2.9×10^9 not 9.5×10^9. Percentage entrained is thus 0.3, not 0.1.

TABLE 5.3-1 PERCENTAGE OF LARVAL FISH ENTRAINMENT AT THE MONROE POWER PLANT

Species	Annual Estimate of Larvae Entrained[a]	Population Estimate				Percent Entrained			
		CLEAR[b,c]		Michigan DNR[c,d]		CLEAR		Michigan DNR	
		x Weekly	Weekly Max.	x Weekly	Weekly Max.	x Weekly	Weekly Max.	x Weekly	Weekly Max.
Alewife[e]	(1942)	7.1×10^5	3.8×10^6	6.7×10^5	1.4×10^6	1.9	40.1	2.9	1.0
Gizzard shad[f]	9571684	5.1×10^7	9.5×10^9	3.4×10^7	6.4×10^7	1.9	0.1	2.8	1.0
Rainbow smelt	122827	8.3×10^5	3.1×10^6	1.8×10^5	1.1×10^6	0.5	0.2	4.0	0.7
Carp	484126	—[e]	—	—	—	—	—	—	—
Emerald shiner	170299	2.0×10^4	5.8×10^4	—	—	8.1	40.1	—	—
Channel catfish	719548	—	—	—	—	—	—	—	—
Trout-perch	19588	—	—	—	—	—	—	—	—
White bass	391995	3.0×10^5	1.3×10^6	2.1×10^5	1.1×10^6	1.3	0.3	1.8	0.4
Yellow perch	4999324	2.6×10^6	1.1×10^7	2.0×10^6	1.1×10^7	1.9	0.5	261.8	45.4
Logperch	53458	1.3×10^6	5.3×10^6	—	—	3.7	1.0	—	—
Walleye	805186	1.3×10^6	2.1×10^6	—	—	163.7	19.5	—	—
Freshwater drum	1774575	2.4×10^5	2.1×10^6	1.5×10^5	5.8×10^5	6.7	0.1	118.3	35.5

a. From Table 4.4-2.
b. From Table 4.2-21, 51% of western basin area.
c. From Table 4.2-20, six stations closest to the Monroe Power Plant.
d. Alewife and gizzard shad ichthyoplankton estimates for Monroe and the Michigan DNR data were apportioned according to the ratio found in the CLEAR ichthyoplankton data.
e. Dashes indicate calculations not completed or data not available.

Table 5.3-1: CLEAR mean value for walleye should be 2.5×10^5 from Table 4.2-21 below. This results in the tabulated percentage entrained of 163.7%. The 2.2×10^5 value yields 186.0%.

TABLE 4.2-21 TOTAL LARVAL POPULATION ABUNDANCE ESTIMATES FOR 621 mi^2 (1,611 km^2) OF THE WESTERN BASIN (51% OF TOTAL AREA), INCLUDING ALL OHIO WATERS AND A FRACTION OF CANADIAN WATERS 1975[a]

Species	May 12-18	May 21-25	June 1-8	June 11-17	June 21-23	July 1-5	July 11-15	Aug. 1-8	Aug. 27-Sept. 5	Mean
Gizzard shad	—[b]	6.1×10^5	2.9×10^7	3.4×10^6	4.3×10^6	4.3×10^6	1.2×10^7	9.5×10^8	1.4×10^6	5.1×10^7
Rainbow smelt	3.8×10^5	3.5×10^5	3.5×10^5	2.5×10^5	1.6×10^5	2.5×10^5	3.8×10^5	—	4.7×10^5	8.3×10^5
Emerald shiner	—	7.6×10^5	6.4×10^5	5.8×10^5	5.3×10^5	4.3×10^5	1.2×10^6	1.5×10^6	7.6×10^5	2.0×10^6
Spottail shiner	—	3.1×10^5	3.7×10^5	6.0×10^5	7.6×10^5	2.3×10^5	—	—	—	2.2×10^5
Freshwater drum	—	2.1×10^5	2.1×10^5	1.0×10^5	7.0×10^5	4.9×10^5	1.9×10^6	8.9×10^5	—	2.4×10^5
Yellow perch	4.1×10^5	7.5×10^5	1.1×10^6	1.3×10^6	2.0×10^6	—	—	—	—	2.6×10^6
White bass	—	3.3×10^5	7.1×10^5	2.0×10^5	3.2×10^5	1.6×10^5	1.8×10^5	—	—	3.0×10^5
Walleye	—	2.1×10^5	—	—	7.8×10^5	—	—	—	—	2.5×10^5
Alewife	—	—	—	3.8×10^5	1.9×10^5	2.3×10^5	7.0×10^5	2.9×10^5	—	7.1×10^5
Logperch	—	—	—	4.9×10^5	1.9×10^5	5.3×10^5	—	—	—	1.3×10^5[c]

a. From CLEAR, unpublished draft data.
b. Dashes indicate insufficient data.
c. This exponent was changed from 4 to 5 to correct an error on the original table.

Table 5.3-3: The numbers of alewife and shad larvae entrained are not the same as those in Table 5.3-1

TABLE 5.3-3 PERCENTAGE OF POTENTIAL ADULT FISH LOST THROUGH ENTRAINMENT IN LAKE ERIE

Species	No. of Larvae Entrained	Adult Losses[a]	Population Estimate (in Thousands)[b]	$ Lost to Population	Table Reference[c]
Alewife	38,404	51	35,679	0.0001	Mean of 4.2-17 and 4.2-20
Gizzard shad	9,562,726	510	76,328	0.0007	Mean of 4.2-17 and 4.2-20
Rainbow smelt	722,821	15,800[d]	419	3.8[e]	4.2-20
Emerald shiner	170,299	1,000	2,654	0.04	4.2-20
Channel catfish	719,548	3,600	1,851	0.2	4.2-20
White bass	391,945	14	20,815	0.00006	4.2-17
Yellow perch	4,996,924	4,000	18,942	0.02	4.2-20
Walleye	409,186	170	5,500	0.003	4.2-20
Freshwater drum	1,774,575	710	14,200	0.005	4.2-20

a. Numbers taken from Table 5.3-2 and generated through 90% model.
b. Best estimate based on current abundance indices (see rationales developed in Subsection 5.2.3).
c. Rationales for estimates in these tables presented in Subsection 4.2.
d. Used 99.5% model based on Rothschild 1961.
e. Estimated percent lost to population is too high if Canadian commercial harvest information is considered (Subsection 5.2.3).