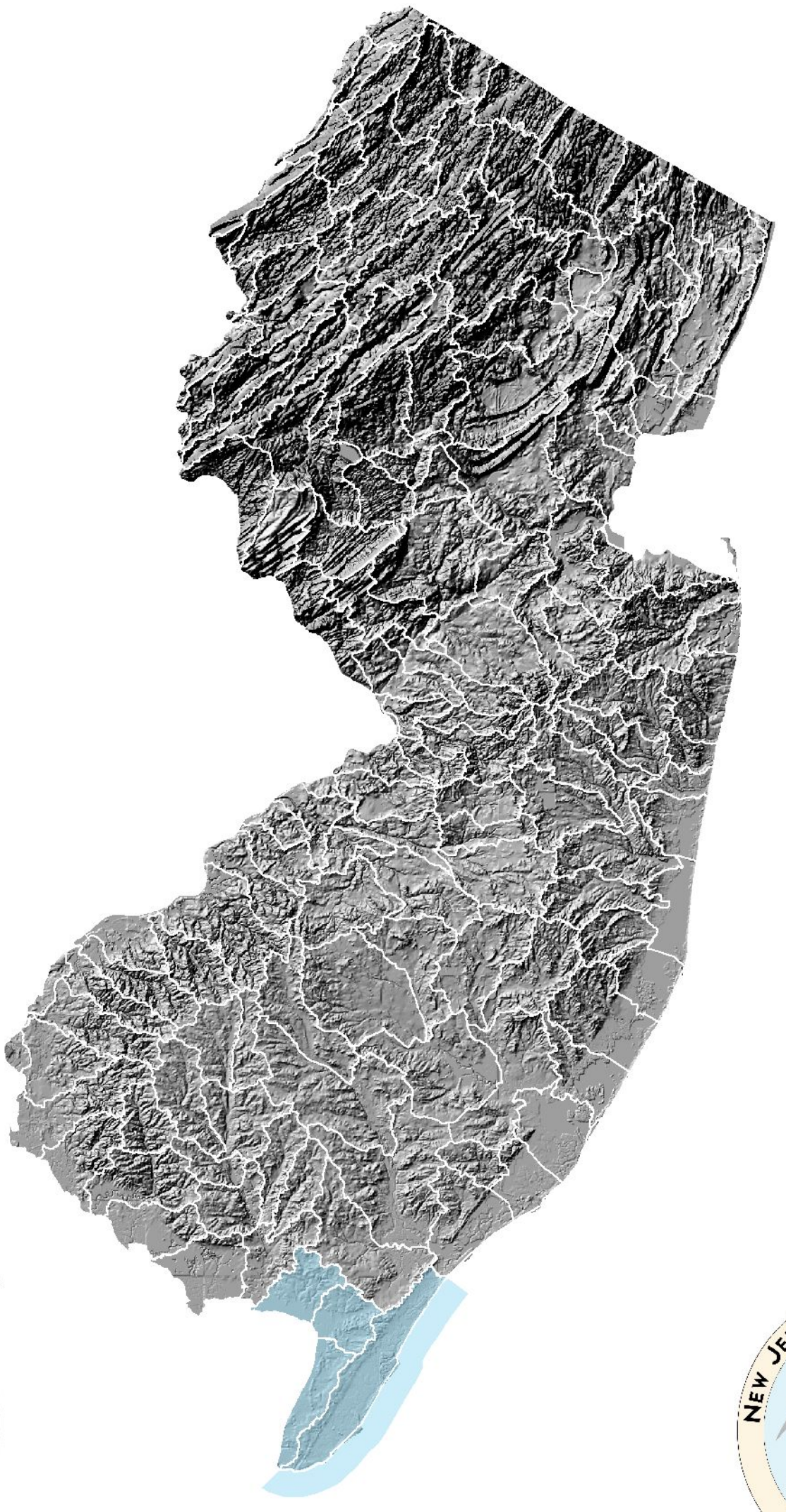
New Jersey Water Withdrawals, Uses, Transfers, and Discharges by HUC11, 1990 to 1999

Appendix 16: HUC11 Tables, Figures and Maps
WMA 16 - Cape May



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NEW JERSEY DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Water Withdrawals, Transfers and Discharges for WEST CREEK / EAST CREEK / RIGGINS DITCH --- 02040206210

WMA:	**Cape May County**	**16**
HUC11:	**West Creek / East Creek / Riggins Ditch**	**02040206210**

Table 1. Freshwater[1] Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:[2]											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	0	0	0	0	0	0	0	0	0	0	0
sum	0	0	0	0	0	0	0	0	0	0	0
ground-water:[3]											
confined	0	214	197	211	212	223	236	254	214	241	200
unconfined	371	160	238	249	157	215	146	247	256	243	228
sum	371	375	436	460	369	438	382	501	470	484	429
total withdrawals:	371	375	436	460	369	438	382	501	470	484	429

Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)

imports[11]	0	0	0	0	0	0	0	0	0	0	0
exports[11]	0	0	0	0	0	0	0	0	0	0	0
net	0	0	0	0	0	0	0	0	0	0	0

Fig 1. Average Source of Fresh Water

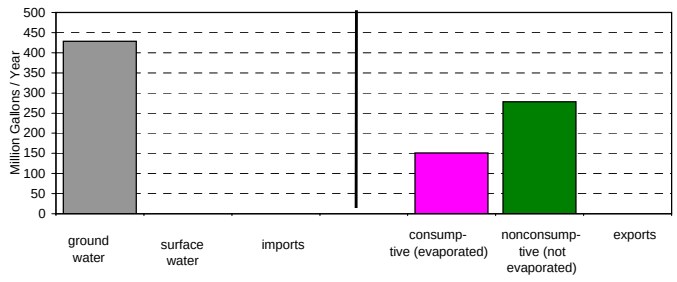

Fig 2. Average Destination of Fresh Water

Table 3. Nonconsumptive[4] & Consumptive[5] Water Use[6] in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	178	193	177	189	190	201	213	226	191	216	197
consumptive	20	22	20	22	22	22	24	28	23	26	23
domestic wells											
nonconsumptive	63	63	65	66	67	68	69	70	72	73	68
consumptive	9	9	9	9	9	10	10	10	10	10	10
industrial & commercial & mining											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrigation											
nonconsumptive	10	9	16	17	8	14	7	17	17	16	13
consumptive	91	79	148	156	73	124	61	150	157	144	118
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	251	265	258	272	265	282	288	313	280	305	278
consumptive	120	110	177	188	104	156	94	188	190	180	151
PERCENTAGES:											
nonconsumptive	67.6%	70.7%	59.3%	59.2%	71.8%	64.4%	75.4%	62.5%	59.5%	62.9%	64.8%
consumptive	32.4%	29.3%	40.7%	40.8%	28.2%	35.6%	24.6%	37.5%	40.5%	37.1%	35.2%

Figure 3. Consumptive & Nonconsumptive Use

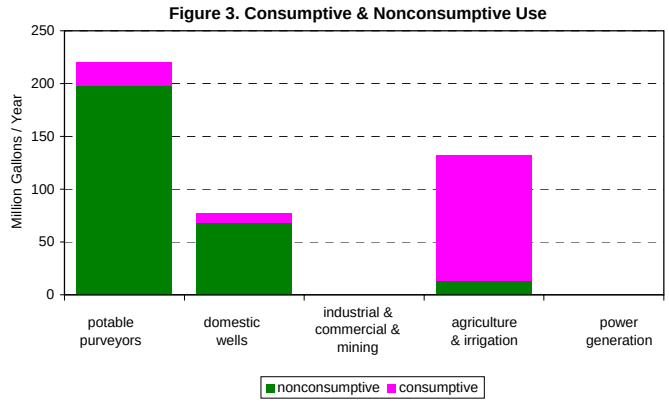

Table 4. Average Seasonal[7] Use - Nonconsumptive[4] & Consumptive[5] (millions of gallons)

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive
potable purveyors	52	0	50	3	44	15	51	4	197	23
domestic wells	15	0	16	1	20	7	17	2	68	10
industrial & commercial & mining	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrig.	0	0	2	15	10	88	2	15	13	118
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	68	0	68	20	73	110	69	20	278	151

Figure 4. Average Seasonal Consumptive Water Loss, by Use

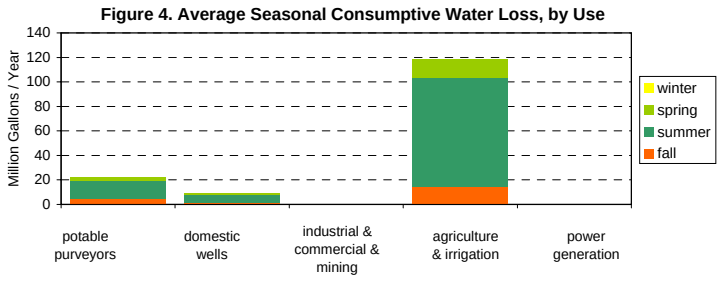

Table 5. Sewage Generation & Transfers[8] in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	0	0	0	0	0	15	178	181	178	201	75
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	0	0	0	0	0	0	0	0	0	0	0

Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges[9] in the HUC11 (millions of gallons)

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	0	0	0	0	0	15	178	181	178	201	75
brackish water	0	0	0	0	0	0	0	0	0	0	0
salt water	0	0	0	0	0	0	0	0	0	0	0
sum:	0	0	0	0	0	15	178	181	178	201	75

Figure 5. Average Sewage Generation & Transfers

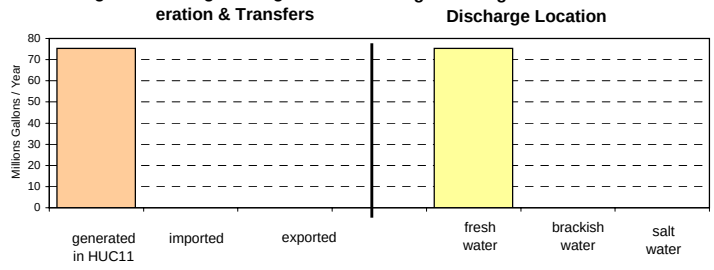

Fig 6. Average Treated-Effluent Discharge Location

Table 7. 1999 Water Allocations[10] in HUC11 by Water Source

Water Source	MGY
surface water	0
ground water	885
total	885

Table 8. 1999 Water Allocations[10] in HUC11 by Water Use Group

Use Group	MGY
agricultural	585
commercial	0
industrial	0
irrigation	0
mining	0
potable supply	300
power generation	0
total	885

Table 9. HUC11 Descriptive Statistics

--- Area:

in this HUC11 only	45.3	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	45.3	sq. mi.
(this HUC11 onshore area:	45.3	sq. mi.)

--- Population of this HUC11:

Year	Population	Change	
1940	1,302	-	
1950	1,519	16.6%	
1960	1,716	13.0%	
1970	1,980	15.4%	
1980	2,608	31.7%	
1990	3,653	40.0%	
2000	3,989	9.2%	
2010	4,338	8.8%	est.[12]
2020	4,758	9.7%	est.[12]
2030	5,145	8.1%	est.[12]

--- Land Use of this HUC11:

Type	Year		Change
	1986	1995	
ag.	5.1%	5.2%	0.1%
barren	0.9%	0.8%	-0.1%
forest	33.1%	32.7%	-0.4%
urban	2.8%	3.1%	0.3%
water	1.8%	2.2%	0.4%
wetlands	56.2%	55.9%	-0.3%

--- % of this HUC11 in:

Pinelands:	64.8%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

location	#	name
downstream:	02040204910	Delaware Bay (Cape May Pt to Fishing Ck)
(if any)		
upstream:	--	--
(if any)	--	--
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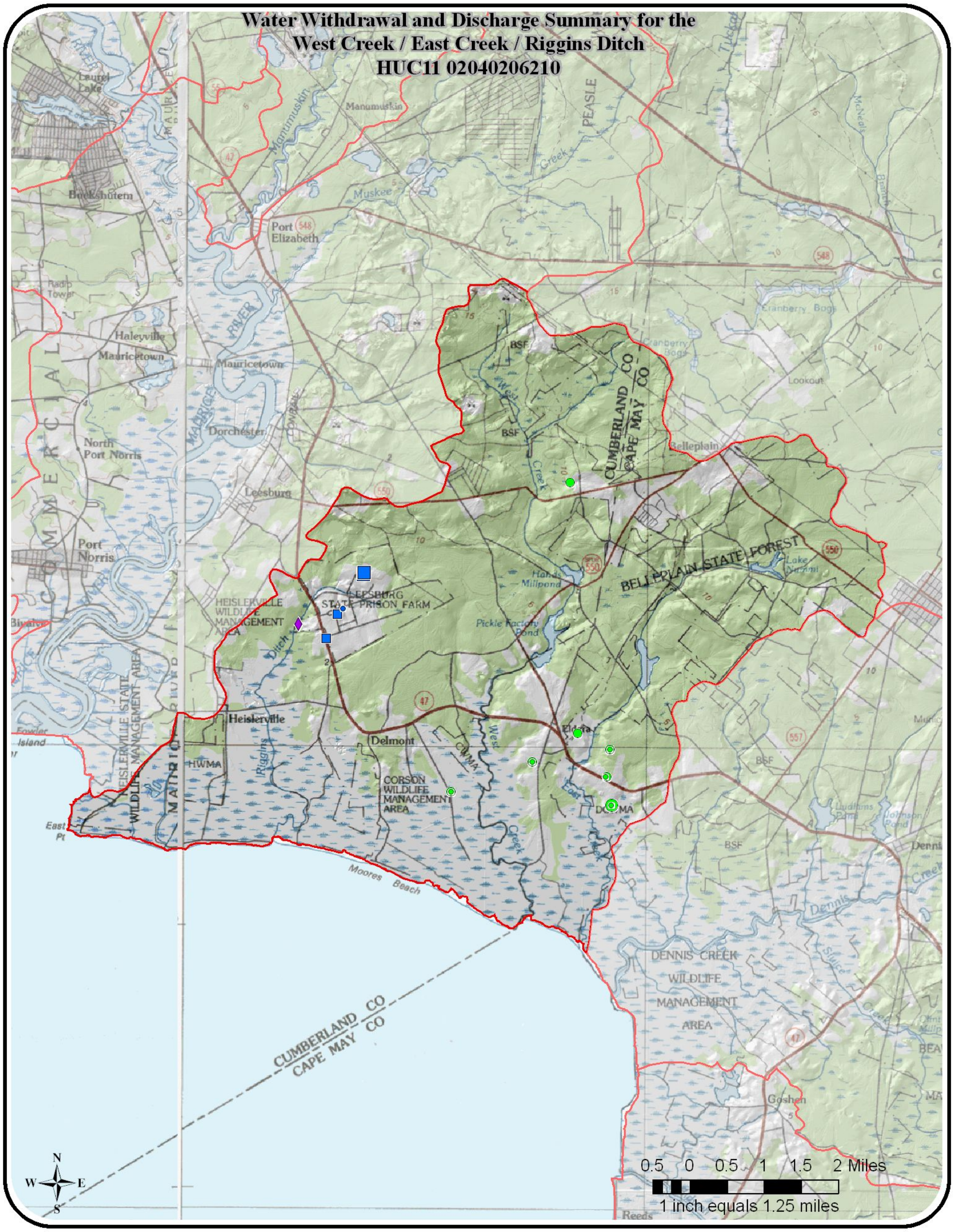
Figure 7. Net Transfers

NOTES:

1 Salt and brackish water withdrawal and use is not included in this data.
2 This does not account for water released from onstream reservoirs for downstream intakes.
3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
7 Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
8 Sewage generation and transfers are based on intersection of sewer service areas with HUC11s.
9 Based on discharge volumes reported under NJPDES program.
10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
13 Subject to revision.
14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.

Water Withdrawal and Discharge Summary for the West Creek / East Creek / Riggins Ditch HUC11 02040206210



Key for Discharge Data

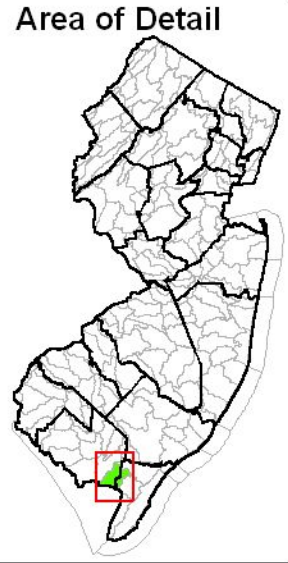
1999 Treated Effluent Discharge		
0 - 50	MGY	♦
50 - 100	MGY	♦
100 - 500	MGY	♦
> 500	MGY	♦
Other Permitted Discharge		⬟

Key for Withdrawal Data

Source		1999 Withdrawal		Use Group	
GW Confined	□	No 1999 Use	■●▲	Agricultural	
GW Unconfined	○	1 - 50 MGY	■●▲	Commercial	
SW	△	51 - 100 MGY	■●▲	Industrial	
		101 - 500 MGY	■●▲	Irrigation	
		> 500 MGY	■●▲	Mining	
				Not Classified	
				Potable Supply	
				Power Generation	

MGY = millions of gallons per year

Area of Detail



Water Withdrawals, Transfers and Discharges for DENNIS CREEK --- 02040206220

WMA:	**Cape May County**	**16**
HUC11:	**Dennis Creek**	**02040206220**

Table 1. Freshwater[1] Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:[2]											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	0	0	0	0	0	0	0	0	0	0	0
sum	0	0	0	0	0	0	0	0	0	0	0
ground-water:[3]											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	215	223	217	243	217	280	243	323	306	283	255
sum	215	223	217	243	217	280	243	323	306	283	255
total withdrawals:	215	223	217	243	217	280	243	323	306	283	255

Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)

imports[11]	78	71	75	79	81	79	77	75	75	75	76
exports[11]	0	0	0	0	0	0	0	0	0	0	0
net	78	71	75	79	81	79	77	75	75	75	76

Fig 1. Average Source of Fresh Water

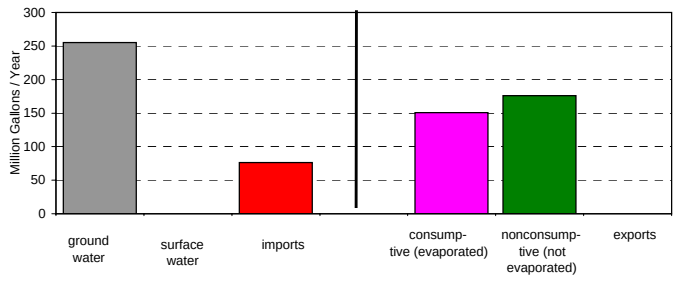


Fig 2. Average Destination of Fresh Water

Table 3. Nonconsumptive[4] & Consumptive[5] Water Use[6] in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	68	62	66	69	71	70	68	66	66	66	67
consumptive	9	9	9	10	10	10	10	11	11	13	10
domestic wells											
nonconsumptive	86	87	89	91	93	96	97	100	103	106	95
consumptive	12	12	13	13	13	13	14	14	14	15	13
industrial & commercial & mining											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrigation											
nonconsumptive	12	12	11	14	11	17	13	20	18	14	14
consumptive	106	112	103	123	97	151	116	179	159	127	127
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	166	161	167	174	175	182	178	186	186	185	176
consumptive	127	133	125	146	121	175	140	205	184	155	151
PERCENTAGES:											
nonconsumptive	56.6%	54.8%	57.2%	54.5%	59.2%	51.0%	56.1%	47.6%	50.3%	54.5%	53.9%
consumptive	43.4%	45.2%	42.8%	45.5%	40.8%	49.0%	43.9%	52.4%	49.7%	45.5%	46.1%

Figure 3. Consumptive & Nonconsumptive Use

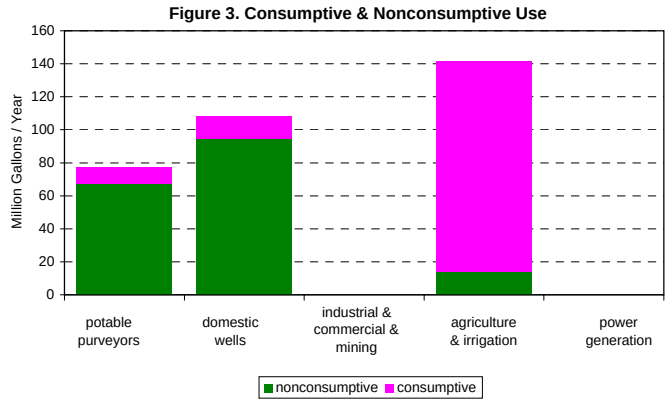


Table 4. Average Seasonal[7] Use - Nonconsumptive[4] & Consumptive[5] (millions of gallons)

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive
potable purveyors	16	0	17	1	21	7	18	2	72	10
domestic wells	22	0	22	2	28	10	23	2	95	13
industrial & commercial & mining	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrig.	0	0	2	17	9	82	3	28	14	127
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	37	0	42	20	58	99	44	32	181	151

Figure 4. Average Seasonal Consumptive Water Loss, by Use

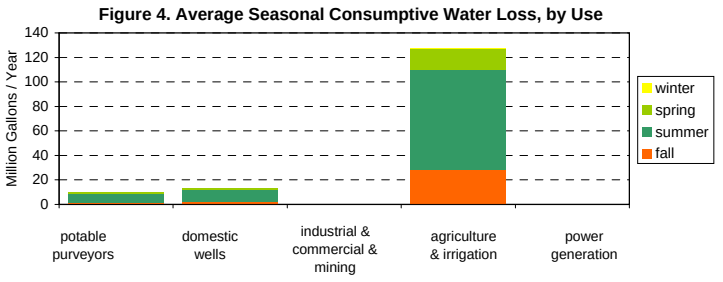


Table 5. Sewage Generation & Transfers[8] in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	0	0	0	0	0	0	0	0	0	0	0
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	0	0	0	0	0	0	0	0	0	0	0

Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges[9] in the HUC11 (millions of gallons)

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	0	0	0	0	0	0	0	0	0	0	0
brackish water	0	0	0	0	0	0	0	0	0	0	0
salt water	0	0	0	0	0	0	0	0	0	0	0
sum:	0	0	0	0	0	0	0	0	0	0	0

Figure 5. Average Sewage Generation & Transfers

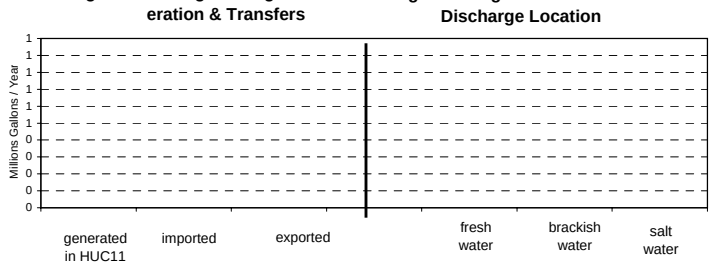


Fig 6. Average Treated-Effluent Discharge Location

Table 7. 1999 Water Allocations[10] in HUC11 by Water Source

Water Source	MGY
surface water	0
ground water	1,066
total	1,066

Table 8. 1999 Water Allocations[10] in HUC11 by Water Use Group

Use Group	MGY
agricultural	954
commercial	0
industrial	0
irrigation	0
mining	0
potable supply	112
power generation	0
total	1,066

Table 9. HUC11 Descriptive Statistics

--- Area:

in this HUC11 only	41.2	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	41.2	sq. mi.
(this HUC11 onshore area:	41.0	sq. mi.)

--- Population of this HUC11:

Year	Population	Change	
1940	2,481	-	
1950	2,792	12.5%	
1960	3,465	24.1%	
1970	3,786	9.3%	
1980	4,844	27.9%	
1990	5,942	22.7%	
2000	6,589	10.9%	
2010	7,227	9.7%	est.[12]
2020	7,905	9.4%	est.[12]
2030	8,581	8.5%	est.[12]

--- Land Use of this HUC11:

Type	Year		Change
	1986	1995	
ag.	5.1%	5.0%	-0.1%
barren	0.7%	0.8%	0.0%
forest	28.6%	26.8%	-1.8%
urban	6.5%	8.5%	2.0%
water	2.4%	2.9%	0.5%
wetlands	56.7%	56.1%	-0.6%

--- % of this HUC11 in:

Pinelands:	26.5%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

location	#	name
downstream:	02040204910	Delaware Bay (Cape May Pt to Fishing Ck)
(if any)		
upstream:	--	--
(if any)	--	--
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Figure 7. Net Transfers

NOTES:

1 Salt and brackish water withdrawal and use is not included in this data.
2 This does not account for water released from onstream reservoirs for downstream intakes.
3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
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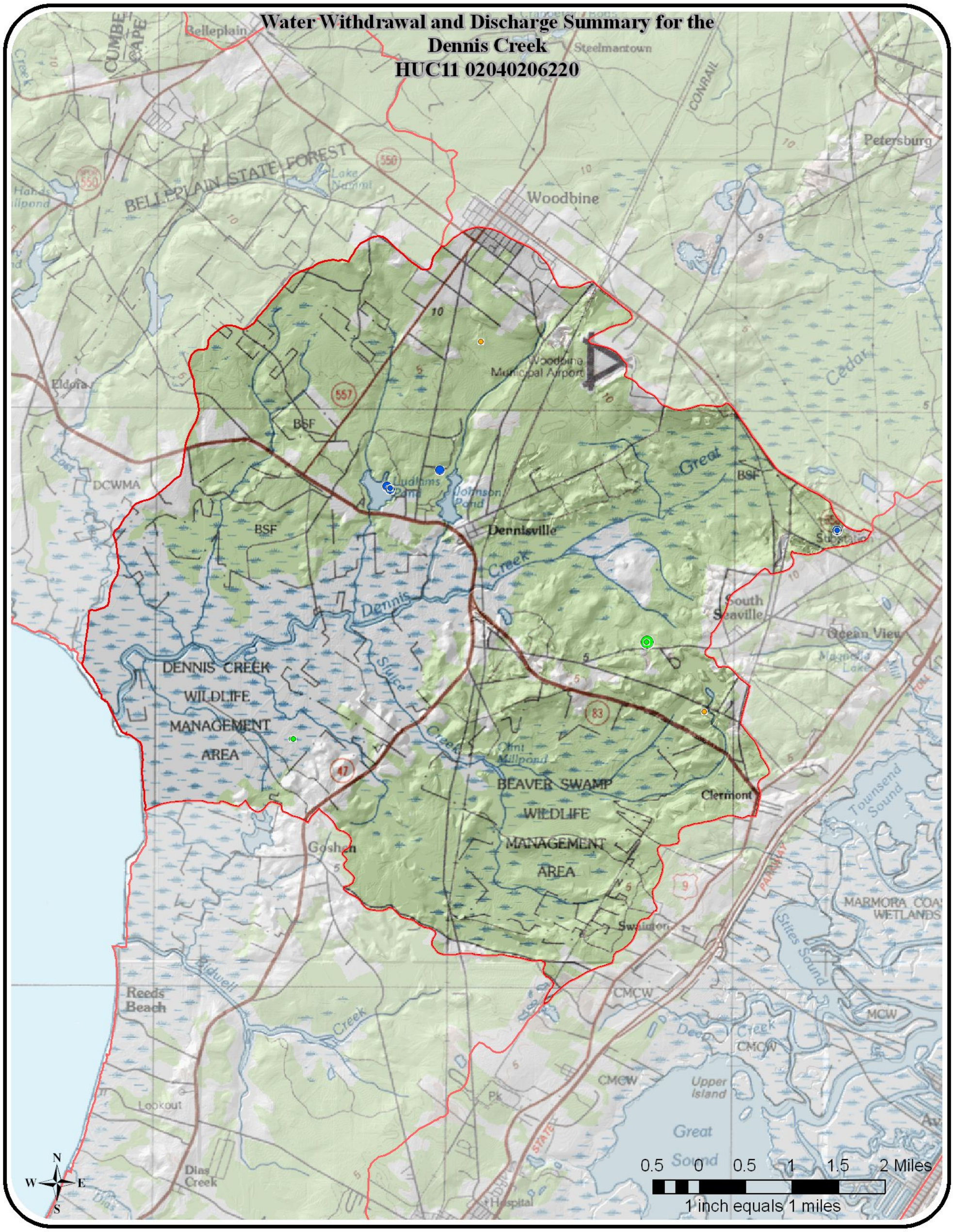
9 Based on discharge volumes reported under NJPDES program.
10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
13 Subject to revision.
14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.

Water Withdrawal and Discharge Summary for the Dennis Creek HUC11 02040206220



Key for Discharge Data

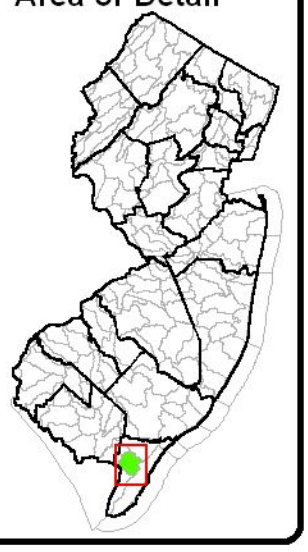
1999 Treated Effluent Discharge		
0 - 50	MGY	♦
50 - 100	MGY	♦
100 - 500	MGY	♦
> 500	MGY	♦
Other Permitted Discharge		⬟

Key for Withdrawal Data

Source		1999 Withdrawal		Use Group	
GW Confined	□	No 1999 Use	■●▲	Agricultural	●
GW Unconfined	○	1 - 50 MGY	■●▲	Commercial	●
SW	△	51 - 100 MGY	■●▲	Industrial	●
		101 - 500 MGY	■●▲	Irrigation	●
		> 500 MGY	■●▲	Mining	●
				Not Classified	●
				Potable Supply	●
				Power Generation	●

MGY = millions of gallons per year

Area of Detail



Water Withdrawals, Transfers and Discharges for CAPE MAY TRIBS WEST --- 02040206230

WMA:	**Cape May County**	**16**
HUC11:	**Cape May Tribs West**	**02040206230**

Table 1. Freshwater[1] Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:[2]											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	0	0	25	0	0	0	0	5	23	7	6
sum	0	0	25	0	0	0	0	5	23	7	6
ground-water:[3]											
confined	398	216	244	253	270	1,636	1,610	1,713	1,669	1,772	978
unconfined	551	463	414	439	435	448	431	453	477	461	457
sum	948	679	658	692	705	2,083	2,041	2,167	2,146	2,233	1,435
total withdrawals:	948	679	683	692	705	2,083	2,041	2,171	2,170	2,239	1,441

Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)

imports[11]	105	139	99	115	136	141	148	121	99	120	122
exports[11]	341	26	29	30	32	1,398	1,361	1,432	1,410	1,499	756
net	(237)	113	70	85	104	(1,257)	(1,213)	(1,312)	(1,311)	(1,380)	(634)

Fig 1. Average Source of Fresh Water

Fig 2. Average Destination of Fresh Water

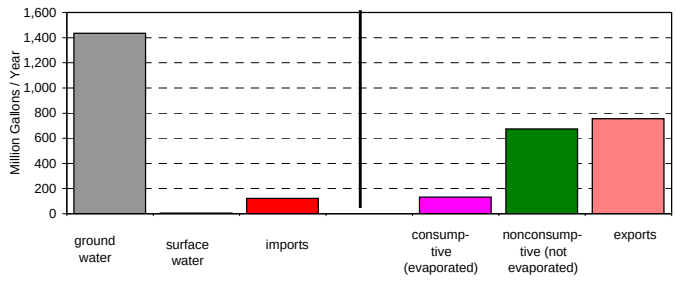


Table 3. Nonconsumptive[4] & Consumptive[5] Water Use[6] in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	267	284	275	291	334	336	354	358	315	336	315
consumptive	39	44	39	47	45	47	48	50	51	52	46
domestic wells											
nonconsumptive	338	340	345	348	352	355	358	362	366	371	353
consumptive	48	48	49	49	50	50	50	51	52	52	50
industrial & commercial & mining											
nonconsumptive	0	0	0	0	2	0	1	1	0	1	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrigation											
nonconsumptive	2	8	5	4	3	4	1	4	6	4	4
consumptive	18	68	41	37	24	32	12	32	50	36	35
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	607	632	624	643	691	695	714	724	687	711	673
consumptive	104	160	129	134	118	129	111	133	153	140	131
PERCENTAGES:											
nonconsumptive	85.3%	79.8%	82.9%	82.8%	85.4%	84.3%	86.5%	84.5%	81.8%	83.6%	83.7%
consumptive	14.7%	20.2%	17.1%	17.2%	14.6%	15.7%	13.5%	15.5%	18.2%	16.4%	16.3%

Figure 3. Consumptive & Nonconsumptive Use

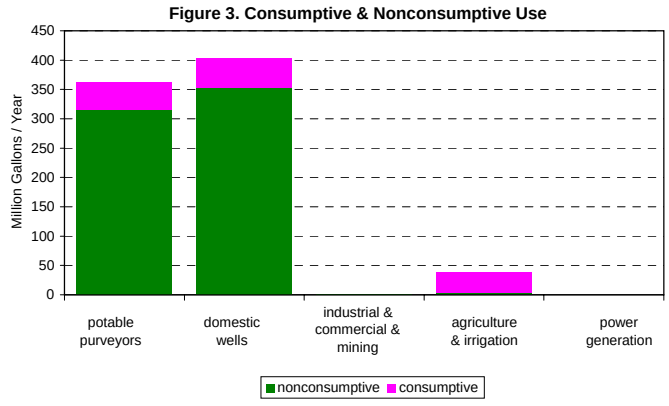


Table 4. Average Seasonal[7] Use - Nonconsumptive[4] & Consumptive[5] (millions of gallons)

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive
potable purveyors	69	0	78	6	96	33	76	7	319	46
domestic wells	81	0	83	6	103	36	86	8	353	50
industrial & commercial & mining	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrig.	0	0	0	1	3	28	1	5	4	35
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	150	0	161	13	202	97	163	20	676	131

Figure 4. Average Seasonal Consumptive Water Loss, by Use

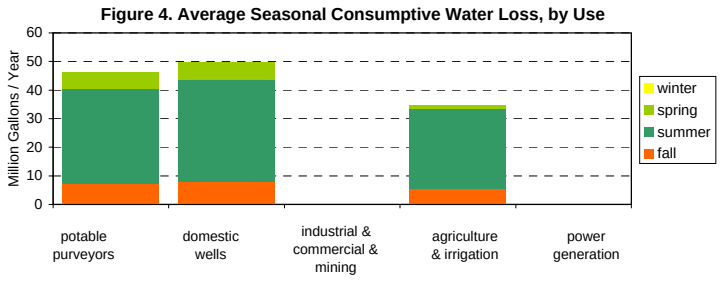


Table 5. Sewage Generation & Transfers[8] in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	589	584	549	652	1,004	1,128	1,428	1,304	1,421	1,327	998
imported to HUC11	121	113	105	131	163	155	165	158	180	166	146
exported from HUC11	112	136	134	134	359	517	777	680	710	672	423

Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges[9] in the HUC11 (millions of gallons)

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	598	562	521	649	808	766	816	783	890	820	721
brackish water	0	0	0	0	0	0	0	0	0	0	0
salt water	0	0	0	0	0	0	0	0	0	0	0
sum:	598	562	521	649	808	766	816	783	890	820	721

Figure 5. Average Sewage Generation & Transfers

Fig 6. Average Treated-Effluent Discharge Location

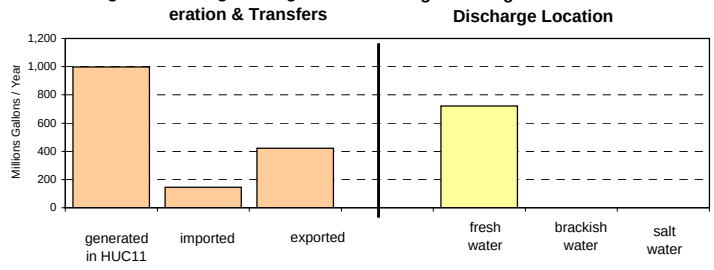


Table 7. 1999 Water Allocations[10] in HUC11 by Water Source

Water Source	MGY
surface water	22
ground water	2,573
total	2,596

Table 8. 1999 Water Allocations[10] in HUC11 by Water Use Group

Use Group	MGY
agricultural	370
commercial	0
industrial	37
irrigation	0
mining	0
potable supply	2,188
power generation	0
total	2,596

Table 9. HUC11 Descriptive Statistics

--- Area:

in this HUC11 only	45.2	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	45.2	sq. mi.
(this HUC11 onshore area:	45.0	sq. mi.)

--- Population of this HUC11:

Year	Population	Change	
1940	2,916	-	
1950	3,771	29.3%	
1960	6,499	72.3%	
1970	9,112	40.2%	
1980	13,642	49.7%	
1990	16,825	23.3%	
2000	18,551	10.3%	
2010	20,247	9.1%	est.[12]
2020	21,920	8.3%	est.[12]
2030	23,582	7.6%	est.[12]

--- Land Use of this HUC11:

Type	Year		Change
	1986	1995	
ag.	7.9%	7.0%	-1.0%
barren	2.3%	1.9%	-0.4%
forest	18.6%	17.6%	-1.0%
urban	18.5%	21.4%	2.9%
water	1.9%	2.0%	0.2%
wetlands	50.7%	50.1%	-0.6%

--- % of this HUC11 in:

Pinelands:	0.0%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

location	#	name
downstream:	02040204910	Delaware Bay (Cape May Pt to Fishing Ck)
(if any)		
upstream:	--	--
(if any)	--	--
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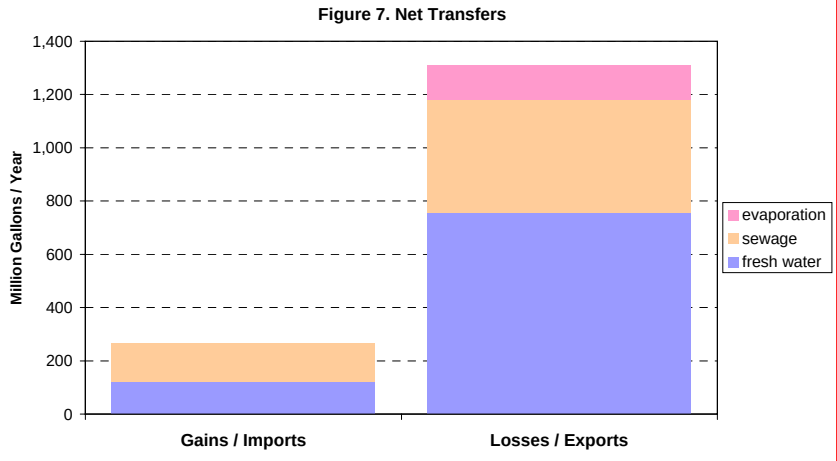
Figure 7. Net Transfers



NOTES:

1 Salt and brackish water withdrawal and use is not included in this data.
2 This does not account for water released from onstream reservoirs for downstream intakes.
3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
7 Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
8 Sewage generation and transfers are based on intersection of sewer service areas with HUC11s.
9 Based on discharge volumes reported under NJPDES program.
10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
13 Subject to revision.
14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.

Water Withdrawal and Discharge Summary for the Cape May Tribs West HUC11 02040206230

Key for Discharge Data

1999 Treated Effluent Discharge

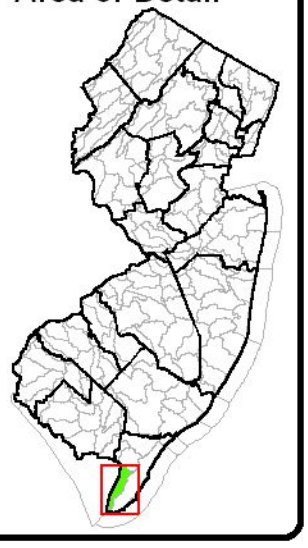
0 - 50	MGY	♦
50 - 100	MGY	♦
100 - 500	MGY	♦
> 500	MGY	♦
Other Permitted Discharge		⬟

Key for Withdrawal Data

Source		1999 Withdrawal		Use Group	
GW Confined	□	No 1999 Use	■●▲	Agricultural	
GW Unconfined	○	1 - 50 MGY	■●▲	Commercial	
SW	△	51 - 100 MGY	■●▲	Industrial	
		101 - 500 MGY	■●▲	Irrigation	
		> 500 MGY	■●▲	Mining	
				Not Classified	
				Potable Supply	
				Power Generation	

MGY = millions of gallons per year

Area of Detail



Water Withdrawals, Transfers and Discharges for CAPE MAY BAYS & TRIBS EAST --- 02040302080

WMA:	**Cape May County**	**16**
HUC11:	**Cape May Bays & Tribs East**	**02040302080**

Table 1. Freshwater[1] Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:[2]											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	4	4	4	34	13	29	13	13	28	36	18
sum	4	4	4	34	13	29	13	13	28	36	18
ground-water:[3]											
confined	1,432	1,552	1,372	1,713	1,497	1,722	1,793	1,826	1,847	1,706	1,646
unconfined	1,957	2,247	2,219	2,353	2,223	867	799	920	949	977	1,551
sum	3,389	3,800	3,591	4,067	3,721	2,589	2,592	2,746	2,796	2,682	3,197
total withdrawals:	3,392	3,804	3,595	4,101	3,734	2,618	2,605	2,759	2,825	2,719	3,215

Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)

imports[11]	587	330	353	372	375	1,301	1,283	1,423	1,317	1,393	873
exports[11]	905	1,027	899	1,010	943	623	636	654	661	592	795
net	(317)	(697)	(546)	(638)	(569)	678	647	769	656	802	78

Fig 1. Average Source of Fresh Water

Fig 2. Average Destination of Fresh Water

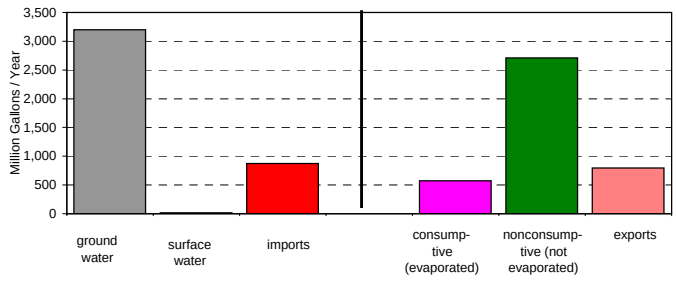


Table 3. Nonconsumptive[4] & Consumptive[5] Water Use[6] in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	2,009	2,036	2,001	2,230	2,044	2,088	2,098	2,215	2,153	2,141	2,101
consumptive	333	351	333	391	325	343	356	393	382	362	357
domestic wells											
nonconsumptive	442	445	451	456	461	466	471	476	482	489	464
consumptive	62	63	63	64	65	66	66	67	68	69	65
industrial & commercial & mining											
nonconsumptive	111	84	68	96	100	124	134	170	173	215	127
consumptive	14	11	9	12	13	15	16	20	21	25	16
agricultural & non-agricultural irrigation											
nonconsumptive	9	11	12	21	15	18	12	18	20	21	16
consumptive	80	96	103	184	132	165	97	159	170	182	137
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	2,572	2,576	2,531	2,802	2,620	2,696	2,714	2,879	2,828	2,865	2,708
consumptive	489	520	508	651	535	589	536	640	641	638	575
PERCENTAGES:											
nonconsumptive	84.0%	83.2%	83.3%	81.2%	83.0%	82.1%	83.5%	81.8%	81.5%	81.8%	82.5%
consumptive	16.0%	16.8%	16.7%	18.8%	17.0%	17.9%	16.5%	18.2%	18.5%	18.2%	17.5%

Figure 3. Consumptive & Nonconsumptive Use

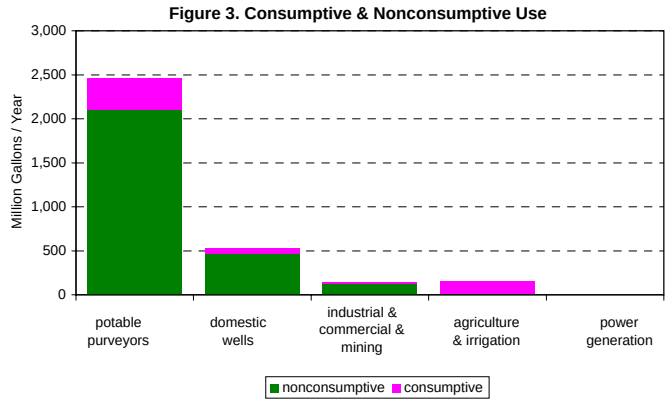


Table 4. Average Seasonal[7] Use - Nonconsumptive[4] & Consumptive[5] (millions of gallons)

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive
potable purveyors	374	0	469	38	770	268	499	51	2,112	357
domestic wells	106	0	109	8	135	47	113	10	464	65
industrial & commercial & mining	24	3	31	4	37	5	35	4	127	16
agricultural & non-agricultural irrig.	0	3	3	22	9	82	3	30	16	137
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	505	5	611	72	951	402	651	95	2,719	575

Figure 4. Average Seasonal Consumptive Water Loss, by Use

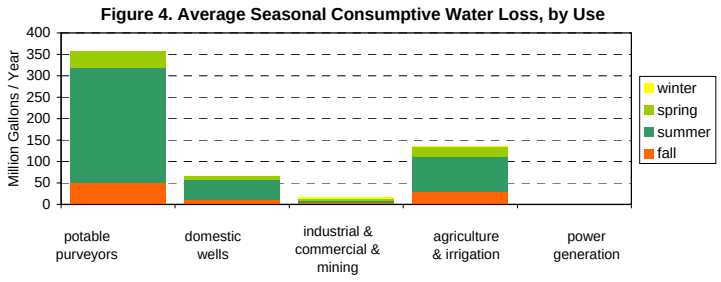


Table 5. Sewage Generation & Transfers[8] in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	1,420	1,591	1,593	1,626	2,852	3,637	5,149	4,541	4,747	4,445	3,160
imported to HUC11	0	0	0	0	0	366	1,353	1,197	1,241	1,179	534
exported from HUC11	1,405	1,577	1,582	1,615	2,844	3,092	3,143	2,767	2,908	2,698	2,363

Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges[9] in the HUC11 (millions of gallons)

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	12	9	6	6	5	0	0	0	0	0	4
brackish water	4	4	4	6	3	3	1	1	0	0	3
salt water	0	0	0	0	0	908	3,358	2,970	3,080	2,927	1,324
sum:	16	13	10	11	8	911	3,360	2,971	3,080	2,927	1,331

Figure 5. Average Sewage Generation & Transfers

Fig 6. Average Treated-Effluent Discharge Location

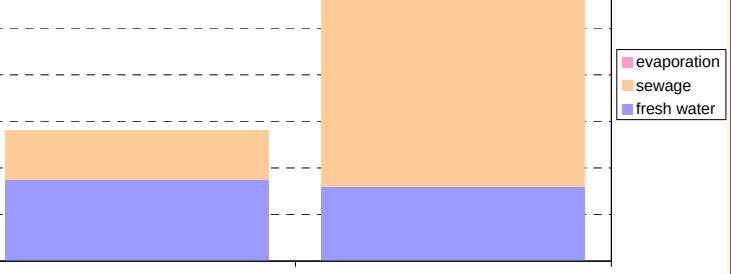


Table 7. 1999 Water Allocations[10] in HUC11 by Water Source

Water Source	MGY
surface water	194
ground water	3,237
total	3,431

Table 8. 1999 Water Allocations[10] in HUC11 by Water Use Group

Use Group	MGY
agricultural	630
commercial	37
industrial	241
irrigation	310
mining	78
potable supply	2,134
power generation	0
total	3,431

Table 9. HUC11 Descriptive Statistics

--- Area:

in this HUC11 only	103.2	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	103.2	sq. mi.
(this HUC11 onshore area:	83.7	sq. mi.)

--- Population of this HUC11:

Year	Population	Change	
1940	13,532	-	
1950	17,799	31.5%	
1960	23,103	29.8%	
1970	27,911	20.8%	
1980	37,812	35.5%	
1990	42,012	11.1%	
2000	44,649	6.3%	
2010	48,246	8.1%	est.[12]
2020	51,812	7.4%	est.[12]
2030	55,342	6.8%	est.[12]

--- Land Use of this HUC11:

Type	Year		Change
	1986	1995	
ag.	4.1%	3.0%	-1.1%
barren	0.8%	0.9%	0.0%
forest	10.4%	9.6%	-0.9%
urban	16.9%	19.0%	2.1%
water	23.1%	23.2%	0.1%
wetlands	44.7%	44.5%	-0.3%

--- % of this HUC11 in:

Pinelands:	0.0%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

location	#	name
downstream:	02040302940	Atlantic Coast (34th St to Cape May Pt)
(if any)		
upstream:	--	--
(if any)	--	--
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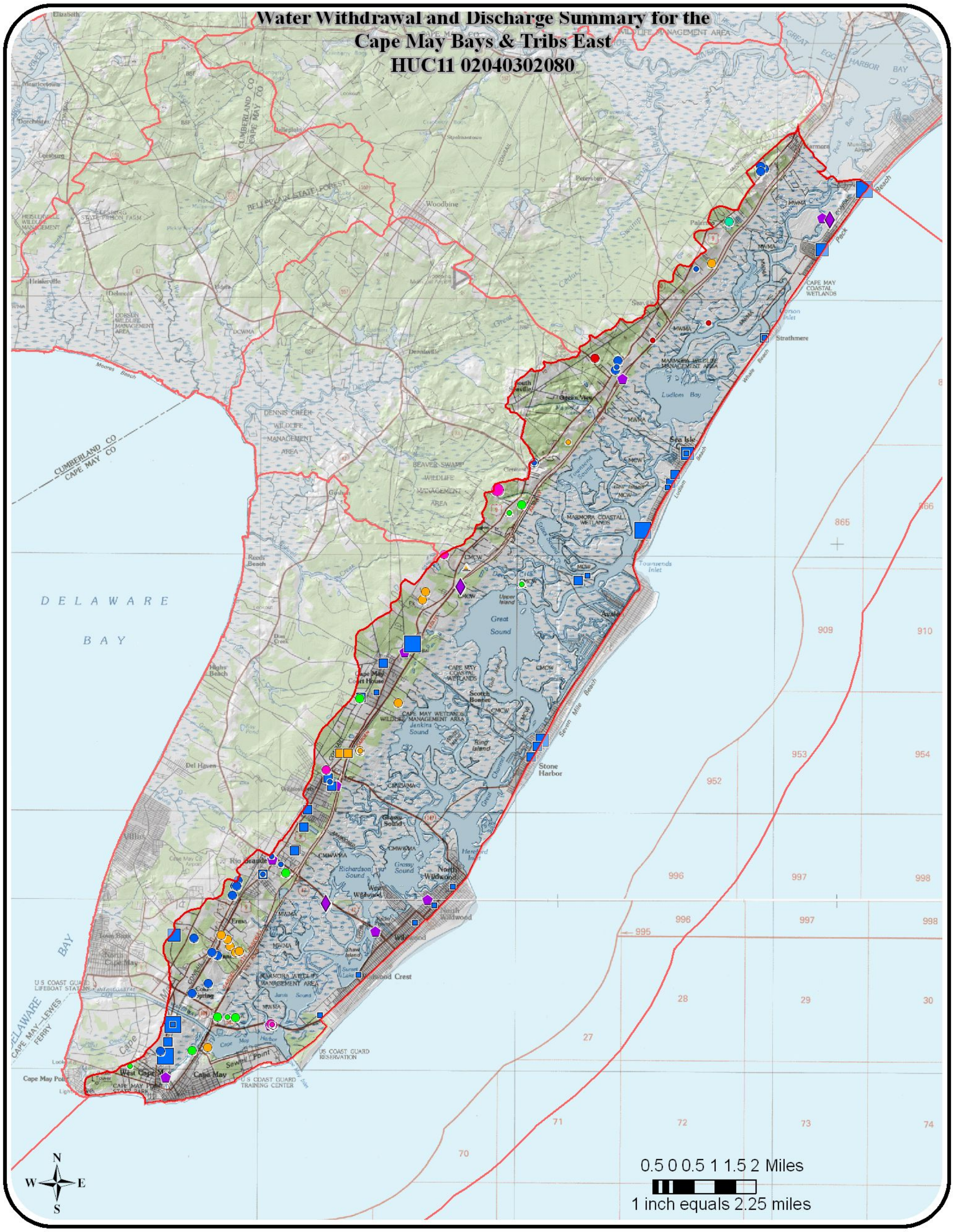
Figure 7. Net Transfers

NOTES:

1 Salt and brackish water withdrawal and use is not included in this data.
2 This does not account for water released from onstream reservoirs for downstream intakes.
3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
7 Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
8 Sewage generation and transfers are based on intersection of sewer service areas with HUC11s.
9 Based on discharge volumes reported under NJPDES program.
10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
13 Subject to revision.
14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.

Water Withdrawal and Discharge Summary for the Cape May Bays & Tribs East HUC11 02040302080



Key for Discharge Data

1999 Treated Effluent Discharge	
0 - 50	MGY
50 - 100	MGY
100 - 500	MGY
> 500	MGY
Other Permitted Discharge	

Key for Withdrawal Data

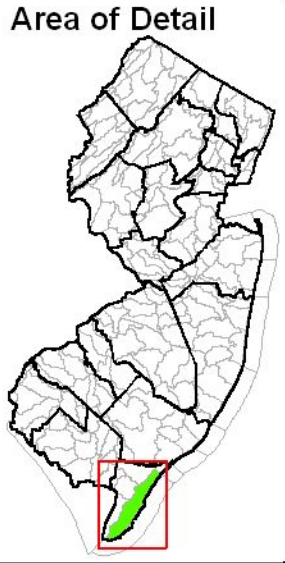
Source	
GW Confined	□
GW Unconfined	○
SW	△

1999 Withdrawal	
No 1999 Use	
1 - 50	MGY
51 - 100	MGY
101 - 500	MGY
> 500	MGY

MGY = millions of gallons per year

Use Group
Agricultural
Commercial
Industrial
Irrigation
Mining
Not Classified
Potable Supply
Power Generation

Area of Detail



Water Withdrawals, Transfers and Discharges for ATLANTIC COAST (34TH ST TO CAPE MAY PT) --- 02040302940

WMA:	**Cape May County**	**16**
HUC11:	**Atlantic Coast (34th St to Cape May Pt)**	**02040302940**

Table 1. Freshwater[1] Withdrawals in the HUC11 (millions of gallons)

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
surface water:[2]											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	0	0	0	0	0	0	0	0	0	0	0
sum	0	0	0	0	0	0	0	0	0	0	0
ground-water:[3]											
confined	361	314	342	352	363	345	374	518	363	343	367
unconfined	20	20	20	20	20	20	20	20	20	20	20
sum	380	334	362	372	383	365	395	538	383	363	388
total withdrawals:	380	334	362	372	383	365	395	538	383	363	388

Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)

imports[11]	612	608	590	689	578	612	616	638	641	611	619
exports[11]	204	165	190	196	201	186	201	274	197	192	201
net	408	443	400	493	377	425	415	364	443	419	419

Fig 1. Average Source of Fresh Water

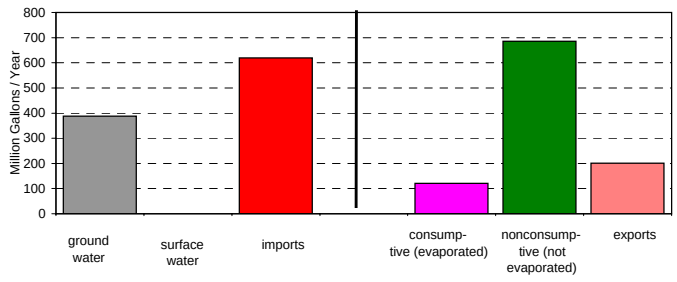


Fig 2. Average Destination of Fresh Water

Table 3. Nonconsumptive[4] & Consumptive[5] Water Use[6] in the HUC11, by Use Type (millions of gallons)

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
potable purveyors											
nonconsumptive	657	641	633	715	634	656	669	745	680	649	668
consumptive	112	115	109	130	106	114	120	137	126	113	118
domestic wells											
nonconsumptive	17	17	18	18	18	18	18	18	18	18	18
consumptive	2	2	2	2	2	2	3	3	3	3	2
industrial & commercial & mining											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrigation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
power generation											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
SUM:											
nonconsumptive	674	659	651	732	652	674	687	763	698	667	686
consumptive	114	118	112	133	109	116	123	140	129	116	121
PERCENTAGES:											
nonconsumptive	85.5%	84.8%	85.4%	84.7%	85.7%	85.3%	84.9%	84.5%	84.4%	85.2%	85.0%
consumptive	14.5%	15.2%	14.6%	15.3%	14.3%	14.7%	15.1%	15.5%	15.6%	14.8%	15.0%

Figure 3. Consumptive & Nonconsumptive Use

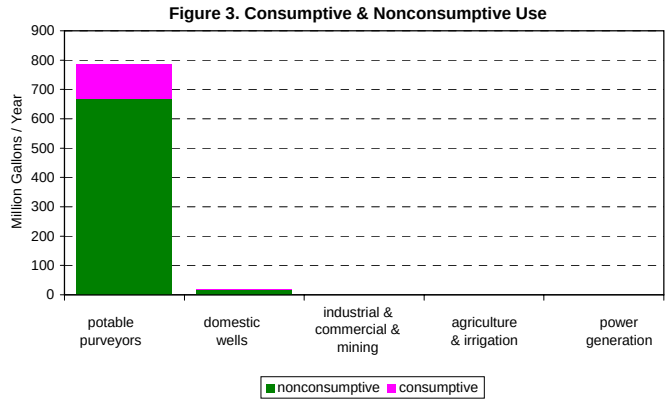


Table 4. Average Seasonal[7] Use - Nonconsumptive[4] & Consumptive[5] (millions of gallons)

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive	Noncon-sumptive	Consump-tive
potable purveyors	111	0	145	12	259	90	154	16	668	118
domestic wells	4	0	4	0	5	2	4	0	18	2
industrial & commercial & mining	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrig.	0	0	0	0	0	0	0	0	0	0
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	115	0	149	12	264	92	158	16	686	121

Figure 4. Average Seasonal Consumptive Water Loss, by Use

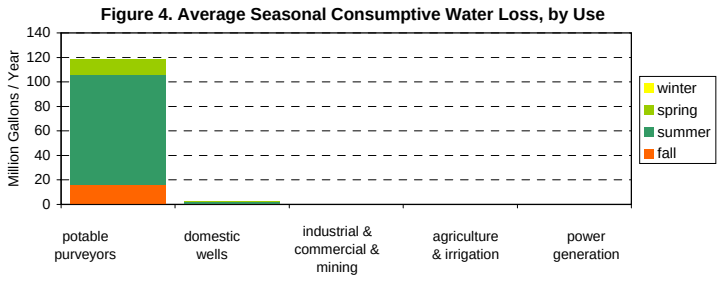


Table 5. Sewage Generation & Transfers[8] in the HUC11 (millions of gallons)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	314	341	348	352	908	1,331	2,004	1,764	1,831	1,739	1,093
imported to HUC11	2,266	2,590	2,651	2,679	4,138	4,360	4,535	3,992	4,130	3,777	3,512
exported from HUC11	9	8	8	10	12	275	986	873	907	861	395

Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges[9] in the HUC11 (millions of gallons)

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	1,065	1,149	1,168	1,174	1,201	1,149	1,350	1,212	1,276	1,147	1,189
brackish water	0	0	0	0	0	0	0	0	0	0	0
salt water	1,506	1,773	1,823	1,848	3,832	4,267	4,203	3,671	3,778	3,508	3,021
sum:	2,571	2,923	2,991	3,022	5,033	5,416	5,553	4,883	5,054	4,655	4,210

Figure 5. Average Sewage Generation & Transfers

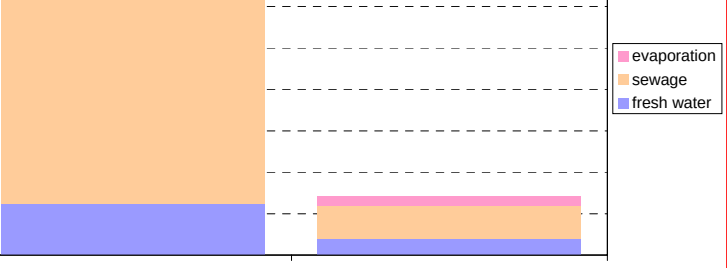


Fig 6. Average Treated-Effluent Discharge Location

Table 7. 1999 Water Allocations[10] in HUC11 by Water Source

Water Source	MGY
surface water	0
ground water	412
total	412

Table 8. 1999 Water Allocations[10] in HUC11 by Water Use Group

Use Group	MGY
agricultural	0
commercial	0
industrial	0
irrigation	0
mining	0
potable supply	412
power generation	0
total	412

Table 9. HUC11 Descriptive Statistics

--- Area:

in this HUC11 only	203.4	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	203.4	sq. mi.
(this HUC11 onshore area:	5.6	sq. mi.)

--- Population of this HUC11:

Year	Population	Change	
1940	3,987	-	
1950	5,542	39.0%	
1960	6,451	16.4%	
1970	7,128	10.5%	
1980	8,969	25.8%	
1990	8,580	-4.3%	
2000	9,359	9.1%	
2010	9,998	6.8%	est.[12]
2020	10,631	6.3%	est.[12]
2030	11,255	5.9%	est.[12]

--- Land Use of this HUC11:

Type	Year		Change
	1986	1995	
ag.	0.0%	0.0%	0.0%
barren	1.3%	1.4%	0.1%
forest	0.0%	0.1%	0.0%
urban	3.7%	3.7%	0.0%
water	94.4%	94.2%	-0.2%
wetlands	0.7%	0.7%	0.0%

--- % of this HUC11 in:

Pinelands:	0.0%
Highlands:	0.0%

Table 10. Upstream and downstream HUC11s (in NJ)

location	#	name
downstream:	#N/A	#N/A
(if any)		
upstream:	--	--
(if any)	--	--
	--	--
	--	--
	--	--
	--	--
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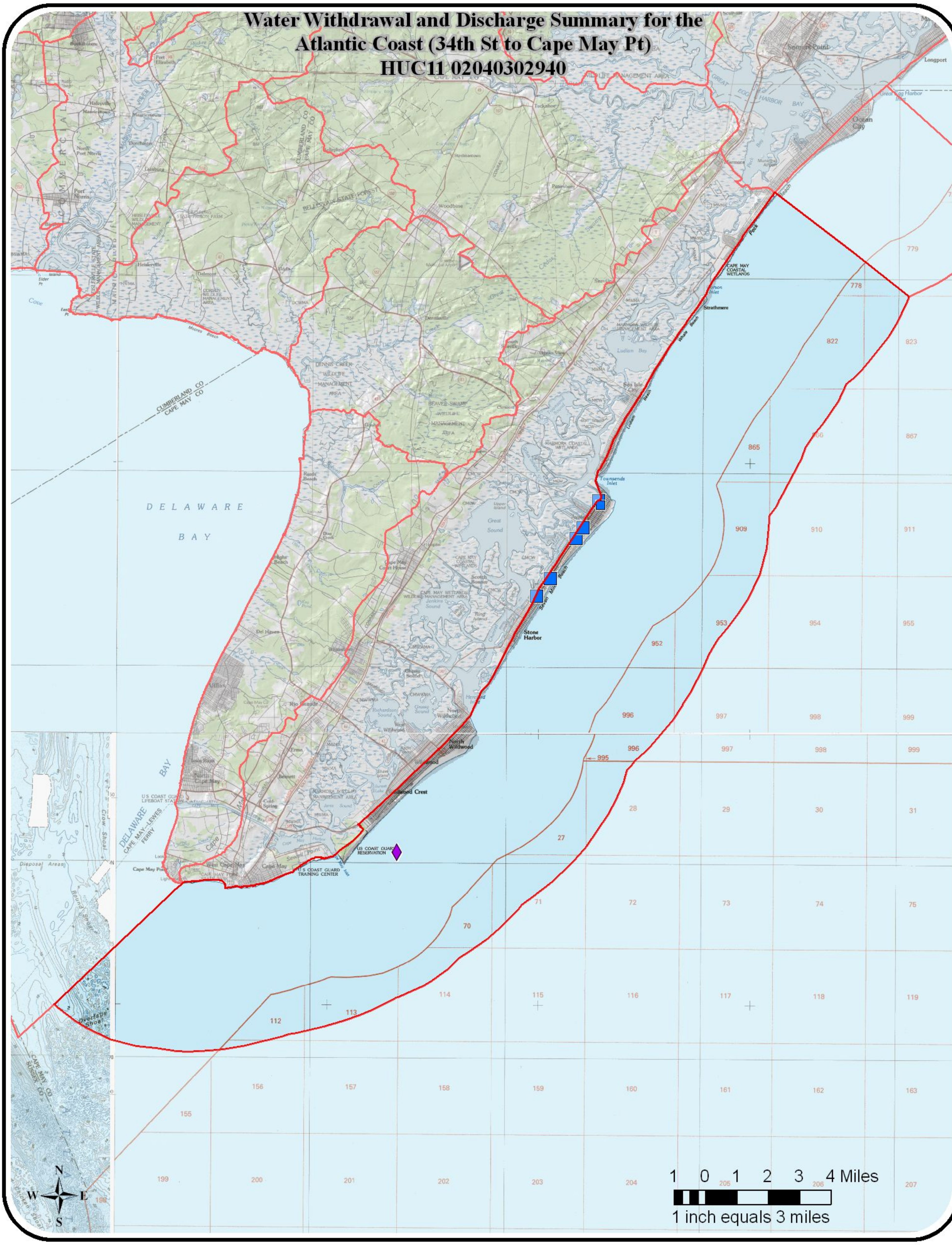
	--	--

Figure 7. Net Transfers

NOTES:

1 Salt and brackish water withdrawal and use is not included in this data.
2 This does not account for water released from onstream reservoirs for downstream intakes.
3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
4 Nonconsumptive water use refers to water used in the watershed but not evaporated.
5 Consumptive water use refers to water evaporated in the watershed. It does not include exports.
6 Use refers only to water actually used in that HUC11. It is equal to freshwater withdrawals + imports - exports.
7 Winter is Jan, Feb, Dec of the same year; spring is March-May; summer is June-Aug; fall is Sept-Nov.
8 Sewage generation and transfers are based on intersection of sewer service areas with HUC11s.
9 Based on discharge volumes reported under NJPDES program.
10 The allocated volume is calculated from allocation permits on file with the Bureau of Water Allocation, NJDEP, as of 1999.
11 Import and export volumes based on reported transfers between purveyors and on intersection of purveyor service areas with HUC11s.
12 Projected population estimates based on NJ Metropolitan Planning Organization estimates.
13 Subject to revision.
14 Withdrawals for offstream reservoirs are problematic and complicate Figures 1 and 2.

Water Withdrawal and Discharge Summary for the Atlantic Coast (34th St to Cape May Pt) HUC11 02040302940



Key for Discharge Data

1999 Treated Effluent Discharge

0 - 50	MGY
50 - 100	MGY
100 - 500	MGY
> 500	MGY
Other Permitted Discharge	

Key for Withdrawal Data

Source	1999 Withdrawal	Use Group
GW Confined	No 1999 Use	Agricultural
GW Unconfined	1 - 50 MGY	Commercial
SW	51 - 100 MGY	Industrial
	101 - 500 MGY	Irrigation
	> 500 MGY	Mining
		Not Classified
		Potable Supply
		Power Generation

MGY = millions of gallons per year

Area of Detail