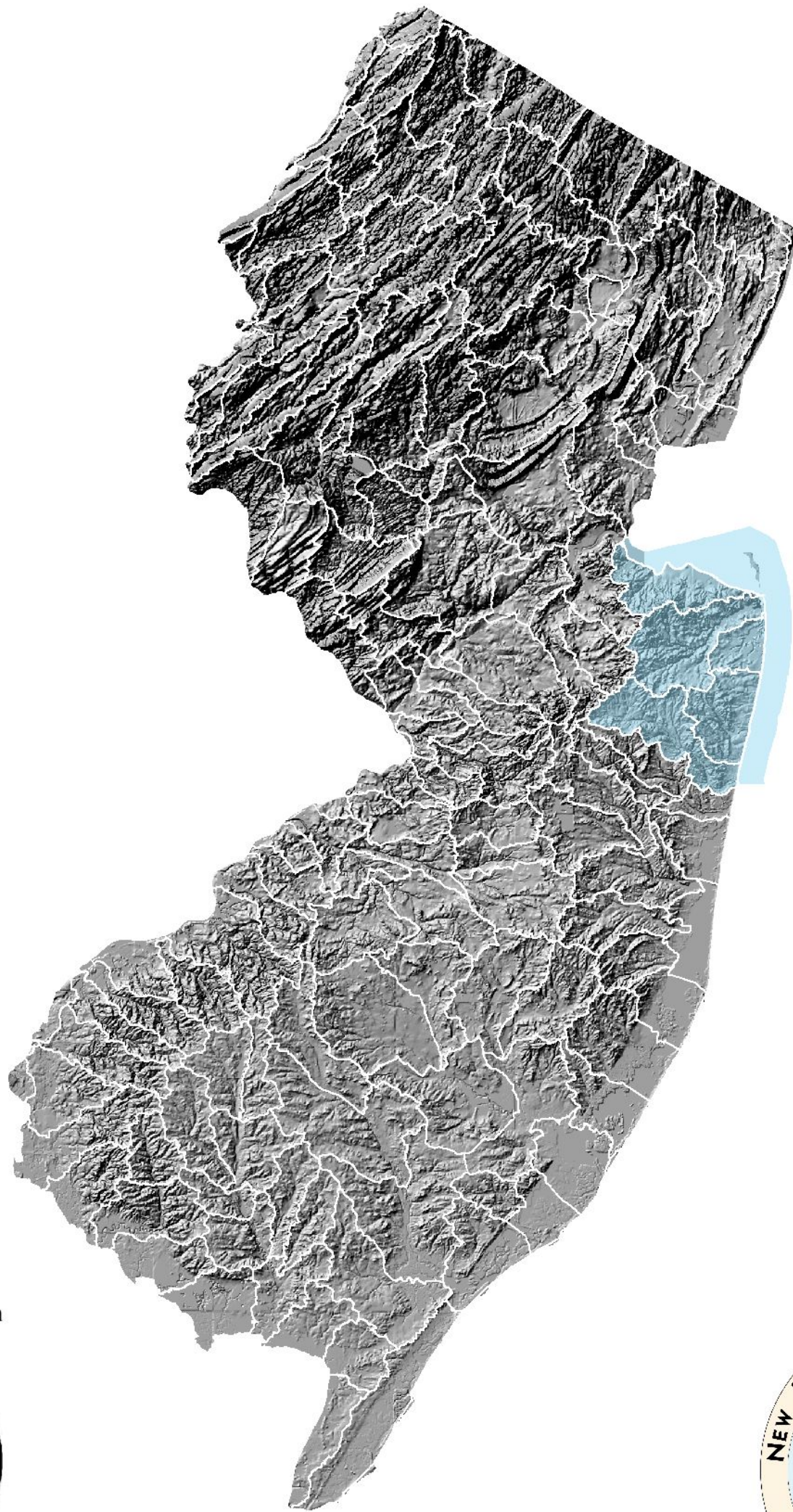


# New Jersey Water Withdrawals, Uses, Transfers, and Discharges by HUC11, 1990 to 1999

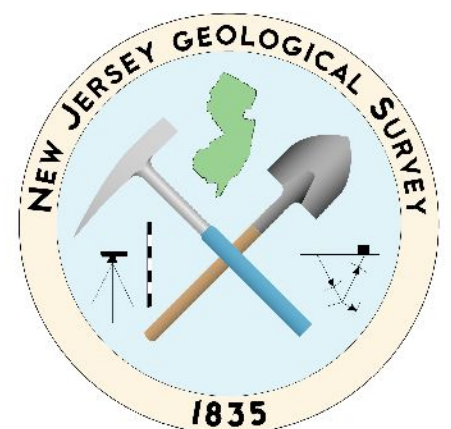
## Appendix 12: HUC11 Tables, Figures and Maps WMA 12 - Monmouth



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NEW JERSEY DEPARTMENT  
OF ENVIRONMENTAL PROTECTION



**Water Withdrawals, Transfers and Discharges for RARITAN / SANDY HOOK BAY TRIBUTARIES --- 02030104060**

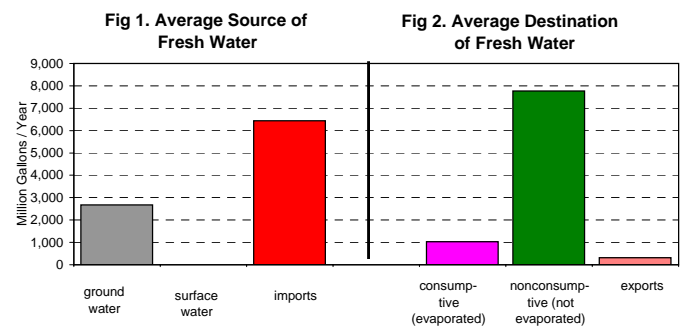
<b>WMA:</b>	<b>Monmouth County</b>	<b>12</b>
<b>HUC11:</b>	<b>Raritan / Sandy Hook Bay tributaries</b>	<b>02030104060</b>

**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>surface water:<sup>2</sup></b>											
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
<b>ground-water:<sup>3</sup></b>											
confined	3,042	1,385	1,358	1,614	1,576	1,935	1,884	2,174	2,214	2,639	1,982
unconfined	849	833	715	853	953	458	433	596	586	638	691
sum	3,891	2,219	2,074	2,466	2,529	2,393	2,316	2,770	2,799	3,278	2,674
<b>total withdrawals:</b>	<b>3,891</b>	<b>2,219</b>	<b>2,074</b>	<b>2,466</b>	<b>2,529</b>	<b>2,393</b>	<b>2,316</b>	<b>2,770</b>	<b>2,799</b>	<b>3,278</b>	<b>2,674</b>

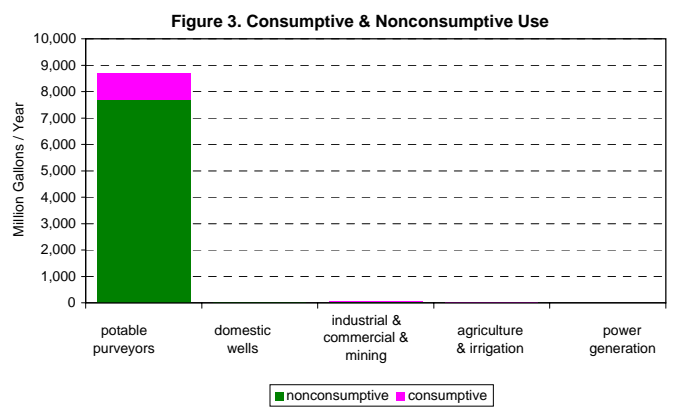
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports <sup>11</sup>	5,531	5,891	6,190	6,425	6,533	6,723	6,469	6,757	7,016	6,783	6,432
exports <sup>11</sup>	634	255	239	238	294	271	236	290	285	347	309
net	4,897	5,636	5,951	6,187	6,239	6,452	6,233	6,467	6,731	6,436	6,123



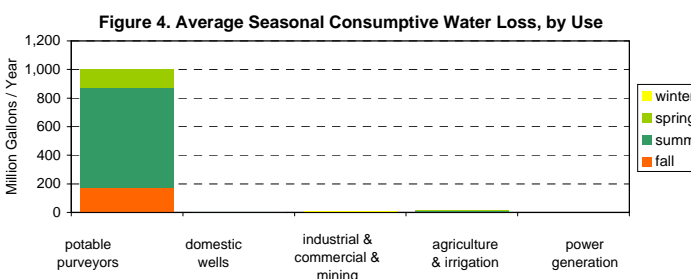
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>potable purveyors</b>											
nonconsumptive	7,769	6,830	7,044	7,525	7,700	7,747	7,511	8,004	8,341	8,483	7,695
consumptive	897	898	878	1,013	952	993	932	1,086	1,162	1,202	1,001
<b>domestic wells</b>											
nonconsumptive	20	20	21	21	21	21	22	22	22	22	21
consumptive	3	3	3	3	3	3	3	3	3	3	3
<b>industrial &amp; commercial &amp; mining</b>											
nonconsumptive	85	67	66	61	65	59	70	60	1	0	53
consumptive	9	7	7	7	7	7	7	7	0	0	6
<b>agricultural &amp; non-agricultural irrigation</b>											
nonconsumptive	0	3	1	2	2	2	1	6	0	0	2
consumptive	4	26	5	21	18	14	5	51	1	3	15
<b>power generation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	7,875	6,920	7,132	7,609	7,788	7,829	7,603	8,091	8,364	8,506	7,772
consumptive	913	935	893	1,044	980	1,017	946	1,146	1,166	1,208	1,025
<b>PERCENTAGES:</b>											
nonconsumptive	89.6%	88.1%	88.9%	87.9%	88.8%	88.5%	88.9%	87.6%	87.8%	87.6%	88.3%
consumptive	10.4%	11.9%	11.1%	12.1%	11.2%	11.5%	11.1%	12.4%	12.2%	12.4%	11.7%



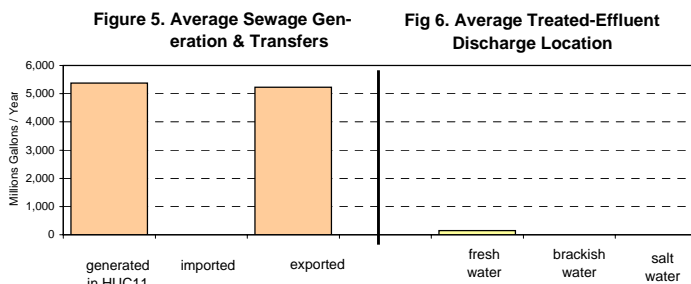
**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive
potable purveyors	1,871	0	1,900	132	2,012	698	1,913	171	7,695	1,001
domestic wells	5	0	5	0	6	2	5	0	21	3
industrial & commercial & mining	13	1	14	1	15	2	12	1	53	6
agricultural & non-agricultural irrig.	0	0	0	1	1	12	0	2	2	15
power generation	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>	<b>1,889</b>	<b>1</b>	<b>1,918</b>	<b>134</b>	<b>2,034</b>	<b>714</b>	<b>1,931</b>	<b>175</b>	<b>7,772</b>	<b>1,025</b>



**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	4,603	5,112	5,552	6,125	6,420	5,923	6,076	4,670	4,761	4,562	5,380
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	4,569	4,693	5,087	5,793	6,161	5,921	6,076	4,670	4,761	4,562	5,229



**Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges<sup>9</sup> in the HUC11 (millions of gallons)**

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	34	419	465	332	259	3	0	0	0	0	151
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:	34	419	465	332	259	3	0	0	0	0	151

**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	0
ground water	2,289
total	2,289

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

Use Group	MGY
agricultural	18
commercial	0
industrial	25
irrigation	74
mining	0
potable supply	2,171
power generation	0
total	2,289

**Table 9. HUC11 Descriptive Statistics**

--- **Area:**

in this HUC11 only	58.6	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	58.6	sq. mi.

(this HUC11 onshore area: 58.5 sq. mi.)

--- **Population of this HUC11:**

Year	Population	Change
1940	33,121	-
1950	46,493	40.4%
1960	85,352	83.6%
1970	128,034	50.0%
1980	133,748	4.5%
1990	139,256	4.1%
2000	142,693	2.5%
2010	149,732	4.9% est. <sup>12</sup>
2020	154,843	3.4% est. <sup>12</sup>
2030	160,023	3.3% est. <sup>12</sup>

--- **Land Use of this HUC11:**

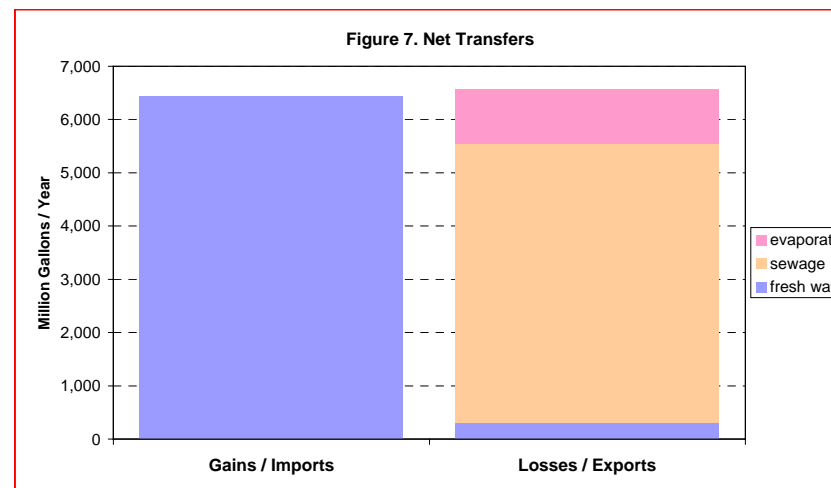
Type	Year		Change
	1986	1995	
ag.	2.9%	2.3%	-0.7%
barren	2.0%	2.0%	0.0%
forest	17.8%	16.7%	-1.1%
urban	55.8%	58.1%	2.3%
water	1.4%	1.5%	0.0%
wetlands	20.0%	19.4%	-0.6%

--- **% of this HUC11 in:**

Pinelands:	0.0%
Highlands:	0.0%

**Table 10. Upstream and downstream HUC11s (in NJ)**

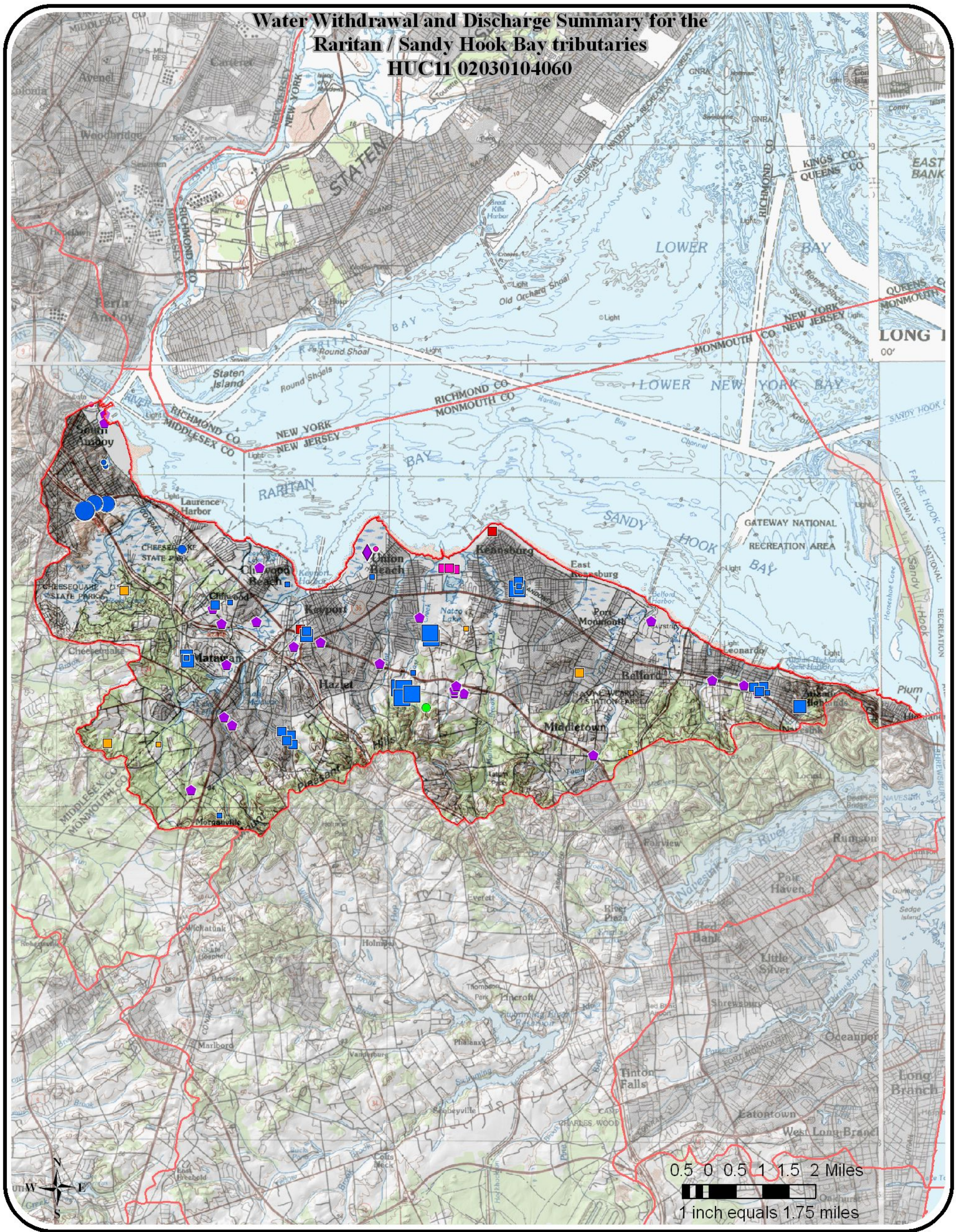
location	#	name
downstream:	02030104910	Raritan Bay / Sandy Hook Bay
(if any)	--	--
upstream:	--	--
(if any)	--	--



**NOTES:**

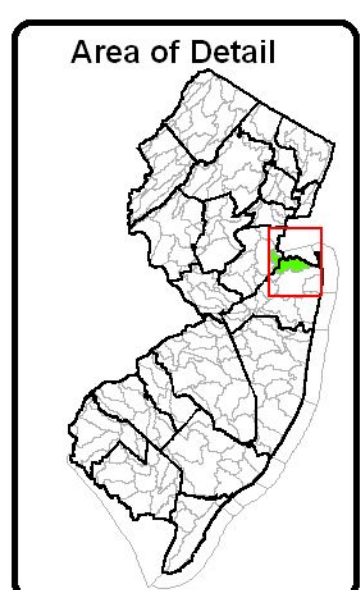
- 1 Salt and brackish water withdrawal and use is not included in this data.
- 2 This does not account for water released from onstream reservoirs for downstream intakes.
- 3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
- 4 Nonconsumptive water use refers 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 Raritan / Sandy Hook Bay tributaries HUC11 02030104060



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	●



**Water Withdrawals, Transfers and Discharges for NAVESINK RIVER / LOWER SHREWSBURY RIVER --- 02030104070**

<b>WMA:</b>	<b>Monmouth County</b>	<b>12</b>
<b>HUC11:</b>	<b>Navesink River / Lower Shrewsbury River</b>	<b>02030104070</b>

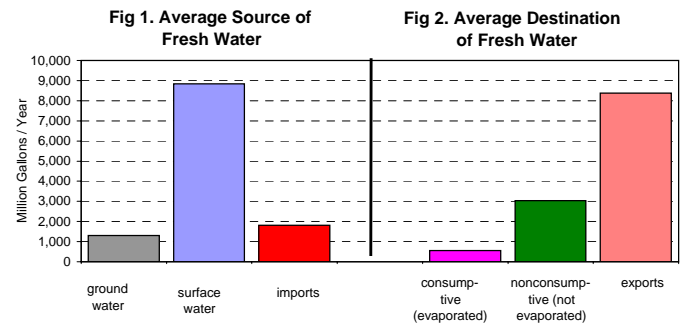
**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>surface water:<sup>2</sup></b>											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	9,445	9,927	8,630	8,982	8,653	8,684	8,022	9,007	8,891	8,180	8,842
sum	9,445	9,927	8,630	8,982	8,653	8,684	8,022	9,007	8,891	8,180	8,842
<b>ground-water:<sup>3</sup></b>											
confined	1,263	1,255	779	878	781	814	836	810	882	933	923
unconfined	343	346	350	360	365	409	397	427	430	449	388
sum	1,607	1,601	1,129	1,238	1,146	1,223	1,233	1,236	1,312	1,382	1,311
<b>total withdrawals:</b>	<b>11,052</b>	<b>11,528</b>	<b>9,759</b>	<b>10,220</b>	<b>9,799</b>	<b>9,907</b>	<b>9,255</b>	<b>10,244</b>	<b>10,203</b>	<b>9,562</b>	<b>10,153</b>

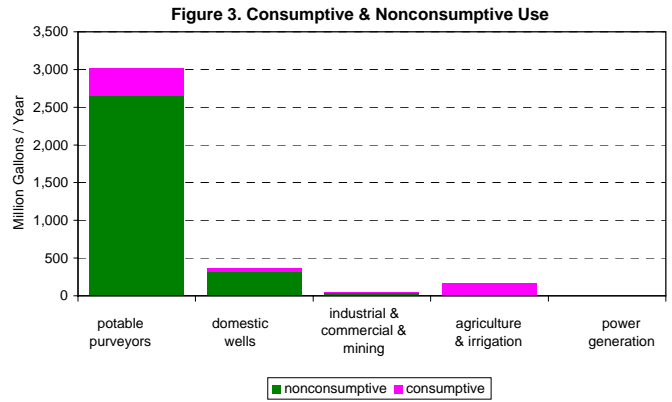
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports <sup>11</sup>	1,660	1,913	1,705	1,720	1,787	1,805	1,656	1,856	1,958	2,062	1,812
exports <sup>11</sup>	9,262	9,605	8,091	8,486	8,110	8,108	7,553	8,381	8,361	7,780	8,374
net	(7,602)	(7,692)	(6,386)	(6,765)	(6,323)	(6,303)	(5,897)	(6,524)	(6,402)	(5,718)	(6,561)



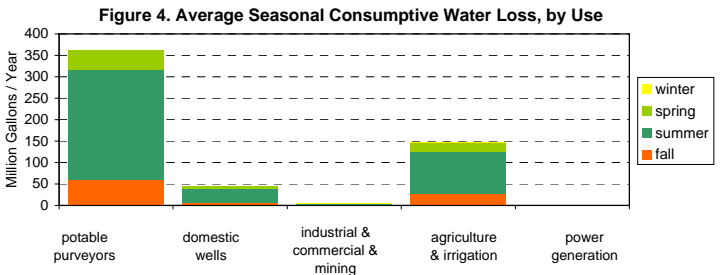
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>potable purveyors</b>											
nonconsumptive	2,704	2,970	2,486	2,578	2,625	2,642	2,440	2,684	2,733	2,736	2,660
consumptive	333	390	324	368	348	352	320	372	410	408	362
<b>domestic wells</b>											
nonconsumptive	298	299	302	307	312	318	323	328	333	340	316
consumptive	42	42	43	43	44	45	45	46	47	48	45
<b>industrial &amp; commercial &amp; mining</b>											
nonconsumptive	19	34	119	28	21	12	83	43	48	53	46
consumptive	2	4	13	3	2	1	9	5	5	6	5
<b>agricultural &amp; non-agricultural irrigation</b>											
nonconsumptive	5	10	8	16	16	23	14	24	22	25	16
consumptive	46	87	76	145	147	209	123	217	201	228	148
<b>power generation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	3,027	3,313	2,916	2,929	2,975	2,995	2,860	3,079	3,137	3,154	3,038
consumptive	423	523	457	560	541	607	497	639	662	690	560
<b>PERCENTAGES:</b>											
nonconsumptive	87.7%	86.4%	86.5%	84.0%	84.6%	83.1%	85.2%	82.8%	82.6%	82.0%	84.4%
consumptive	12.3%	13.6%	13.5%	16.0%	15.4%	16.9%	14.8%	17.2%	17.4%	18.0%	15.6%



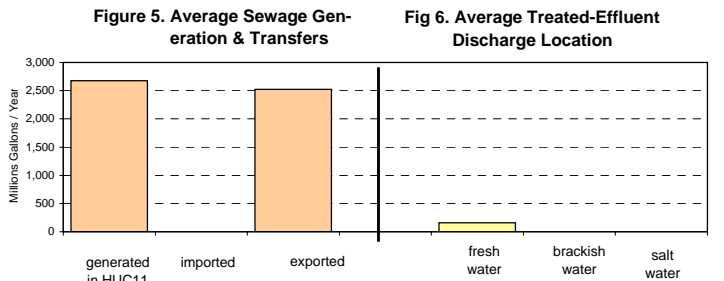
**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive
potable purveyors	616	0	625	45	740	257	679	60	2,660	362
domestic wells	72	0	74	5	92	32	77	7	316	45
industrial & commercial & mining	5	1	9	1	20	2	12	1	46	5
agricultural & non-agricultural irrig.	0	1	3	23	11	96	3	28	16	148
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	693	1	711	74	862	387	772	97	3,039	560



**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	2,981	3,197	3,000	3,290	3,299	3,224	2,754	1,701	1,805	1,526	2,678
imported to HUC11	0	0	0	0	0	0	0	0	0	0	0
exported from HUC11	2,802	3,013	2,841	3,124	3,132	3,063	2,591	1,562	1,655	1,429	2,521



**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	9,508
ground water	1,762
total	11,270

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

Use Group	MGY
agricultural	300
commercial	37
industrial	137
irrigation	338
mining	0
potable supply	10,458
power generation	0
total	11,270

**Table 9. HUC11 Descriptive Statistics**

--- **Area:**

in this HUC11 only	94.7	sq. mi.
upstream HUC11s	29.2	sq. mi.
total watershed	123.9	sq. mi.

(this HUC11 onshore area: 90.8 sq. mi.)

--- **Population of this HUC11:**

Year	Population	Change
1940	22,989	-
1950	32,048	39.4%
1960	52,493	63.8%
1970	70,953	35.2%
1980	80,984	14.1%
1990	90,999	12.4%
2000	102,625	12.8%
2010	107,441	4.7% est. <sup>12</sup>
2020	111,128	3.4% est. <sup>12</sup>
2030	115,266	3.7% est. <sup>12</sup>

--- **Land Use of this HUC11:**

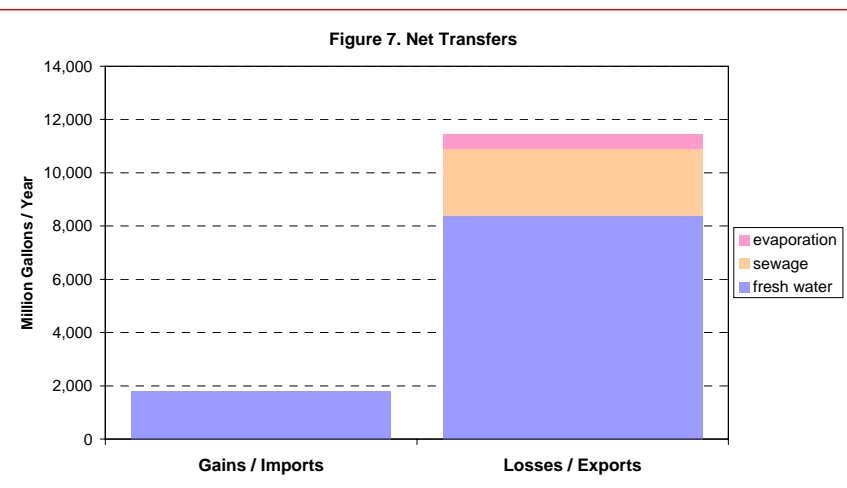
Type	Year		Change
	1986	1995	
ag.	18.6%	15.1%	-3.5%
barren	0.3%	0.7%	0.4%
forest	19.1%	19.0%	-0.1%
urban	35.4%	39.1%	3.7%
water	5.8%	5.8%	0.0%
wetlands	20.8%	20.3%	-0.5%

--- **% of this HUC11 in:**

Pinelands:	0.0%
Highlands:	0.0%

**Table 10. Upstream and downstream HUC11s (in NJ)**

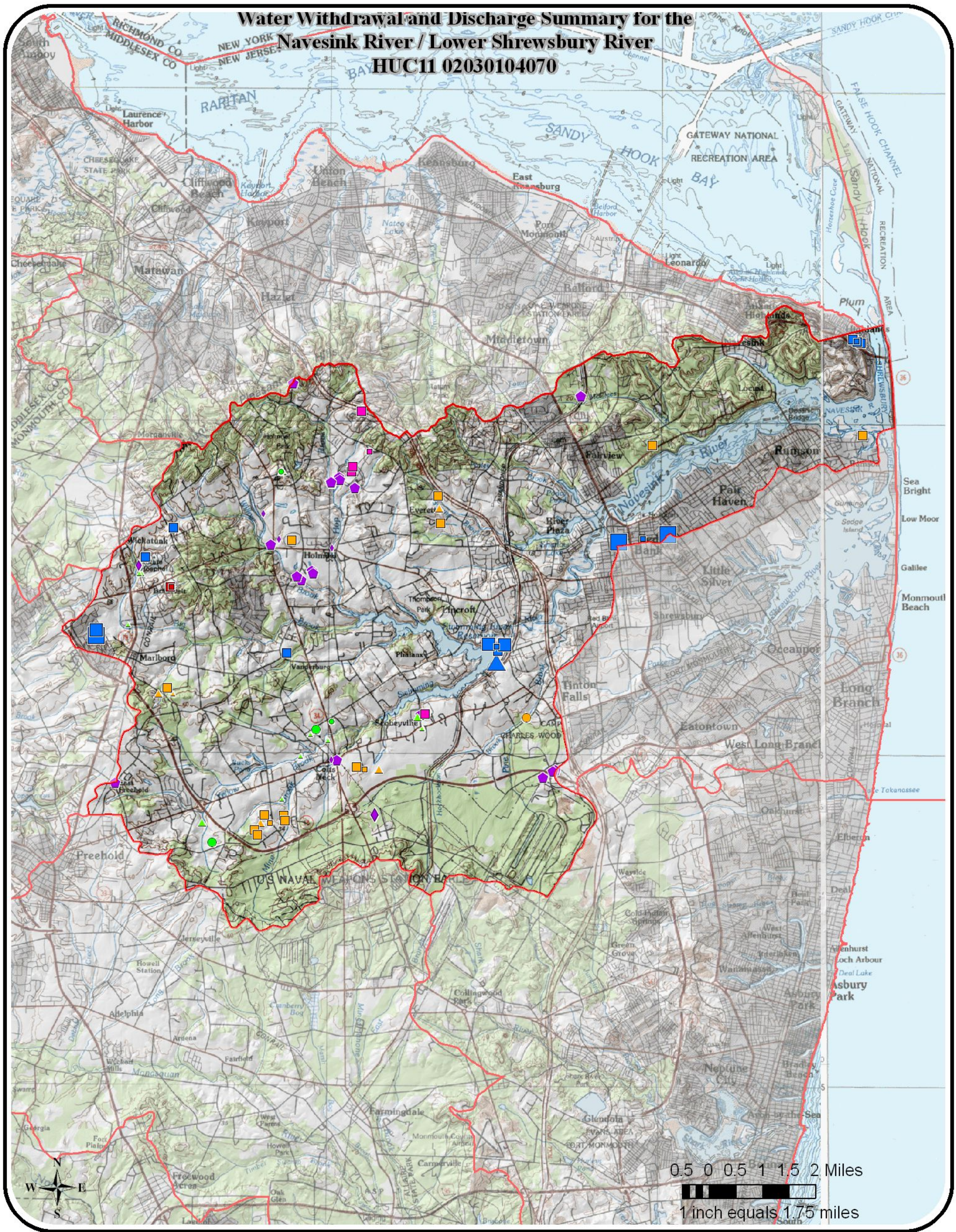
location	#	name
downstream: (if any)	02030104910	Raritan Bay / Sandy Hook Bay
upstream: (if any)	02030104080	Shrewsbury River (above Navesink River)
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
---	---	---
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**NOTES:**

- 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 Navesink River / Lower Shrewsbury River HUC11 02030104070

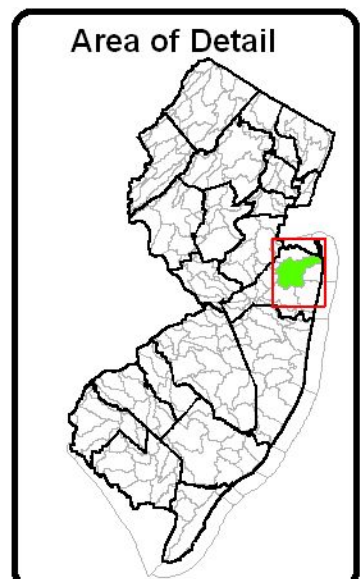


Key for Discharge Data		
1999 Treated Effluent Discharge		
0 - 50	MGY	◆
50 - 100	MGY	◆
100 - 500	MGY	◆
> 500	MGY	◆
Other Permitted Discharge		◆

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	■●▲	

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

MGY = millions of gallons per year



**Water Withdrawals, Transfers and Discharges for SHREWSBURY RIVER (ABOVE NAVESINK RIVER) --- 02030104080**

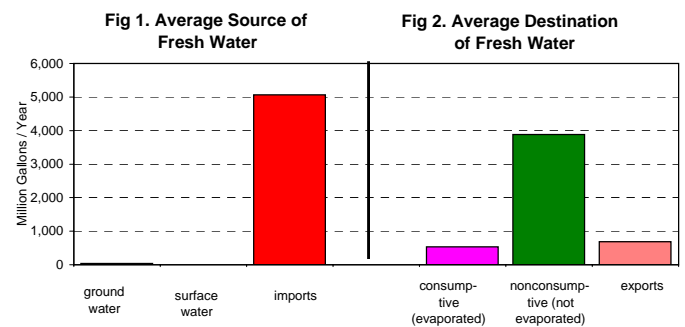
<b>WMA:</b>	<b>Monmouth County</b>	<b>12</b>
<b>HUC11:</b>	<b>Shrewsbury River (above Navesink River)</b>	<b>02030104080</b>

**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>surface water:<sup>2</sup></b>											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	0	0	0	0	0	0	0	0	0	3	0
sum	0	0	0	0	0	0	0	0	0	3	0
<b>ground-water:<sup>3</sup></b>											
confined	10	10	11	25	15	39	28	29	42	25	23
unconfined	18	18	18	19	19	19	19	19	20	20	19
sum	29	28	29	43	34	58	47	48	62	44	42
<b>total withdrawals:</b>	<b>29</b>	<b>28</b>	<b>29</b>	<b>43</b>	<b>34</b>	<b>58</b>	<b>47</b>	<b>48</b>	<b>62</b>	<b>48</b>	<b>43</b>

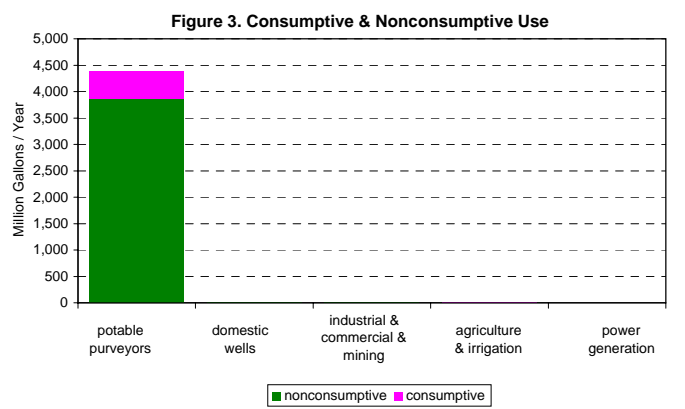
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports <sup>11</sup>	4,389	5,130	4,846	5,113	5,149	5,197	4,833	5,308	5,364	5,319	5,065
exports <sup>11</sup>	693	686	686	686	686	686	686	686	686	686	687
net	3,697	4,444	4,161	4,428	4,463	4,511	4,147	4,622	4,679	4,633	4,378



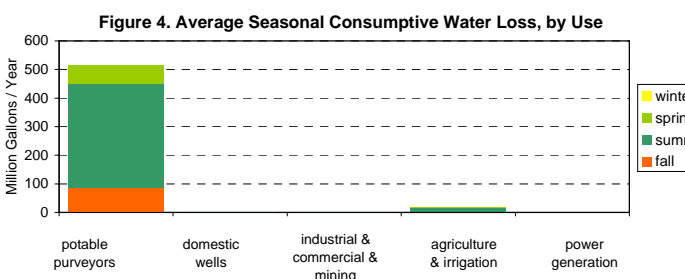
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>potable purveyors</b>											
nonconsumptive	3,276	3,932	3,692	3,898	3,969	4,004	3,667	4,063	4,084	4,046	3,863
consumptive	420	512	468	530	494	507	481	559	595	587	515
<b>domestic wells</b>											
nonconsumptive	16	16	16	16	16	17	17	17	17	17	17
consumptive	2	2	2	2	2	2	2	2	2	2	2
<b>industrial &amp; commercial &amp; mining</b>											
nonconsumptive	0	0	0	0	3	13	9	10	8	7	5
consumptive	0	0	0	0	0	3	3	2	2	1	1
<b>agricultural &amp; non-agricultural irrigation</b>											
nonconsumptive	1	1	1	2	1	2	2	2	3	3	2
consumptive	9	9	10	22	11	21	14	15	30	31	17
<b>power generation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	3,293	3,949	3,710	3,916	3,989	4,036	3,694	4,091	4,112	4,074	3,886
consumptive	432	523	480	554	508	534	500	579	629	621	536
<b>PERCENTAGES:</b>											
nonconsumptive	88.4%	88.3%	88.5%	87.6%	88.7%	88.3%	88.1%	87.6%	86.7%	86.8%	87.9%
consumptive	11.6%	11.7%	11.5%	12.4%	11.3%	11.7%	11.9%	12.4%	13.3%	13.2%	12.1%



**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive
potable purveyors	907	0	921	67	1,037	360	998	89	3,863	515
domestic wells	4	0	4	0	5	2	4	0	17	2
industrial & commercial & mining	1	0	1	0	1	1	1	0	5	1
agricultural & non-agricultural irrig.	0	0	0	3	1	11	0	3	2	17
power generation	0	0	0	0	0	0	0	0	0	0
SUM:	913	0	926	70	1,044	373	1,003	93	3,886	536

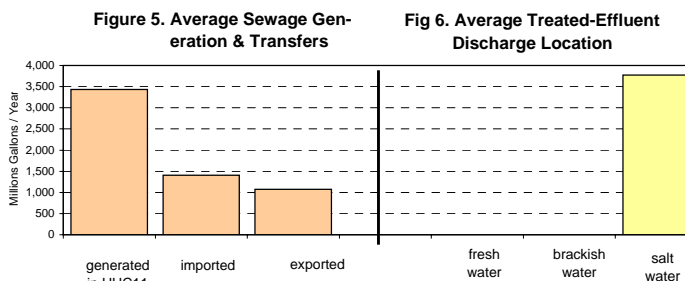


**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	2,845	3,690	3,128	3,398	3,581	3,480	3,837	3,557	3,767	3,073	3,436
imported to HUC11	1,231	1,516	1,237	1,397	1,439	1,374	1,502	1,491	1,577	1,301	1,406
exported from HUC11	776	1,142	1,050	1,050	1,163	1,171	1,313	1,051	1,116	885	1,072

**Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges<sup>9</sup> 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	3,300	4,064	3,315	3,745	3,857	3,684	4,026	3,998	4,228	3,489	3,771
sum:	3,300	4,064	3,315	3,745	3,857	3,684	4,026	3,998	4,228	3,489	3,771



**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	7
ground water	82
total	89

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

Use Group	MGY
agricultural	0
commercial	37
industrial	0
irrigation	52
mining	0
potable supply	0
power generation	0
total	89

**Table 9. HUC11 Descriptive Statistics**

--- **Area:**

in this HUC11 only	29.2	sq. mi.
upstream HUC11s	0.0	sq. mi.
total watershed	29.2	sq. mi.

(this HUC11 onshore area: 25.7 sq. mi.)

--- **Population of this HUC11:**

Year	Population	Change
1940	29,217	-
1950	43,295	48.2%
1960	56,435	30.4%
1970	69,766	23.6%
1980	65,917	-5.5%
1990	66,287	0.6%
2000	70,900	7.0%
2010	73,904	4.2% est. <sup>12</sup>
2020	75,157	1.7% est. <sup>12</sup>
2030	76,096	1.3% est. <sup>12</sup>

--- **Land Use of this HUC11:**

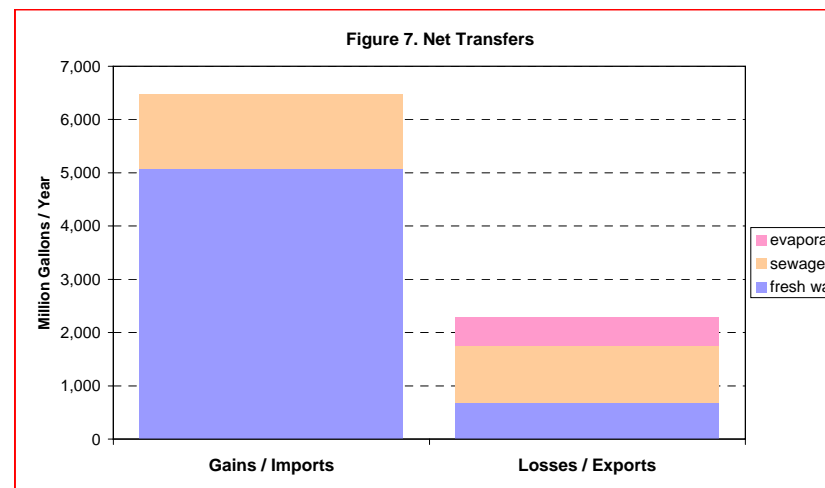
Type	Year		Change
	1986	1995	
ag.	1.0%	0.6%	-0.4%
barren	0.6%	0.4%	-0.2%
forest	5.1%	4.5%	-0.6%
urban	68.4%	71.1%	2.7%
water	13.3%	13.3%	0.0%
wetlands	11.6%	10.1%	-1.5%

--- **% of this HUC11 in:**

Pinelands:	0.0%
Highlands:	0.0%

**Table 10. Upstream and downstream HUC11s (in NJ)**

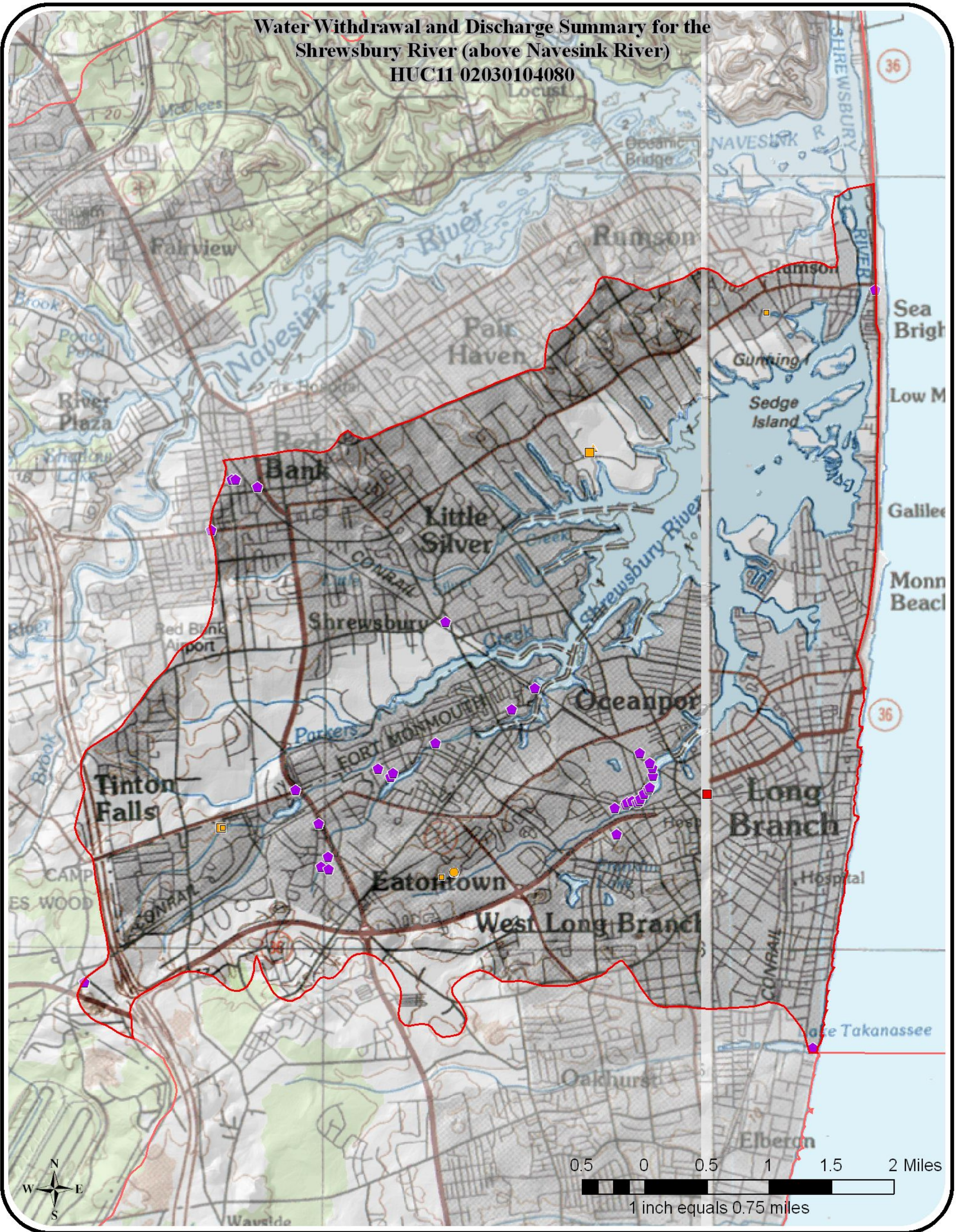
location	#	name
downstream:	02030104070	Navesink River / Lower Shrewsbury River
(if any)	--	--
upstream:	--	--
(if any)	--	--



**NOTES:**

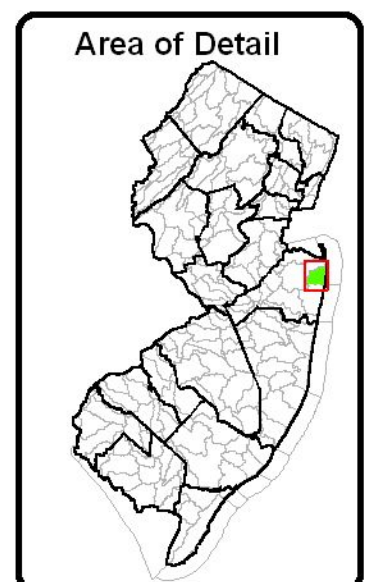
- 1 Salt and brackish water withdrawal and use is not included in this data.
- 2 This does not account for water released from onstream reservoirs for downstream intakes.
- 3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.
- 4 Nonconsumptive water use refers 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  
Shrewsbury River (above Navesink River)  
HUC11 02030104080**



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
GW Confined □	No 1999 Use ■●▲
GW Unconfined ○	1 - 50 MGY ■●▲
SW △	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 ●



**Water Withdrawals, Transfers and Discharges for WHALE POND BK / SHARK R / WRECK POND BK --- 02030104090**

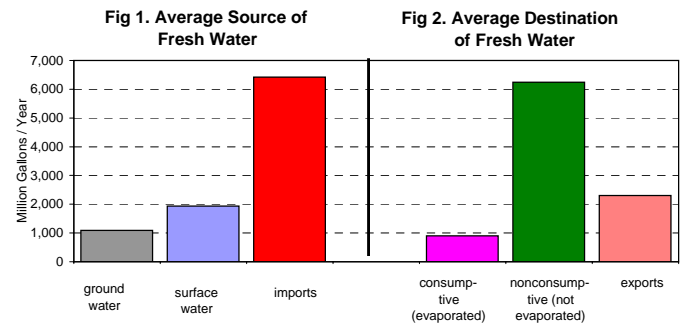
<b>WMA:</b>	<b>Monmouth County</b>	<b>12</b>
<b>HUC11:</b>	<b>Whale Pond Bk / Shark R / Wreck Pond Bk</b>	<b>02030104090</b>

**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<i>surface water:</i> <sup>2</sup>											
Delaware River	0	0	0	0	0	0	0	0	0	0	0
other	1,655	1,424	1,450	1,631	2,315	1,961	1,638	2,188	2,535	2,521	1,932
sum	1,655	1,424	1,450	1,631	2,315	1,961	1,638	2,188	2,535	2,521	1,932
<i>ground-water:</i> <sup>3</sup>											
confined	1,555	903	753	951	899	1,032	901	970	971	960	990
unconfined	188	92	78	96	99	99	84	108	101	105	105
sum	1,743	995	831	1,047	998	1,131	985	1,078	1,073	1,065	1,095
<b>total withdrawals:</b>	<b>3,398</b>	<b>2,419</b>	<b>2,281</b>	<b>2,678</b>	<b>3,312</b>	<b>3,092</b>	<b>2,623</b>	<b>3,266</b>	<b>3,607</b>	<b>3,587</b>	<b>3,026</b>

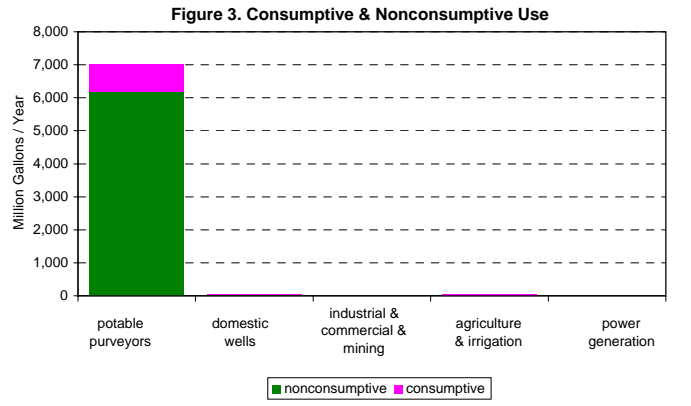
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
imports <sup>11</sup>	5,207	6,801	6,421	6,668	6,349	6,596	6,247	6,720	6,624	6,595	6,423
exports <sup>11</sup>	2,247	2,020	1,990	2,132	2,466	2,353	2,130	2,441	2,646	2,631	2,306
net	2,960	4,781	4,430	4,537	3,882	4,243	4,117	4,279	3,978	3,964	4,117



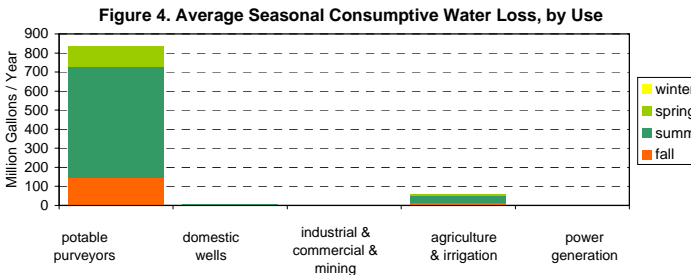
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<i>potable purveyors</i>											
nonconsumptive	5,544	6,267	5,881	6,234	6,260	6,360	5,846	6,476	6,477	6,452	6,180
consumptive	720	839	751	864	798	828	779	912	941	941	837
<i>domestic wells</i>											
nonconsumptive	49	49	50	50	50	51	52	52	53	54	51
consumptive	7	7	7	7	7	7	7	7	7	8	7
<i>industrial &amp; commercial &amp; mining</i>											
nonconsumptive	0	0	0	0	0	0	4	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<i>agricultural &amp; non-agricultural irrigation</i>											
nonconsumptive	4	4	2	6	8	9	5	10	10	10	7
consumptive	34	34	20	54	72	80	47	87	94	86	61
<i>power generation</i>											
nonconsumptive	0	0	0	0	0	0	4	5	6	0	1
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	5,597	6,320	5,933	6,290	6,318	6,420	5,910	6,542	6,547	6,515	6,239
consumptive	762	880	778	925	876	914	834	1,007	1,042	1,034	905
<b>PERCENTAGES:</b>											
nonconsumptive	88.0%	87.8%	88.4%	87.2%	87.8%	87.5%	87.6%	86.7%	86.3%	86.3%	87.3%
consumptive	12.0%	12.2%	11.6%	12.8%	12.2%	12.5%	12.4%	13.3%	13.7%	13.7%	12.7%



**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive
potable purveyors	1,425	0	1,489	108	1,688	586	1,576	143	6,179	837
domestic wells	12	0	12	1	15	5	12	1	51	7
industrial & commercial & mining	0	0	0	0	0	0	0	0	0	0
agricultural & non-agricultural irrig.	0	1	1	10	4	36	2	14	7	61
power generation	0	0	0	0	0	0	0	0	1	0
<b>SUM:</b>	<b>1,437</b>	<b>1</b>	<b>1,503</b>	<b>118</b>	<b>1,708</b>	<b>627</b>	<b>1,590</b>	<b>159</b>	<b>6,238</b>	<b>905</b>

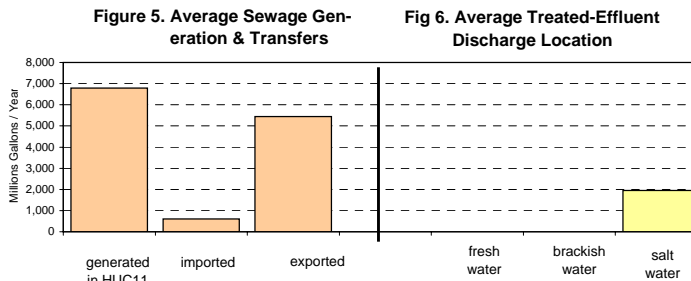


**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	4,830	6,792	6,734	7,034	6,899	6,629	7,619	7,182	7,872	6,364	6,795
imported to HUC11	526	574	574	585	555	534	652	649	751	629	603
exported from HUC11	3,653	5,508	5,451	5,730	5,664	5,441	6,169	5,737	6,200	4,964	5,452

**Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges<sup>9</sup> in the HUC11 (millions of gallons)**

destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	6	6	6	1	0	0	0	0	0	0	2
brackish water	0	0	0	0	0	0	0	0	0	0	0
salt water	1,697	1,852	1,851	1,888	1,789	1,721	2,102	2,094	2,423	2,030	1,945
sum:	1,703	1,858	1,857	1,889	1,789	1,721	2,102	2,094	2,423	2,030	1,947



**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	3,133
ground water	1,390
total	4,523

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

Use Group	MGY
agricultural	0
commercial	0
industrial	0
irrigation	222
mining	0
potable supply	4,301
power generation	0
total	4,523

**Table 9. HUC11 Descriptive Statistics**

--- **Area:**

in this HUC11 only	60.7 sq. mi.
upstream HUC11s	0.0 sq. mi.
total watershed	60.7 sq. mi.

(this HUC11 onshore area: 59.5 sq. mi.)

--- **Population of this HUC11:**

Year	Population	Change
1940	53,426	-
1950	72,170	35.1%
1960	99,653	38.1%
1970	124,388	24.8%
1980	132,825	6.8%
1990	133,440	0.5%
2000	141,109	5.7%
2010	149,890	6.2% est. <sup>12</sup>
2020	155,806	3.9% est. <sup>12</sup>
2030	160,206	2.8% est. <sup>12</sup>

--- **Land Use of this HUC11:**

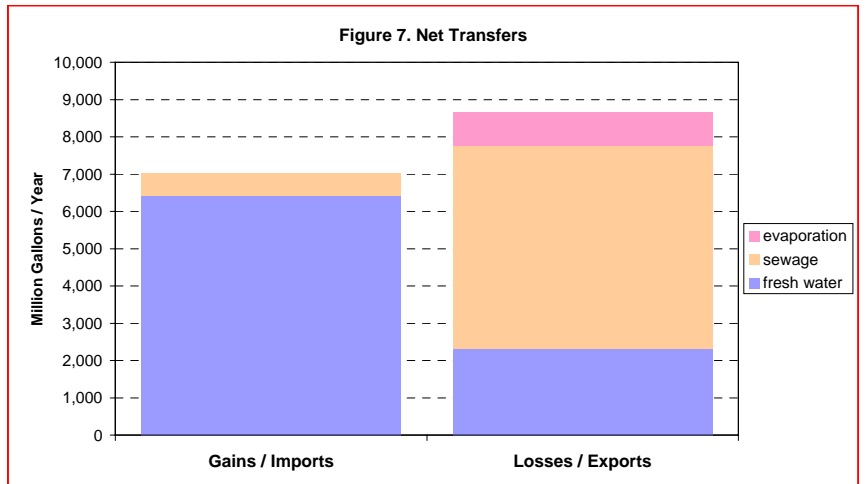
Type	Year		Change
	1986	1995	
ag.	3.9%	3.1%	-0.8%
barren	3.1%	2.8%	-0.2%
forest	18.1%	16.7%	-1.4%
urban	54.4%	57.9%	3.5%
water	3.7%	3.8%	0.1%
wetlands	16.9%	15.8%	-1.1%

--- **% of this HUC11 in:**

Pinelands:	0.0%
Highlands:	0.0%

**Table 10. Upstream and downstream HUC11s (in NJ)**

location	#	name
downstream:	02030104930	Atlantic Coast (Whale Pond to Manasquan)
(if any)	--	--
upstream:	--	--
(if any)	--	--



**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.

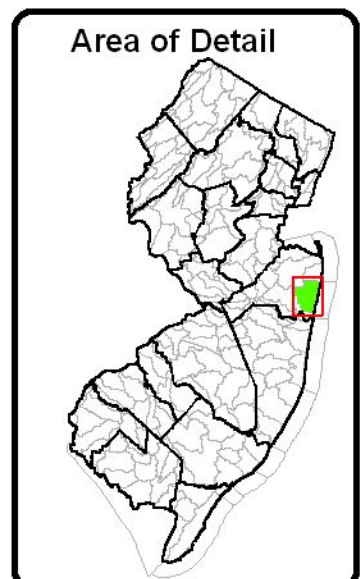


**Water Withdrawal and Discharge Summary for the  
Whale Pond Bk / Shark R / Wreck Pond Bk  
HUC11 02030104090**



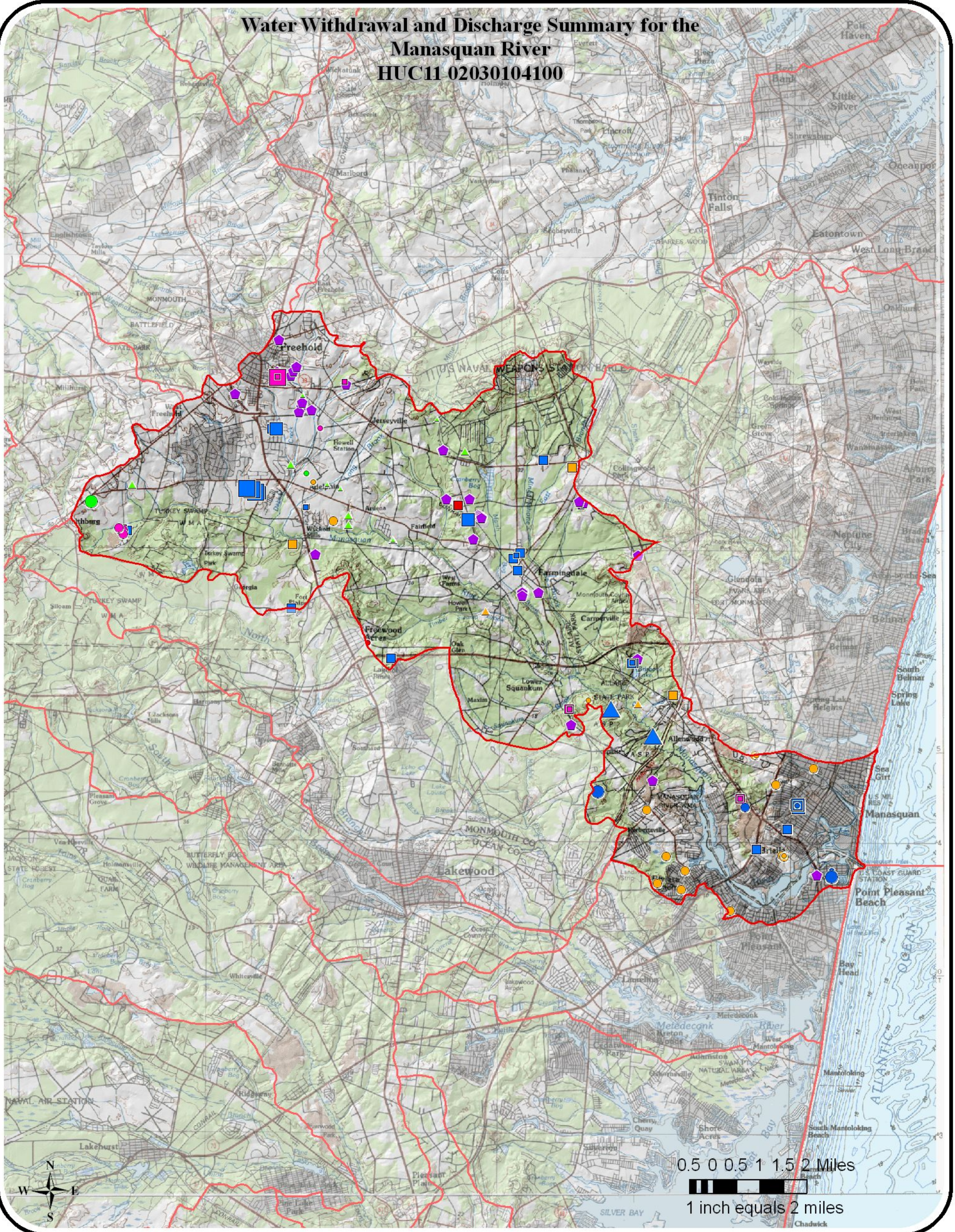
Key for Discharge Data	
1999 Treated Effluent Discharge	
0 - 50 MGY	◆
50 - 100 MGY	◆
100 - 500 MGY	◆
> 500 MGY	◆
Other Permitted Discharge	◆

Key for Withdrawal Data	
Source	1999 Withdrawal
GW Confined □	No 1999 Use ■●▲
GW Unconfined ○	1 - 50 MGY ■●▲
SW △	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 ●





# Water Withdrawal and Discharge Summary for the Manasquan River HUC11 02030104100

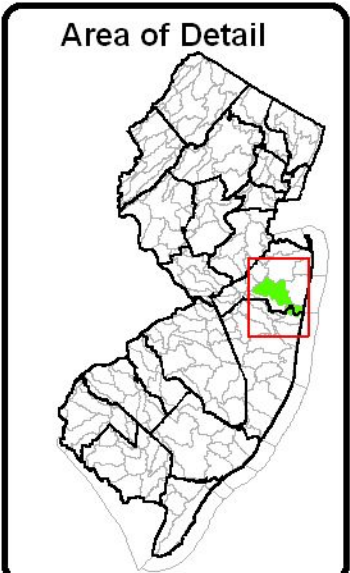


Key for Discharge Data	
1999 Treated Effluent Discharge	
0 - 50 MGY	◆
50 - 100 MGY	◆
100 - 500 MGY	◆
> 500 MGY	◆
Other Permitted Discharge	◆

Key for Withdrawal Data	
Source	1999 Withdrawal
GW Confined □	No 1999 Use ●▲
GW Unconfined ○	1 - 50 MGY ■●▲
SW △	51 - 100 MGY ■●▲
	101 - 500 MGY ■●▲
	> 500 MGY ■●▲

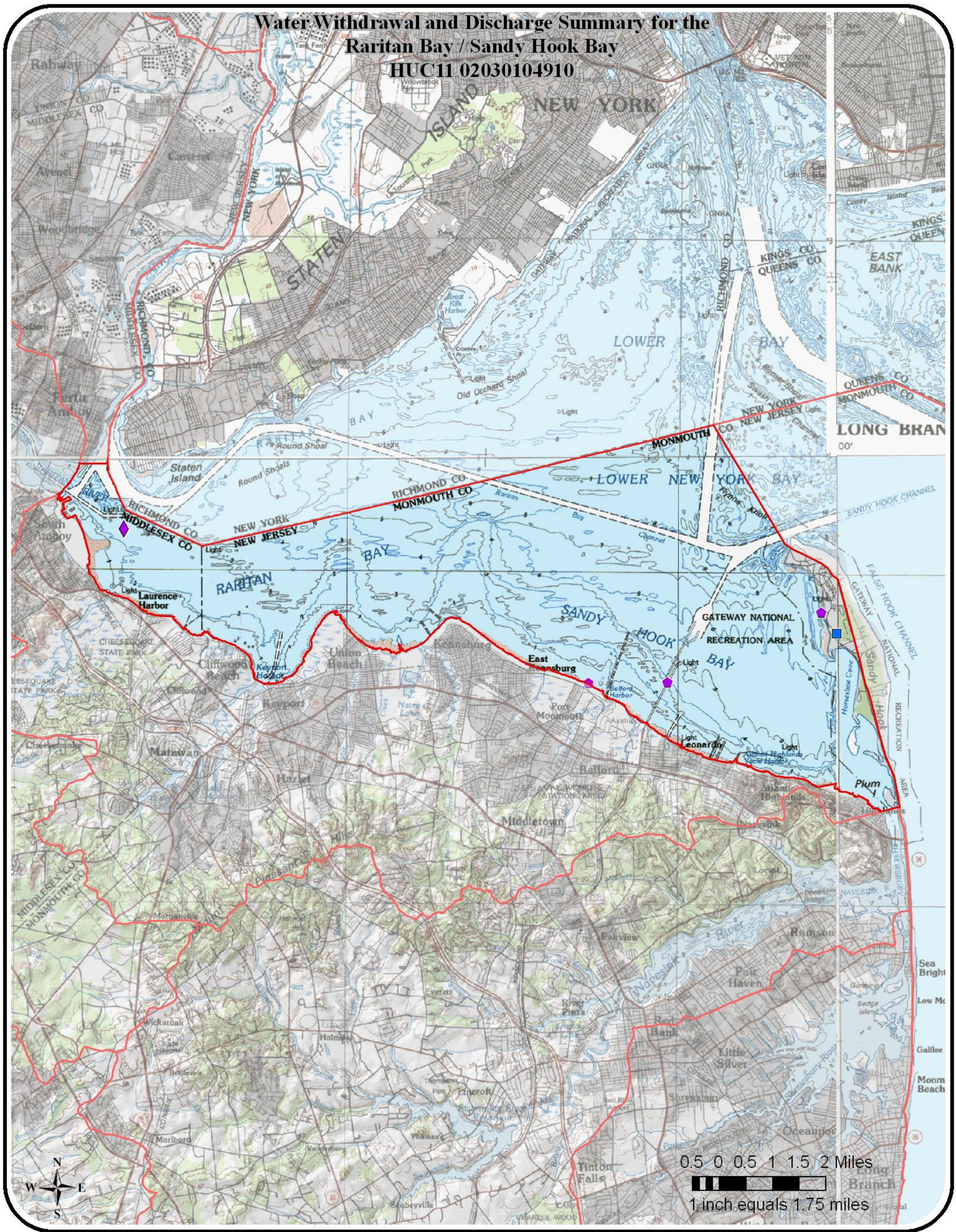
Use Group	
Agricultural	●
Commercial	●
Industrial	●
Irrigation	●
Mining	●
Not Classified	●
Potable Supply	●
Power Generation	●

MGY = millions of gallons per year





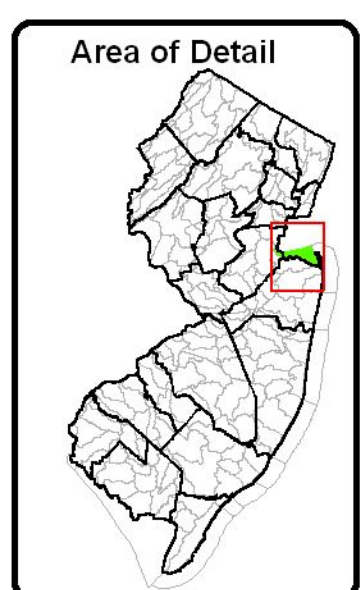
# Water Withdrawal and Discharge Summary for the Raritan Bay / Sandy Hook Bay HUC11 02030104910



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

MGY = millions of gallons per year

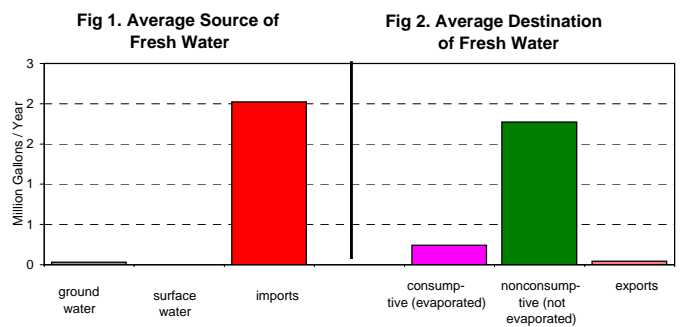


**Water Withdrawals, Transfers and Discharges for ATLANTIC COAST (SANDY HOOK TO WHALEPOND) --- 02030104920**

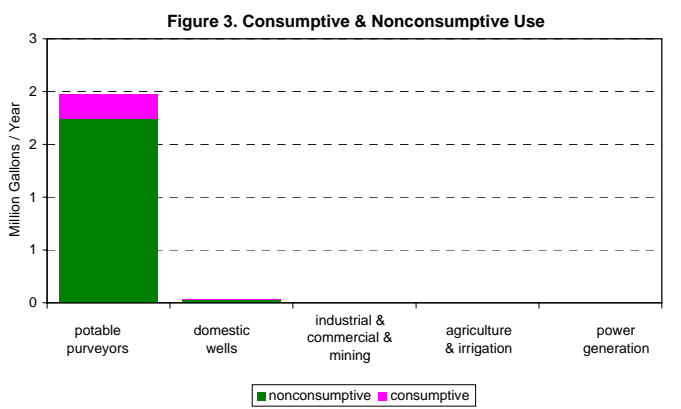
<b>WMA:</b>	<b>Monmouth County</b>	<b>12</b>
<b>HUC11:</b>	<b>Atlantic Coast (Sandy Hook to Whale Pond)</b>	<b>02030104920</b>

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<i>surface water:<sup>2</sup></i>											
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
<i>ground-water:<sup>3</sup></i>											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	0	0	0	0	0	0	0	0	0	0	0
sum	0	0	0	0	0	0	0	0	0	0	0
<b>total withdrawals:</b>	#N/A	0	0	0	0	0	0	0	0	0	0

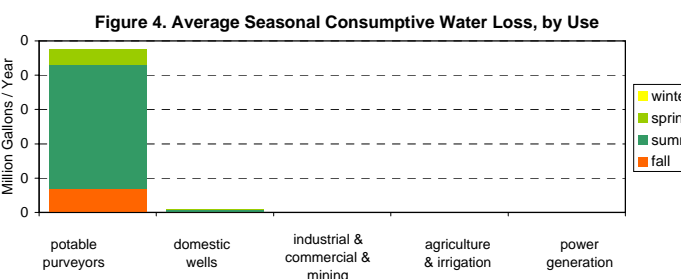
imports <sup>11</sup>	0	0	0	0	0	0	2	8	9	2
exports <sup>11</sup>	0	0	0	0	0	0	0	0	0	0
net	0	0	0	0	0	0	2	8	8	2



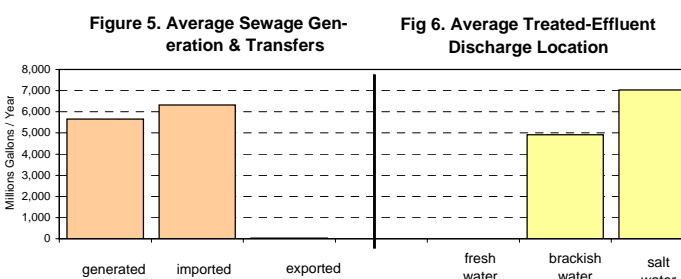
Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<i>potable purveyors</i>											
nonconsumptive	0	0	0	0	0	0	0	2	7	7	2
consumptive	0	0	0	0	0	0	0	0	1	1	0
<i>domestic wells</i>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<i>industrial &amp; commercial &amp; mining</i>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<i>agricultural &amp; non-agricultural irrigation</i>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<i>power generation</i>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	0	0	0	0	0	0	0	2	7	7	2
consumptive	0	0	0	0	0	0	0	1	1	1	0
<b>PERCENTAGES:</b>											
nonconsumptive	88.2%	88.1%	88.7%	87.8%	88.8%	88.5%	88.1%	95.9%	86.8%	87.3%	88.0%
consumptive	11.8%	11.9%	11.3%	12.2%	11.2%	11.5%	11.9%	4.1%	13.2%	12.7%	12.0%



Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive	Noncon-sumptive	Consumptive
potable purveyors	0	0	0	0	1	0	0	0	2	0
domestic wells	0	0	0	0	0	0	0	0	0	0
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
<b>SUM:</b>	0	0	0	0	1	0	0	0	2	0



generated in HUC11	4,649	5,377	4,905	5,124	6,014	5,854	6,625	6,204	6,552	5,326	5,663
imported to HUC11	6,155	6,513	6,690	7,372	7,809	7,761	7,204	4,590	4,786	4,274	6,315
exported from HUC11	23	28	23	26	27	26	28	28	30	24	26



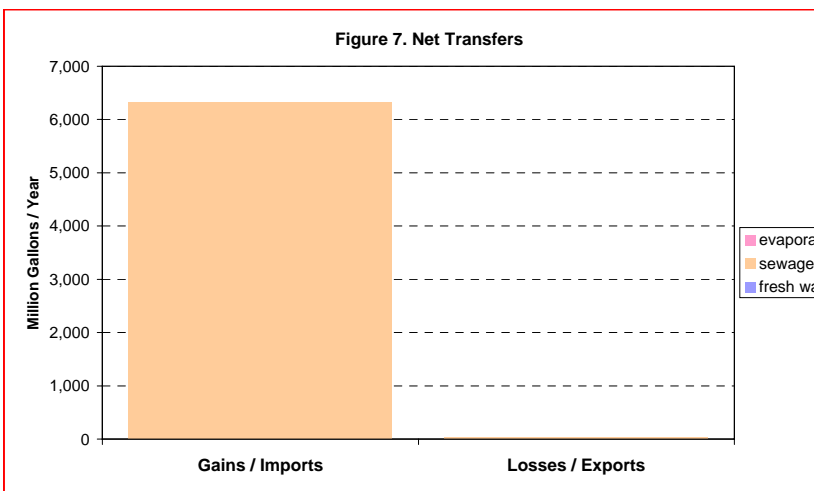
destination	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
fresh water	0	0	0	0	0	0	0	0	0	0	0
brackish water	5,145	5,026	5,322	6,004	6,294	6,236	5,494	3,221	3,332	3,121	4,919
salt water	5,636	6,836	6,249	6,465	7,502	7,354	8,307	7,545	7,977	6,455	7,033
sum:	10,781	11,862	11,571	12,469	13,796	13,590	13,801	10,766	11,309	9,576	11,952

Water Source	MGY
surface water	0
ground water	0
total	0

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

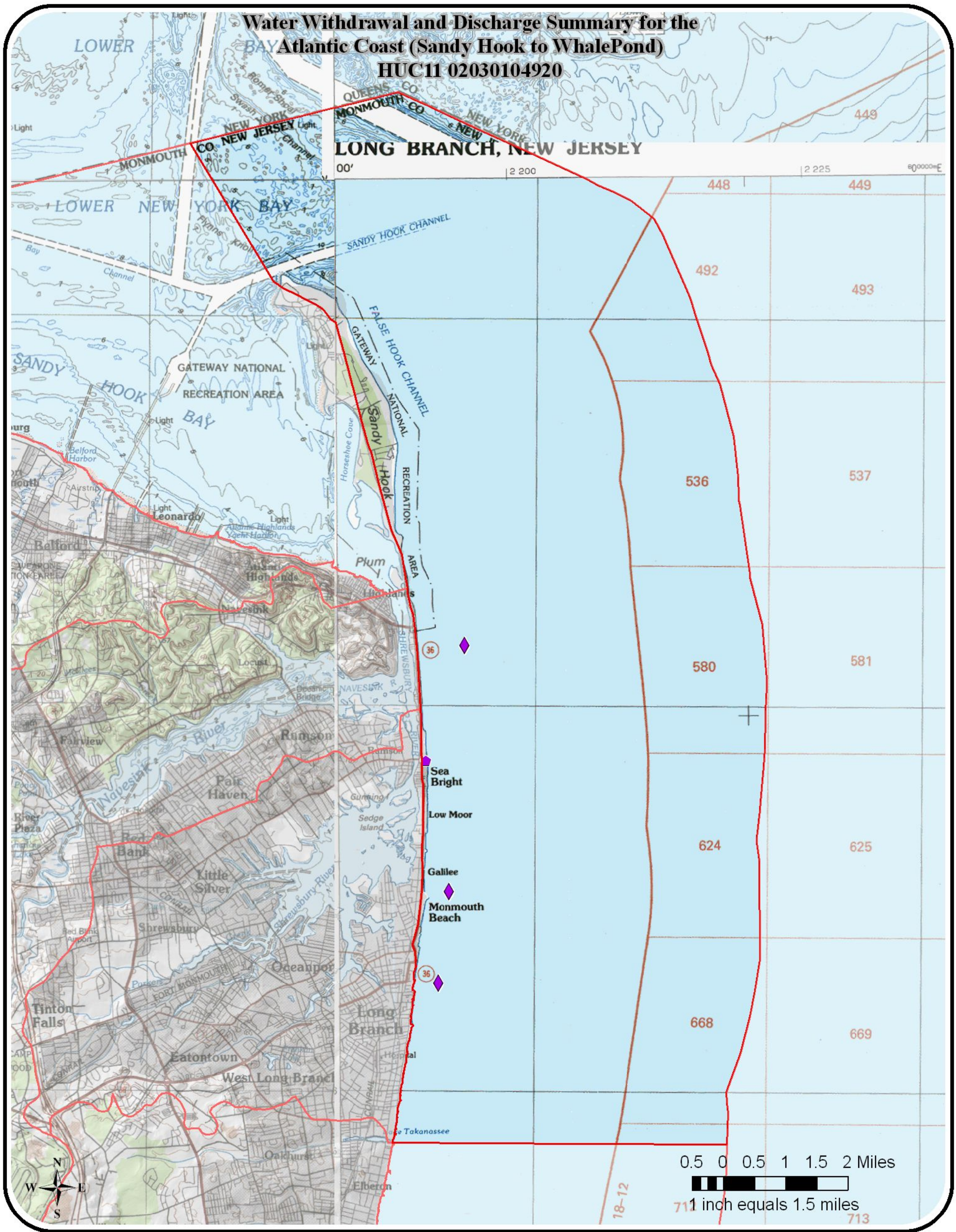
<b>--- Area:</b>			
in this HUC11 only	93.4 sq. mi.		
upstream HUC11s	0.0 sq. mi.		
total watershed	93.4 sq. mi.		
(this HUC11 onshore area: 1.6 sq. mi.)			
<b>--- Population of this HUC11:</b>			
Year	Population	Change	
1940	274	-	
1950	357	30.1%	
1960	435	21.9%	
1970	542	24.5%	
1980	744	37.3%	
1990	710	-4.6%	
2000	766	8.0%	
2010	804	4.9%	est. <sup>12</sup>
2020	835	3.8%	est. <sup>12</sup>
2030	857	2.7%	est. <sup>12</sup>
<b>--- Land Use of this HUC11:</b>			
Type	1986	1995	Change
ag.	0.0%	0.0%	0.0%
barren	0.8%	1.1%	0.3%
forest	0.6%	0.6%	0.0%
urban	0.6%	0.6%	0.0%
water	96.9%	96.3%	-0.6%
wetlands	1.1%	1.5%	0.3%
<b>--- % of this HUC11 in:</b>			
Pinelands:	0.0%		
Highlands:	0.0%		

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



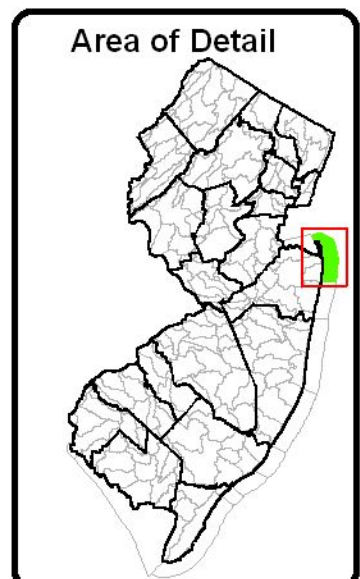
**NOTES:**  
 1 Salt and brackish water withdrawal and use is not included in this data.  
 2 This does not account for water released from onstream reservoirs for downstream intakes.  
 3 Includes both permitted ground-water withdrawals and estimated domestic well withdrawals.  
 4 Nonconsumptive water 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 (Sandy Hook to Whale Pond)**  
HUC11 02030104920



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
GW Confined □	No 1999 Use ■●▲
GW Unconfined ○	1 - 50 MGY ■●▲
SW △	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 ●



**Water Withdrawals, Transfers and Discharges for ATLANTIC COAST (WHALE POND TO MANASQUAN) --- 02030104930**

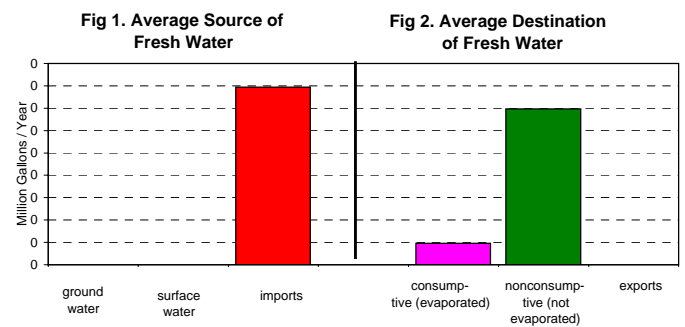
<b>WMA:</b>	<b>Monmouth County</b>	<b>12</b>
<b>HUC11:</b>	<b>Atlantic Coast (Whale Pond to Manasquan)</b>	<b>02030104930</b>

**Table 1. Freshwater<sup>1</sup> Withdrawals in the HUC11 (millions of gallons)**

Withdrawals (Q)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>surface water:<sup>2</sup></b>											
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
<b>ground-water:<sup>3</sup></b>											
confined	0	0	0	0	0	0	0	0	0	0	0
unconfined	0	0	0	0	0	0	0	0	0	0	0
sum	0	0	0	0	0	0	0	0	0	0	0
<b>total withdrawals:</b>	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	0

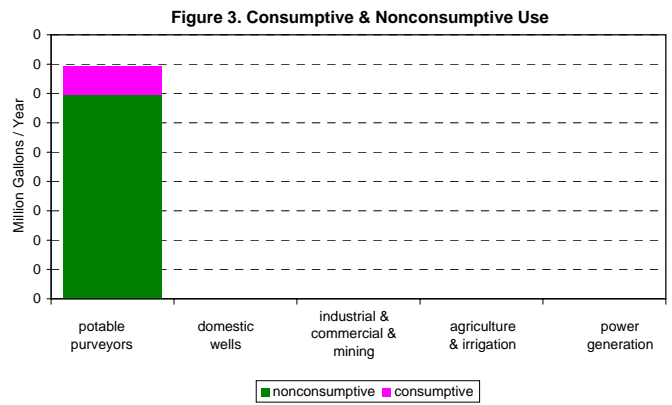
**Table 2. Freshwater Imports To & Exports From the HUC11 (millions of gallons)**

imports <sup>11</sup>	0	0	0	0	0	0	0	0	0	0	0
exports <sup>11</sup>	0	0	0	0	0	0	0	0	0	0	0
net	0	0	0	0	0	0	0	0	0	0	0



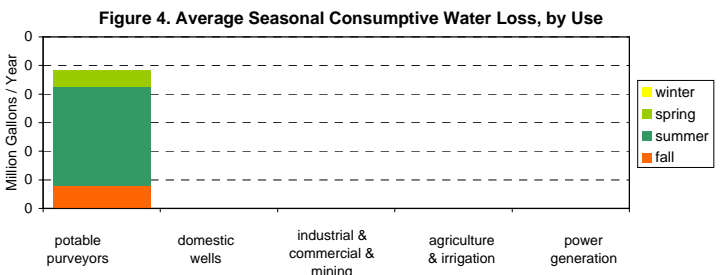
**Table 3. Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> Water Use<sup>6</sup> in the HUC11, by Use Type (millions of gallons)**

Water use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
<b>potable purveyors</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>domestic wells</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>industrial &amp; commercial &amp; mining</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>agricultural &amp; non-agricultural irrigation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>power generation</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>SUM:</b>											
nonconsumptive	0	0	0	0	0	0	0	0	0	0	0
consumptive	0	0	0	0	0	0	0	0	0	0	0
<b>PERCENTAGES:</b>											
nonconsumptive	88.7%	88.5%	88.6%	85.6%	89.0%	88.0%	87.9%	86.9%	87.4%	87.2%	87.8%
consumptive	11.3%	11.5%	11.4%	14.4%	11.0%	12.0%	12.1%	13.1%	12.6%	12.8%	12.2%



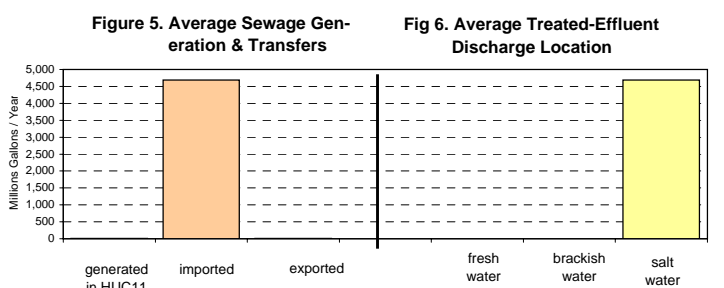
**Table 4. Average Seasonal<sup>7</sup> Use - Nonconsumptive<sup>4</sup> & Consumptive<sup>5</sup> (millions of gallons)**

Use Group	Winter		Spring		Summer		Fall		Yearly Avg.	
	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive	Non-consumptive	Consumptive
potable purveyors	0	0	0	0	0	0	0	0	0	0
domestic wells	0	0	0	0	0	0	0	0	0	0
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
<b>SUM:</b>	0	0	0	0	0	0	0	0	0	0



**Table 5. Sewage Generation & Transfers<sup>8</sup> in the HUC11 (millions of gallons)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	average
generated in HUC11	5	6	6	6	5	5	6	6	7	6	6
imported to HUC11	3,037	4,696	4,747	4,977	4,865	4,659	5,303	4,956	5,373	4,289	4,690
exported from HUC11	5	6	6	6	5	5	6	6	7	6	6



**Table 6. Destination of Treated Effluent (Reclaimed-Water) Discharges<sup>9</sup> 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	3,037	4,696	4,747	4,977	4,865	4,659	5,303	4,956	5,373	4,289	4,690
sum:	3,037	4,696	4,747	4,977	4,865	4,659	5,303	4,956	5,373	4,289	4,690

**Table 7. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Source**

Water Source	MGY
surface water	0
ground water	0
total	0

**Table 8. 1999 Water Allocations<sup>10</sup> in HUC11 by Water Use Group**

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

**Table 9. HUC11 Descriptive Statistics**

--- **Area:**

in this HUC11 only	64.7 sq. mi.
upstream HUC11s	0.0 sq. mi.
total watershed	64.7 sq. mi.

(this HUC11 onshore area: 0.1 sq. mi.)

--- **Population of this HUC11:**

Year	Population	Change
1940	90	-
1950	130	43.6%
1960	170	31.1%
1970	210	23.4%
1980	231	10.2%
1990	221	-4.4%
2000	254	14.7%
2010	260	2.5% est. <sup>12</sup>
2020	267	2.6% est. <sup>12</sup>
2030	272	1.8% est. <sup>12</sup>

--- **Land Use of this HUC11:**

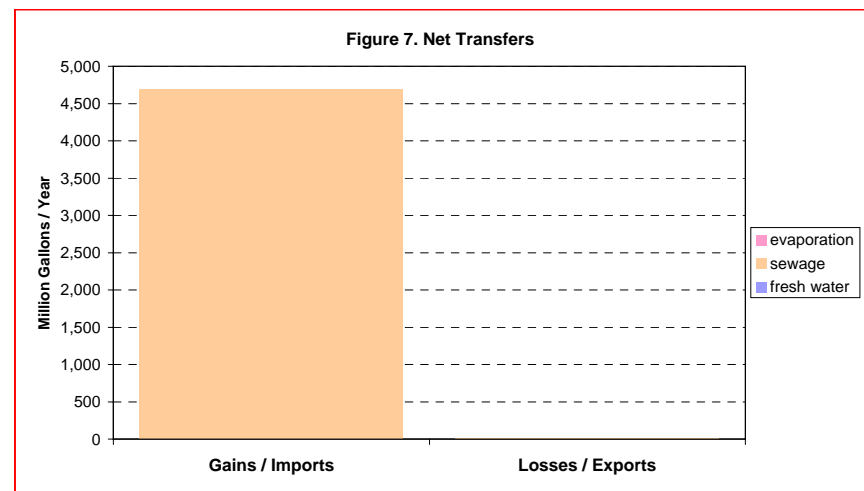
Type	Year		Change
	1986	1995	
ag.	0.0%	0.0%	0.0%
barren	0.2%	0.3%	0.2%
forest	0.0%	0.0%	0.0%
urban	0.0%	0.0%	0.0%
water	99.8%	99.7%	-0.2%
wetlands	0.0%	0.0%	0.0%

--- **% of this HUC11 in:**

Pinelands:	0.0%
Highlands:	0.0%

**Table 10. Upstream and downstream HUC11s (in NJ)**

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



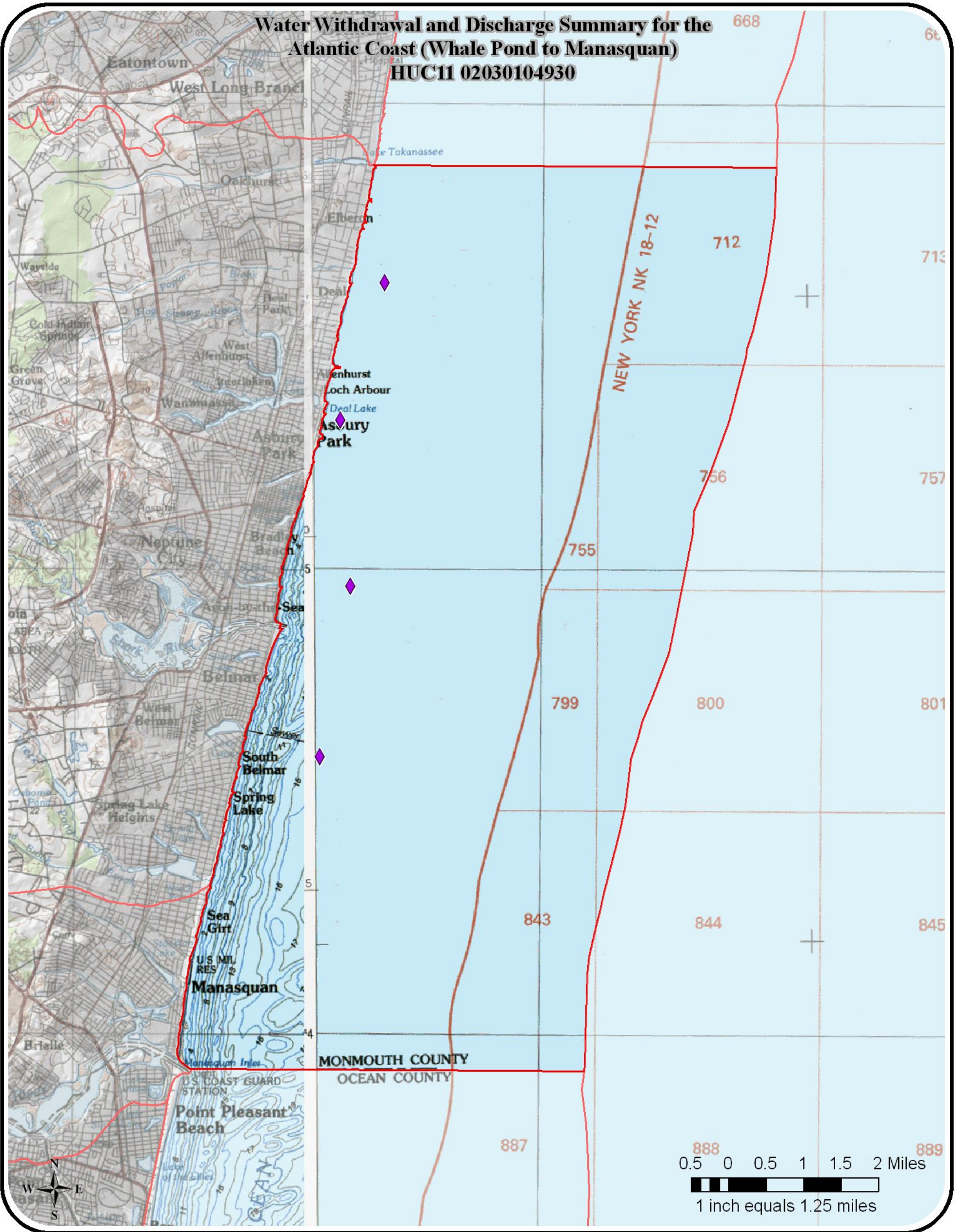
**NOTES:**

- 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 (Whale Pond to Manasquan)

**HUC11 02030104930**



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
GW Confined □	No 1999 Use ■●▲
GW Unconfined ○	1 - 50 MGY ■●▲
SW △	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 ●

