



Department
of Health

Final Summary Report
BEACH Act Grant Implementation
FFY 2014 – 2015
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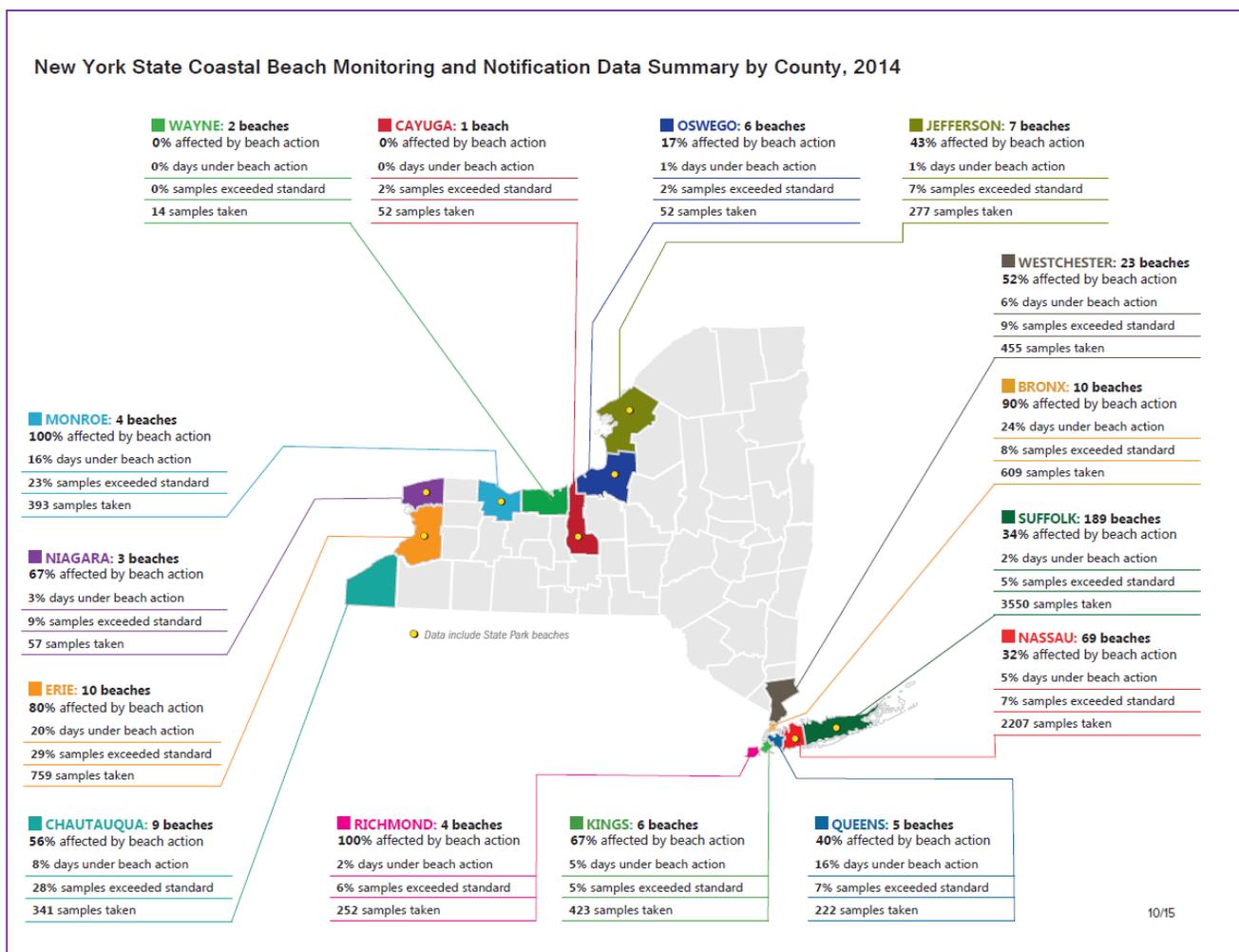
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Overview

The New York State Department of Health, Bureau of Community Environmental Health and Food Protection (BCEHFP) completed another successful season of implementing the USEPA BEACH Act in 2014. During this beach season, 12 subgrantees (local health departments and the NY State Office of Parks, Recreation and Historic Preservation) monitored all 348 operating coastal bathing beaches on the Atlantic Ocean, Long Island Sound and the Great Lakes for bacterial indicators of fecal pollution. When bacterial water quality criteria were exceeded, public notification activities or beach closures were implemented to protect public health. Figure 1 provides a statewide overview of BEACH Act grant monitoring and notification activities by County for the 2014 beach season.

Figure 1.

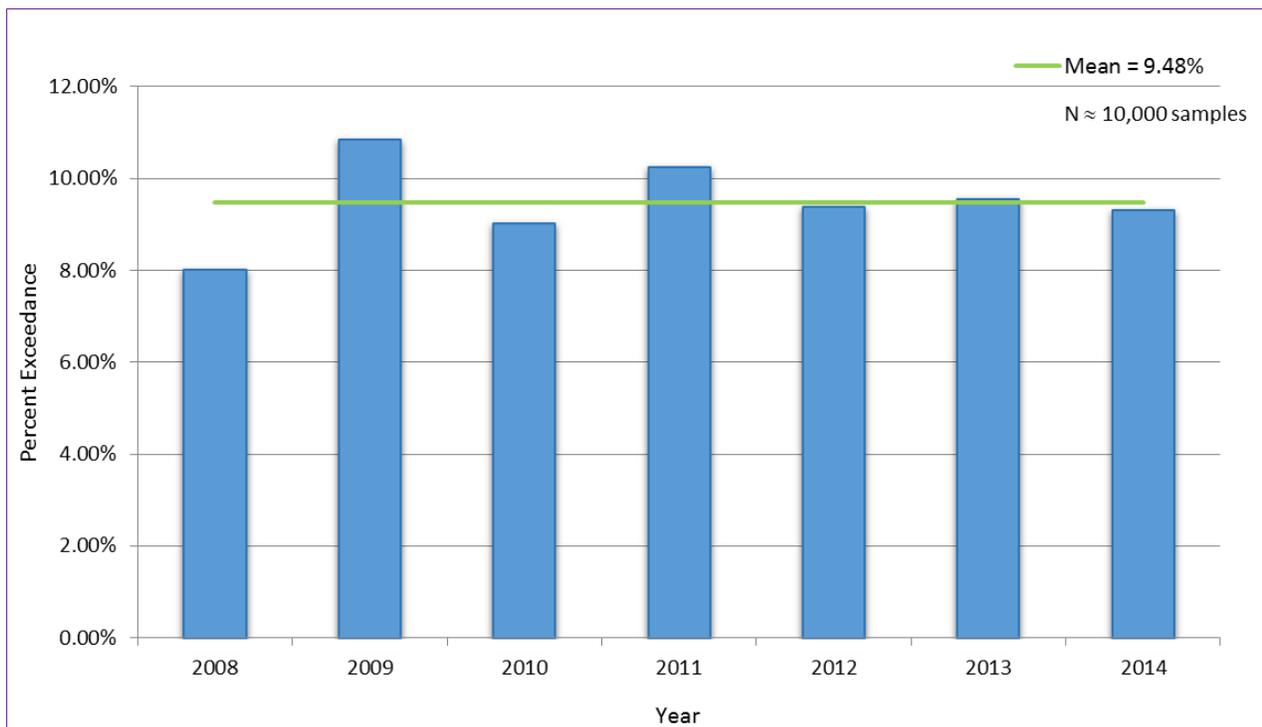


Implementation Summary

All coastal beaches that were open for swimming in 2014 were monitored in accordance with USEPA criteria. Marine beaches were monitored for enterococci and Great Lakes beaches were monitored for *E. coli*. The monitoring frequency for each beach was determined by the corresponding tier assessment level in accordance with each subgrantee's approved workplan and USEPA guidelines. All samples were analyzed using USEPA approved methods by laboratories certified by the New York State Department of Health's Environmental Laboratory Approval Program (ELAP). Subgrantees were required to appropriately notify the public and/or close a beach when a water quality exceedance was detected. Subgrantee workplans specify public notification and risk communication methods. Notification activities included, but were not limited to: restricting access at lifeguarded beaches; posting signs at beaches, facility entrances, or similar points of access; radio or television announcements, websites, phone hotlines, and press releases to media outlets, including television, radio and print. Many subgrantees use predictive tools to forecast exceedances of water quality criteria based upon precipitation measurements, water clarity and other environmental factors in addition to sampling.

In 2014, 9,633 beach water samples were collected for bacteriological analysis (*E. coli* or enterococcus). Of the samples analyzed, 899 (9.30%) exceeded the indicator standard. This is a decrease below the mean of 9.48% for 2008 through 2014 (Figure 2).

Figure 2, Percent of Sample Exceeding Standards.

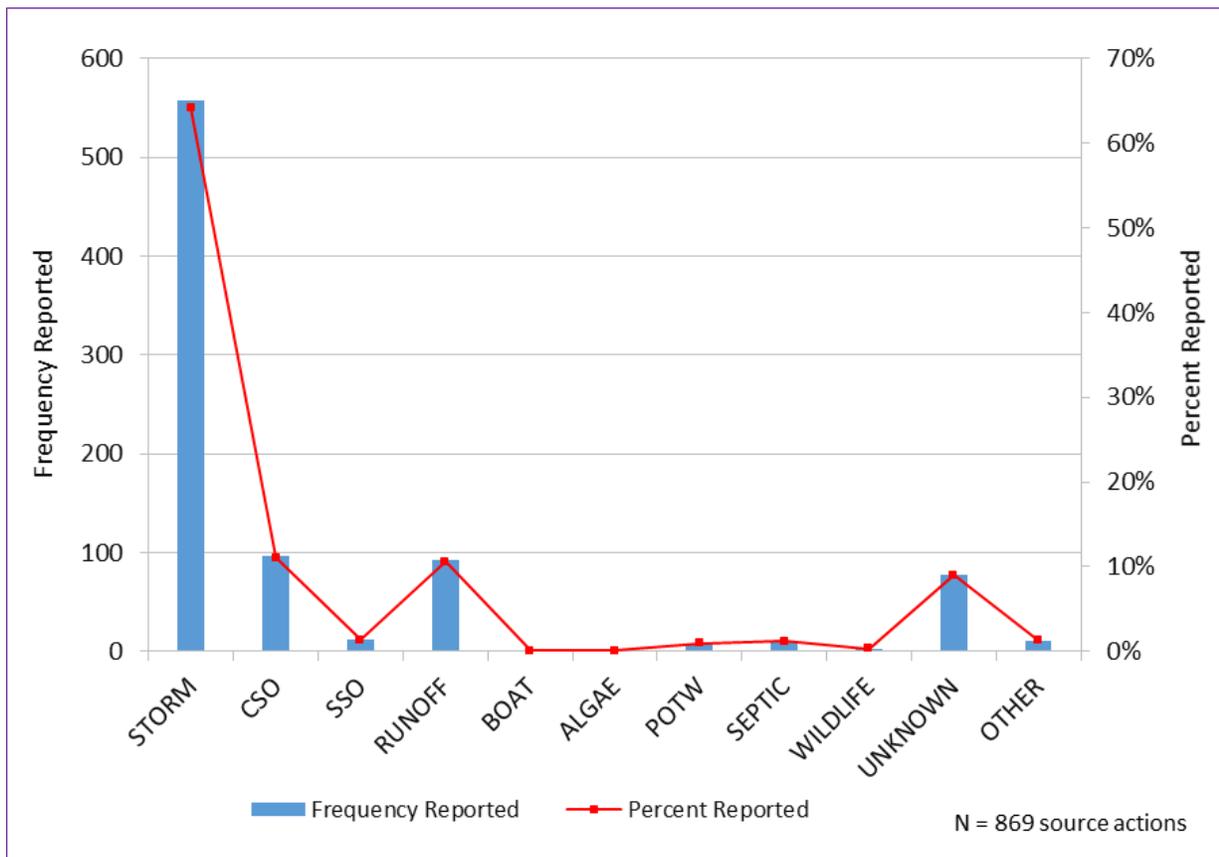


Pollution Sources

Storm water is the most commonly reported pollution source associated with notification actions at coastal beaches in New York State accounting for 64% of reported reasons for notifications. Combined sewage overflows and run-off are the next most frequently reported pollution sources, each accounting for 11% of sources reported for notifications. Nine percent of notifications are a result of unknown pollution sources (Figure 3).

Figure 3, Frequency and Percent of Pollution Sources Reported with Notification Actions.

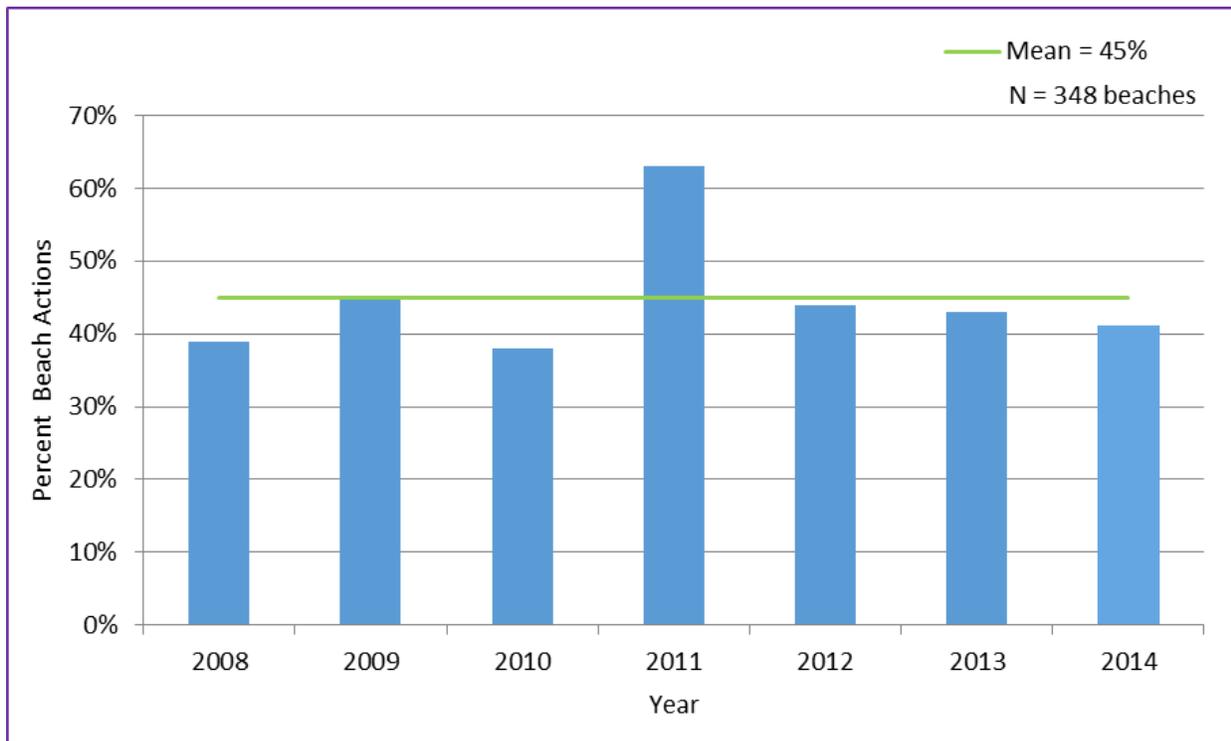
Note: some beaches have multiple sources.



Beach Actions-Notifications/Beach Closures

There were 750 beach “action” events (beach closures or advisories) in 2014. These actions occurred at 41% of the coastal beaches, which is slightly lower than the 45% mean. In 2011 there was a large increase in beach actions attributed to the effects of Hurricane Irene. The heavy rainfall caused a large number of preemptive notification events for numerous Atlantic Ocean beaches on Long Island.

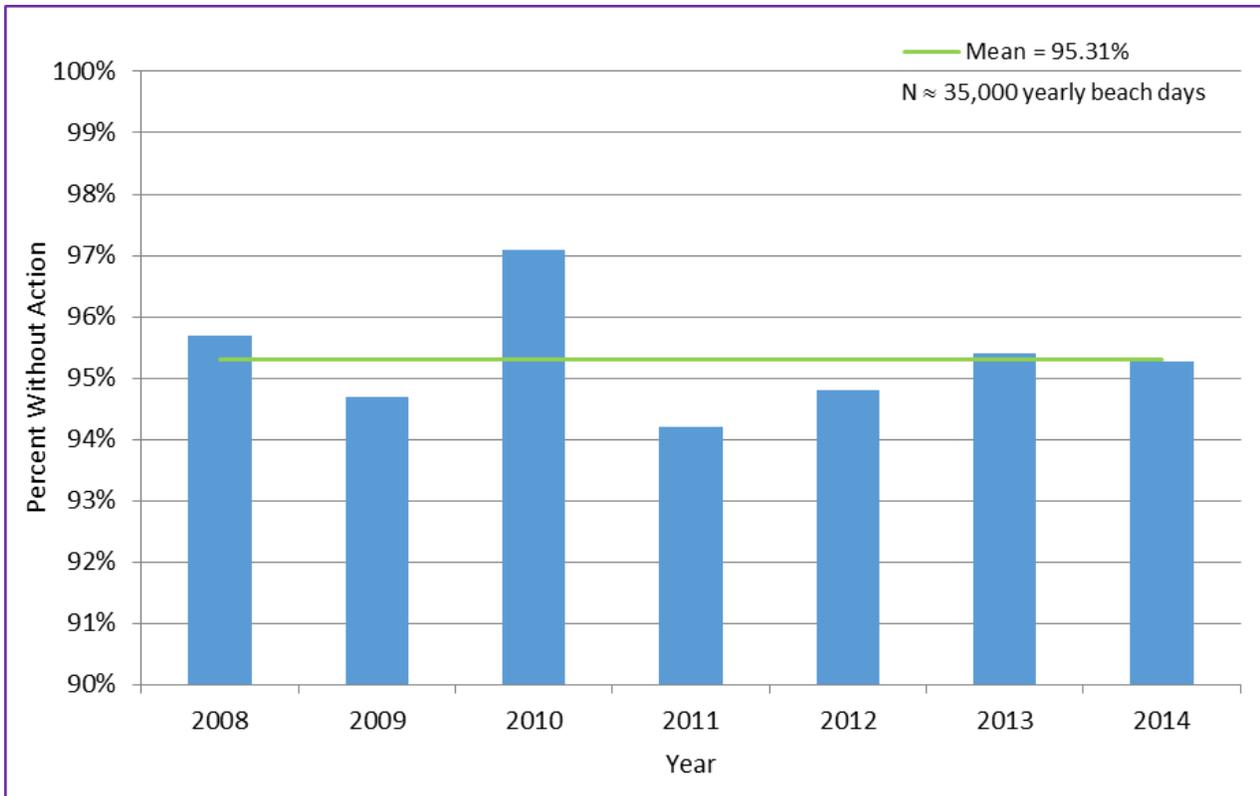
Figure 4, Percent of Beaches with Notifications, 2008-2014.



Beach Actions-Days of Season

Beaches were closed or under advisory for a total of 1,633 action days during the 2014 season. This equates to approximately 5% of total available beach days. As a result, there were no notifications for 95% of available beach days (Figure 5).

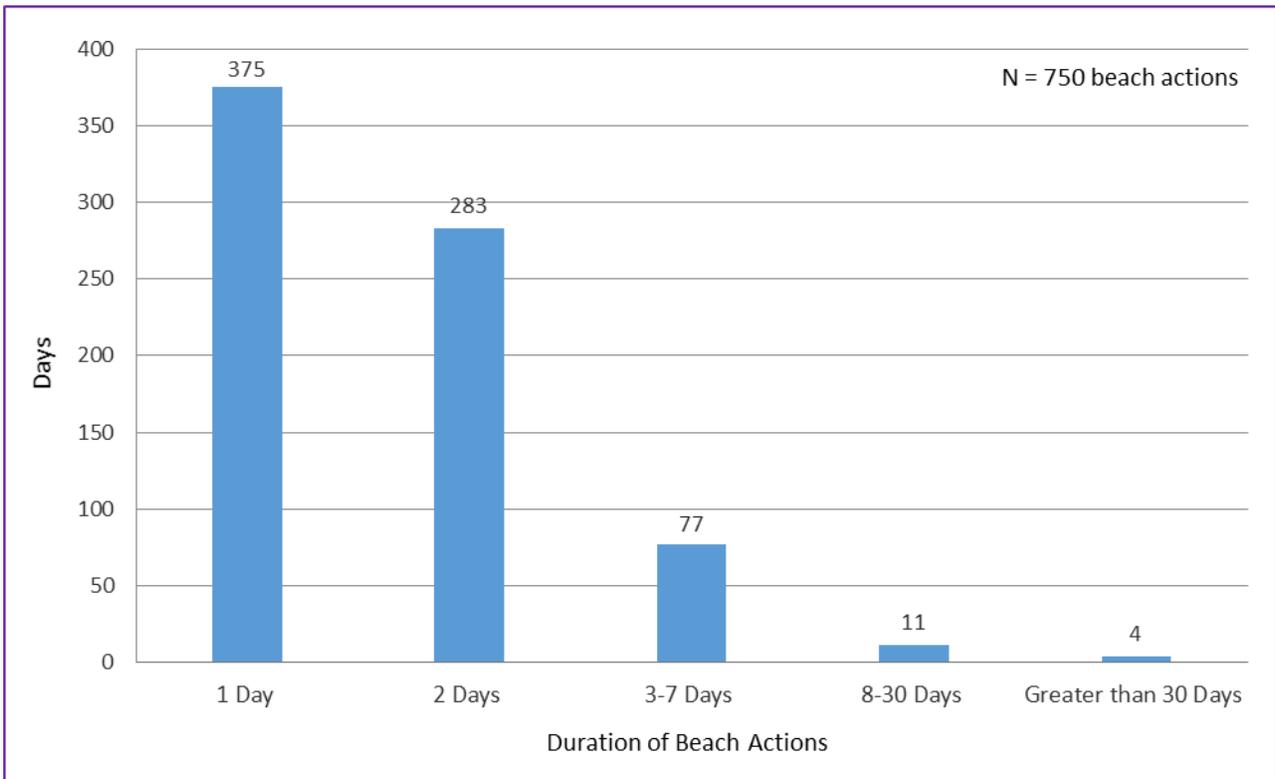
Figure 5, Percent of Days without Beach Actions, 2008-2014.



Beach Actions-Duration

Three hundred seventy-five of 750 notifications only lasted 1 day (Figure 6). This is believed to be due to the fact that storm water is the most common source of bacterial indicator exceedances at NY beaches and notifications for storm water are typically of a short duration. Additional analysis will be performed in the future to support this hypothesis.

Figure 6, Beach Action Duration Summary 2014.



Monitoring and Notification Results by Waterbody and Jurisdiction

Beaches monitored under the BEACH Act program in New York State are in both marine environments; Atlantic Ocean (AO) and Long Island Sound (LIS) and on the Great Lakes; Lake Erie (LE) and Lake Ontario (LO). Historical sample results were compiled for each waterbody to compare the rates of water quality standard exceedance over time (Figure 7a). The mean exceedance rate per year in New York is included for reference. Consistently, Great Lakes beaches have the highest exceedance rates in the State (2014; AO = 6%, LIS = 6%, LE = 29%, LO = 14%). Note, the rates are unweighted; there are approximately 40 Great Lakes beaches submitting on average 1815 samples per year and approximately 307 marine beaches submitting on average 7686 samples per year. Historical notification results were also compiled to determine the difference among waterbodies in percent days under advisory or closure i.e. actions (Figure 7b). The mean percent days under action per year Statewide is also included for reference. Consistently, LE beaches have the greatest percent days under action in the State (2014; AO = 2%, LIS = 5%, LE = 16%, LO = 4%).

Figure 7a, Monitoring Results Percent Exceedances by Waterbody, 2010-2014

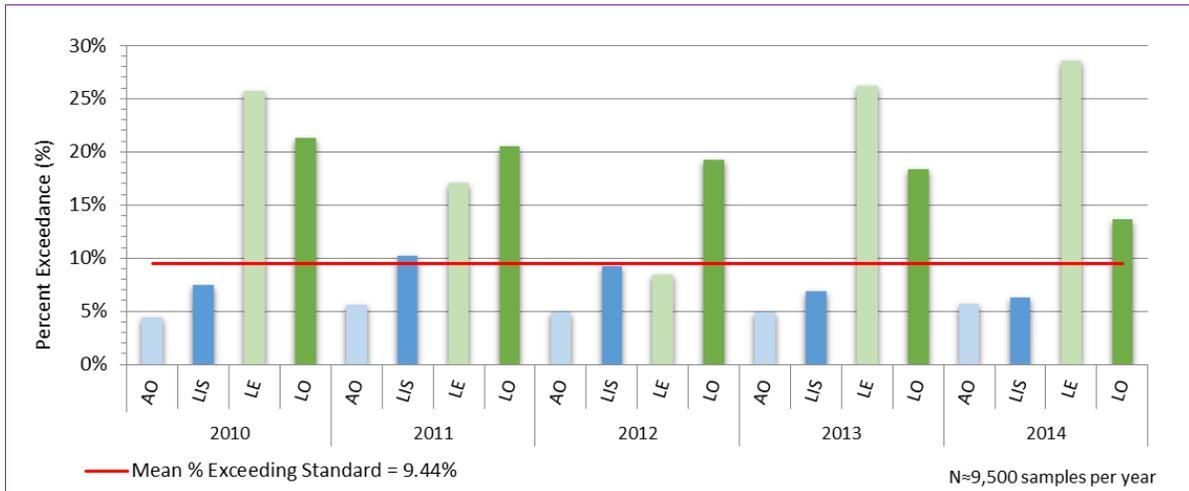
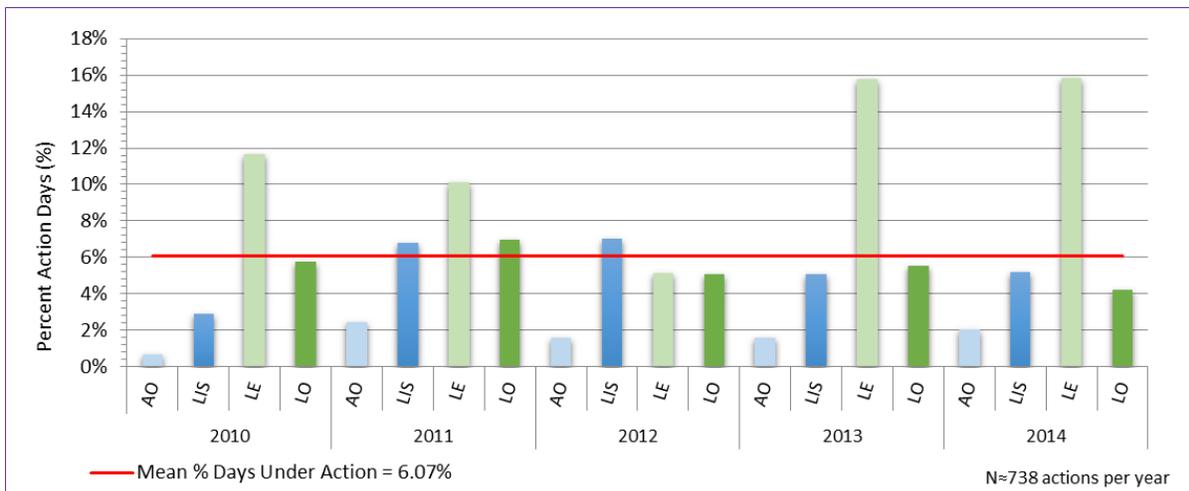


Figure 7b, Percent Days Under Action (Advisory and Closure) by Waterbody, 2010-2014



Cayuga County – Monitoring and Notification Results

There is one beach eligible for the BEACH Act program in Cayuga County on Lake Ontario. Approximately 43 samples per year are collected from the beach in Cayuga. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 8). The mean exceedance rate per year in Cayuga is included for reference. In 2014, the beach had an exceedance rate of 1.92% (samples = 1), below the county mean and 7.38% below the 2014 State rate (9.30%). The Cayuga County beach did not issue an advisory or closure during the time period assessed. Note, the beach located in this county is operated by the New York State Office of Parks, Recreation, and Historical Preservation i.e. State Parks.

Figure 8, Monitoring Results Percent Exceedances in Cayuga County*, 2010-2014



Chautauqua County – Monitoring and Notification Results

Nine eligible BEACH Act beaches are located in Chautauqua County on Lake Erie. There were 341 samples collected and analyzed in 2014. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 9a). The mean exceedance rate per year in Chautauqua is included for reference. In 2014, the exceedance rate at the beaches was 28.45% (samples = 97), above the county mean and 19.15% above the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 9b). The mean number of percent days under action per year in Chautauqua is included for reference. In 2014, 8.18% of swim season days were under action for the beaches in Chautauqua County; this is below the county mean and 3.9% above the 2014 State rate (4.28%).

Figure 9a, Monitoring Results Percent Exceedances in Chautauqua County, 2010-2014

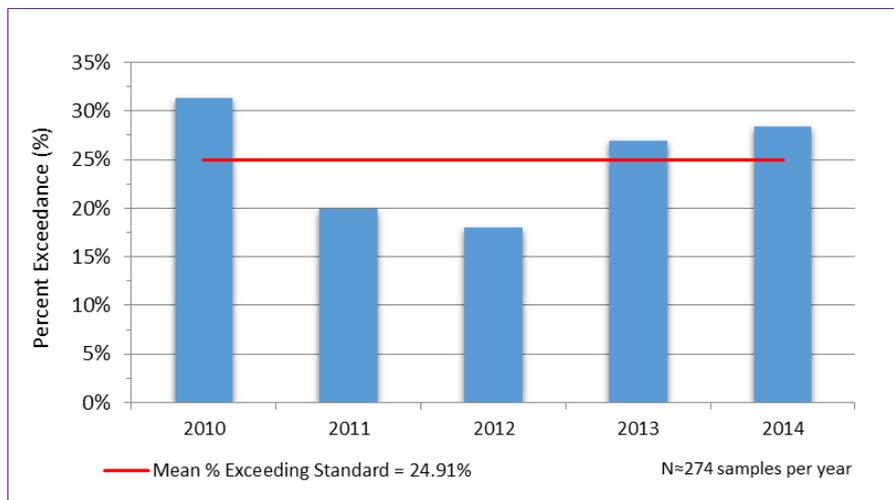
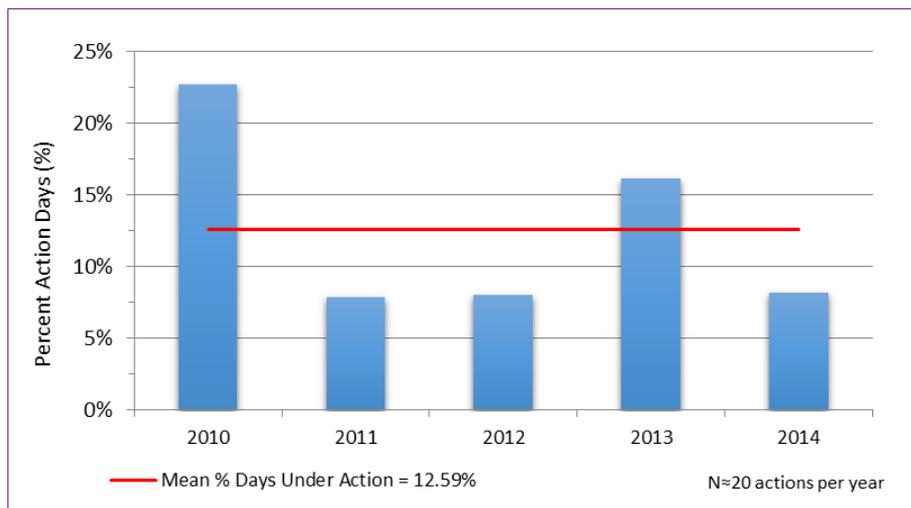


Figure 9b, Percent Days Under Action (Advisory and Closure) in Chautauqua County, 2010-2014



Erie County – Monitoring and Notification Results

Ten BEACH Act beaches are located in Erie County on Lake Erie. There were 759 samples collected and analyzed in 2014. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 10a). The mean exceedance rate per year in Erie is included for reference. In 2014, the exceedance rate at the beaches was 28.59% (samples = 217), above the county mean and 19.29% above the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 10b). The mean percent days under action per year in Erie County is included for reference. In 2014, 23.86% of swim season days were under action for the beaches in Erie County; this exceeds the county mean and is above the 2014 State rate by 19.58% (4.28%). Note, there are beaches located in this county that are operated by the New York State Office of Parks, Recreation, and Historical Preservation, i.e. State Parks.

Figure 10a, Monitoring Results Percent Exceedances in Erie County*, 2010-2014

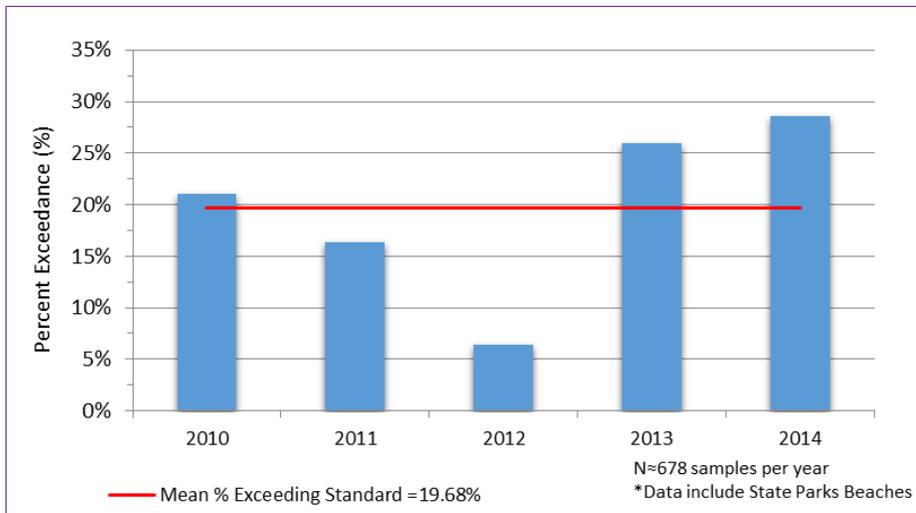
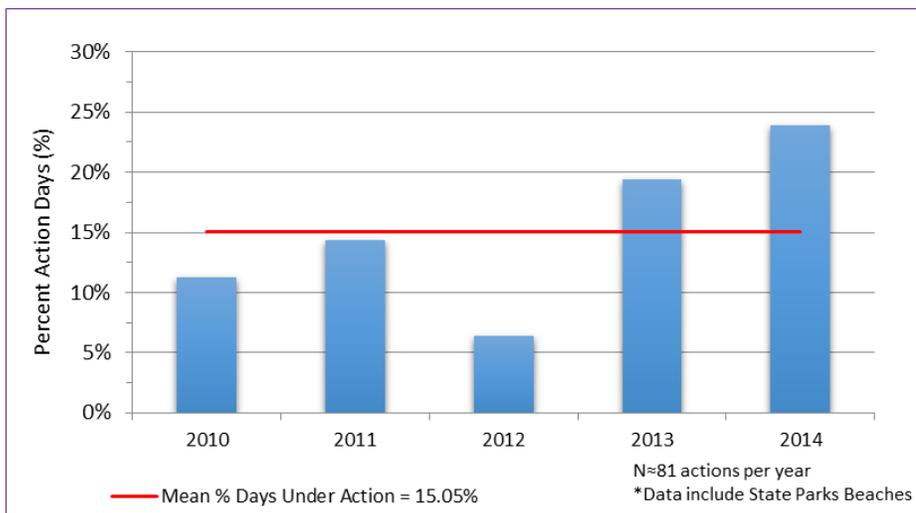


Figure 10b, Percent Days under Action (Advisory and Closure) in Erie County*, 2010-2014



Jefferson County – Monitoring and Notification Results

Seven BEACH Act beaches are located in Jefferson County on Lake Ontario. There were 277 samples collected and analyzed in 2014. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 11a). The mean exceedance rate per year in Jefferson is included for reference. In 2014, the exceedance rate at the beaches was 6.50% (samples = 18), below the county mean and 2.8% below the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 11b). The mean percent of days under action per year in Jefferson County is included for reference. In 2014, 0.89% of swim season days were under action for the beaches in Jefferson County; this is below the county mean and 3.39% below the 2014 State rate (4.28%). Note, there are beaches located in this county that are operated by the New York State Office of Parks, Recreation, and Historical Preservation, i.e. State Parks.

Figure 11a, Monitoring Results Percent Exceedances in Jefferson County*, 2010-2014

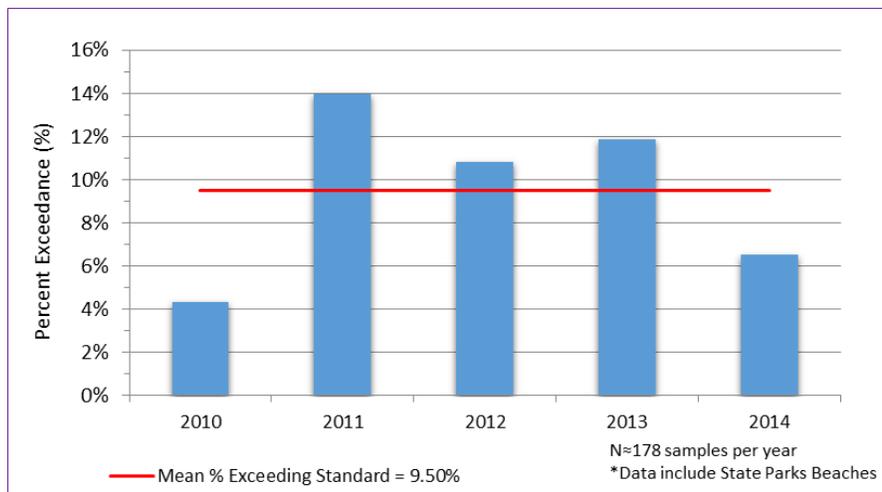
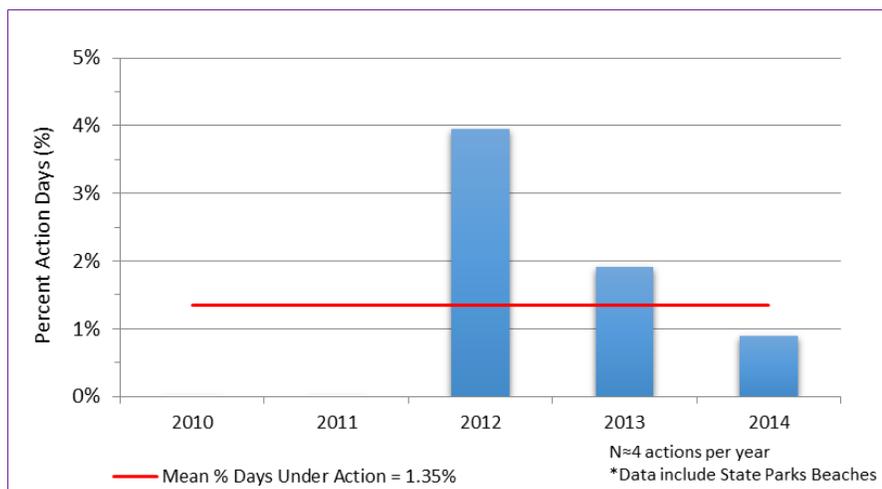


Figure 11b, Percent Days under Action (Advisory and Closure) in Jefferson County*, 2010-2014



Monroe County – Monitoring and Notification Results

There are four BEACH Act beaches in Monroe County on Lake Ontario. There were 393 samples collected and analyzed in 2014. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 12a). The mean exceedance rate per year in Monroe County is included for reference. In 2014, the exceedance rate at the beaches was 22.90% (samples = 90), below the county mean and 13.6% above the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 12b). The mean percent days under action per year in Monroe is included for reference. In 2014, 18.6% of swim season days were under action for the beaches in Monroe County; this is below the county mean and 14.31% above the 2014 State rate (4.28%). Note, there are beaches located in this county that are operated by the New York State Office of Parks, Recreation, and Historical Preservation, i.e. State Parks.

Figure 12a, Monitoring Results Percent Exceedances in Monroe County*, 2010-2014

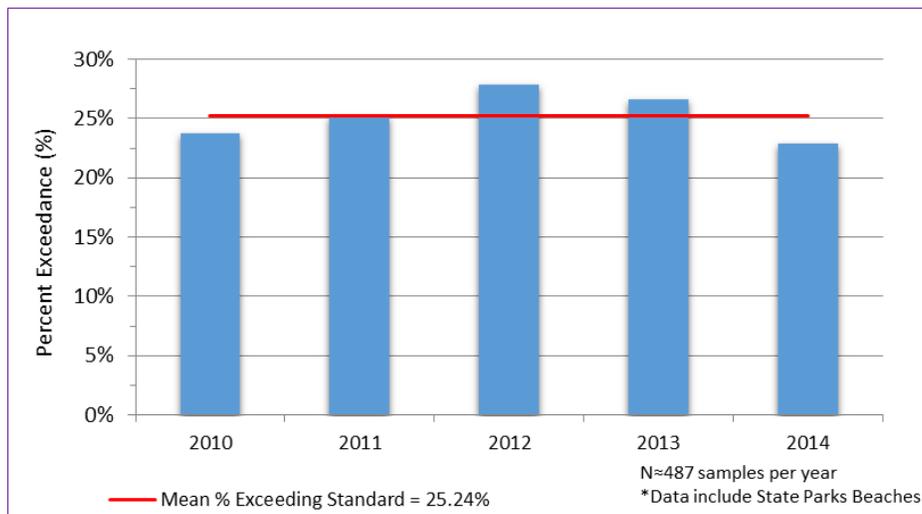
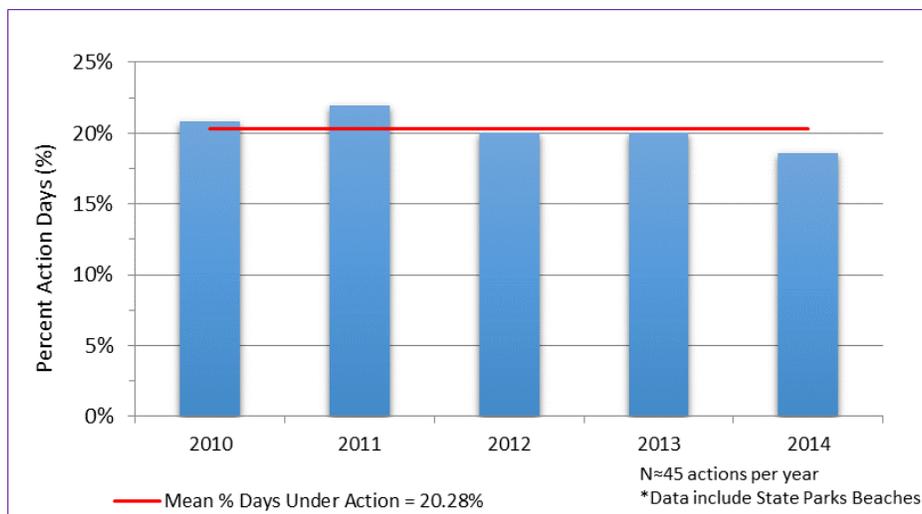


Figure 12b, Percent Days under Action (Advisory and Closure) in Monroe County*, 2010-2014



Nassau County – Monitoring and Notification Results

There are 69 BEACH Act program beaches in Nassau County on the Atlantic Ocean and Long Island Sound. There were 2,207 samples collected and analyzed in 2014. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 13a). The mean exceedance rate per year in Nassau County is included for reference. In 2014, the exceedance rate at the beaches was 7.20% (samples = 159), above the county mean and 2.1% below the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 13b). The mean percent days under action per year in Nassau is included for reference. In 2014, 5.1% of swim season days were under action for the beaches in Nassau County; this exceeds the county mean and is 0.81% above the 2014 State rate (4.28%). Note, there are beaches located in this county that are operated by the New York State Office of Parks, Recreation, and Historical Preservation i.e. State Parks.

Figure 13a, Monitoring Results Percent Exceedances in Nassau County*, 2010-2014

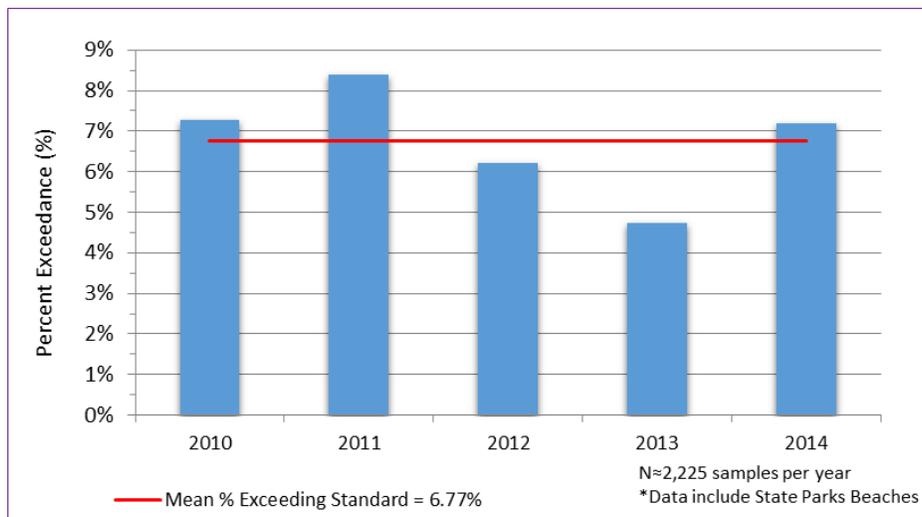
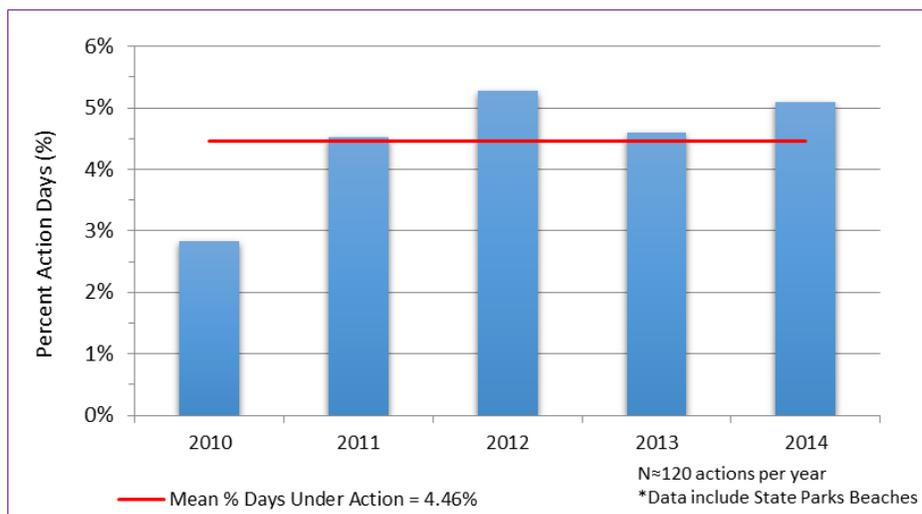


Figure 13b, Percent Days under Action (Advisory and Closure) in Nassau County*, 2010-2014



Niagara County – Monitoring and Notification Results

Three Lake Ontario beaches in Niagara County are monitored under BEACH Act program. There were 57 samples collected and analyzed in 2014 from these beaches. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 14a). The mean exceedance rate per year in Niagara County is included for reference. In 2014, the exceedance rate at the beaches was 8.77% (samples = 5), below the county mean and 0.53% below the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 14b). The mean percent days under action per year in Niagara is included for reference. In 2014, 5.4% of swim season days were under action for the beaches in Niagara County; this is below the county mean and 1.1% above the 2014 State rate (4.28%). Note, there are beaches located in this county that are operated by the New York State Office of Parks, Recreation, and Historical Preservation, i.e. State Parks.

Figure 14a, Monitoring Results Percent Exceedances in Niagara County*, 2010-2014

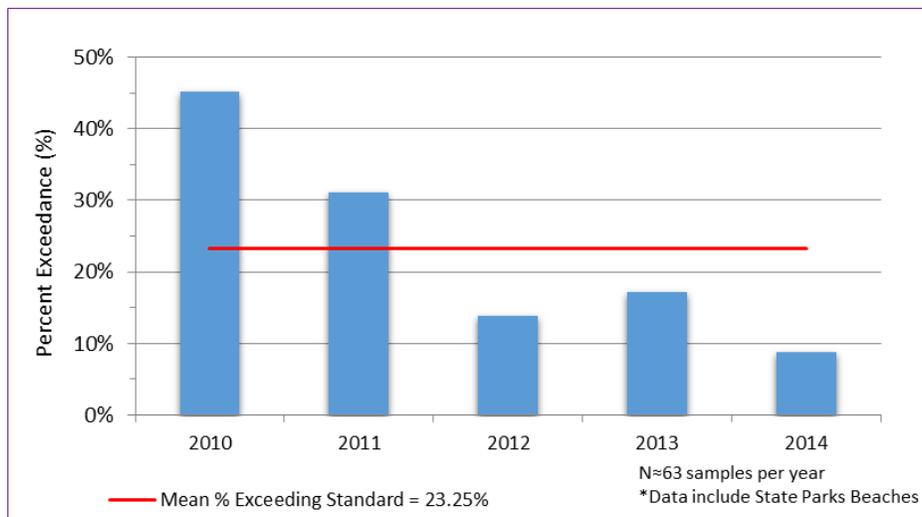
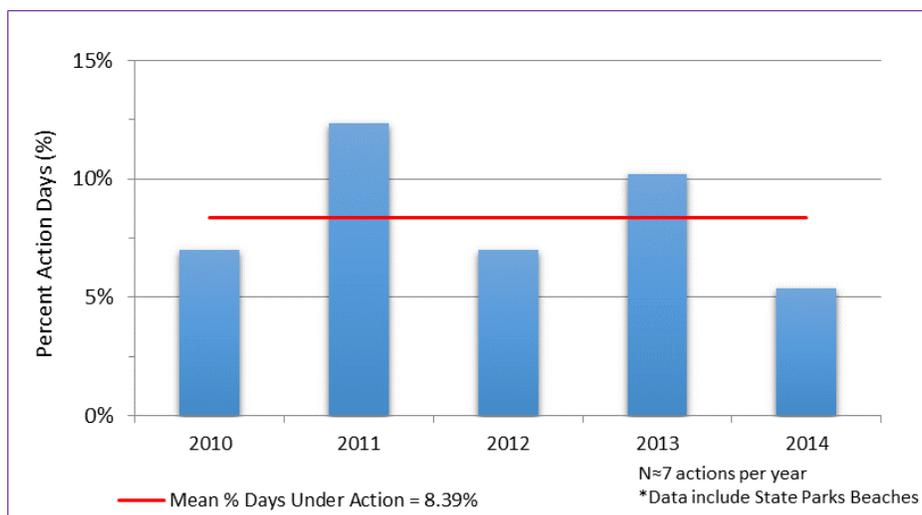


Figure 14b, Percent Days under Action (Advisory and Closure) in Niagara County*, 2010-2014



New York City (NYC) Counties County – Monitoring and Notification Results

Twenty-five BEACH Act beaches are located within NYC Counties. Kings and Richmond County beaches are located on the Atlantic Ocean while Bronx and Queens County beaches are located on Long Island Sound. There were 1,506 samples collected and analyzed in 2014 from the beaches in NYC. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 15a). The mean exceedance rate per year in NYC is included for reference. In 2014, the exceedance rate at the beaches was 6.71% (samples = 101), below the jurisdiction mean and 2.59% below the 2014 State rate. Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 15b). The mean percent days under action per year in NYC is included for reference. In 2014, 8.21% of swim season days were under action for the beaches in NYC Counties; this is below the jurisdiction mean and 3.93% above the 2014 State rate (4.28%).

Figure 15a, Monitoring Results Percent Exceedances in NYC Counties, 2010-2014

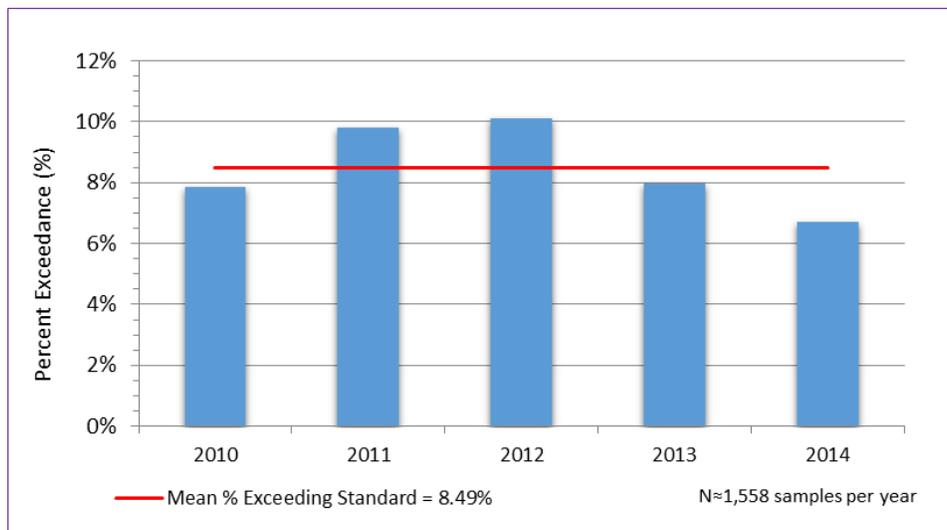
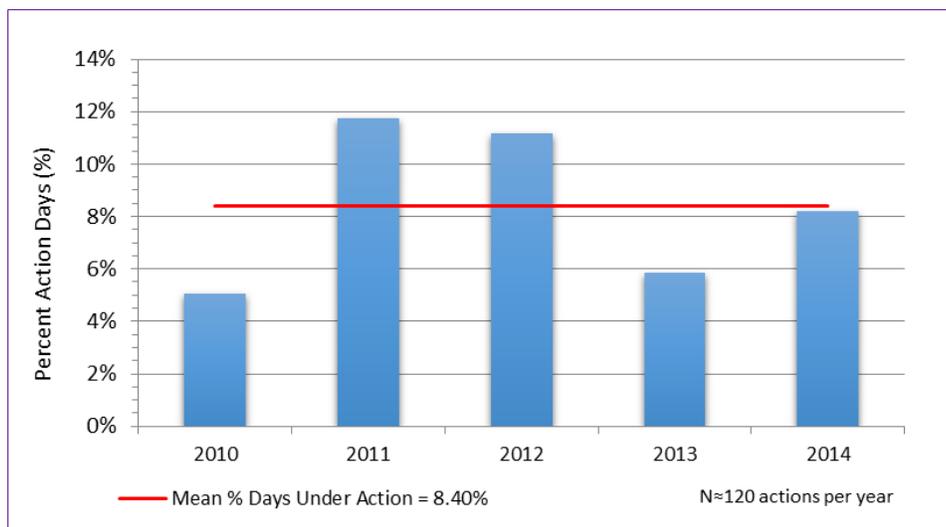


Figure 15b, Percent Days under Action (Advisory and Closure) in NYC Counties, 2010-2014



Oswego County – Monitoring and Notification Results

Six BEACH Act beaches are located in Oswego County on Lake Ontario. There were 52 samples collected and analyzed in 2014 from these beaches. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 16a). The mean exceedance rate per year in Oswego is included for reference. In 2014, the exceedance rate at the beaches was 1.92% (samples = 1), above the county mean and 7.38% below the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 16b). The mean percent days under action per year in Oswego is included for reference. In 2014, 1% of swim season days were under action for the beaches in Oswego County; this exceeds the county mean and is 3.25% below the 2014 State rate (4.28%). Note, there are beaches located in this county that are operated by the New York State Office of Parks, Recreation, and Historical Preservation, i.e. State Parks.

Figure 16a, Monitoring Results Percent Exceedances in Oswego County*, 2010-2014

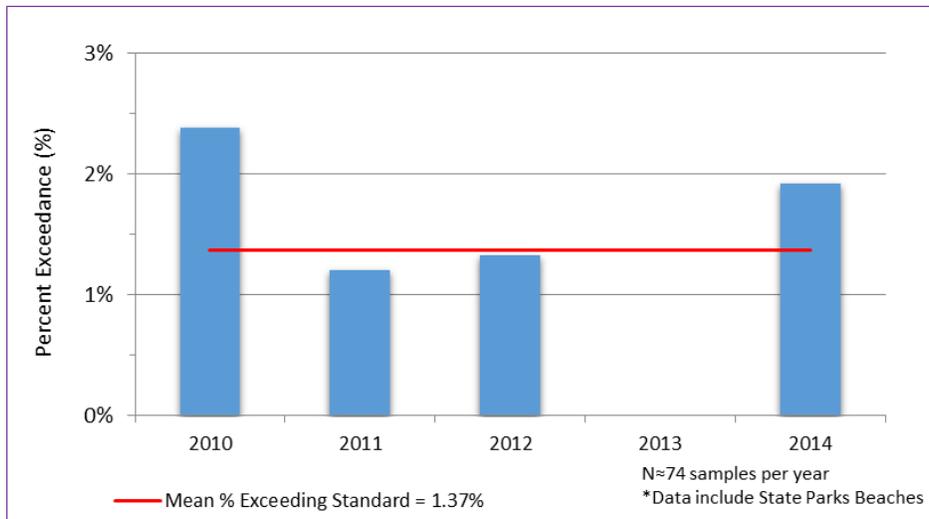
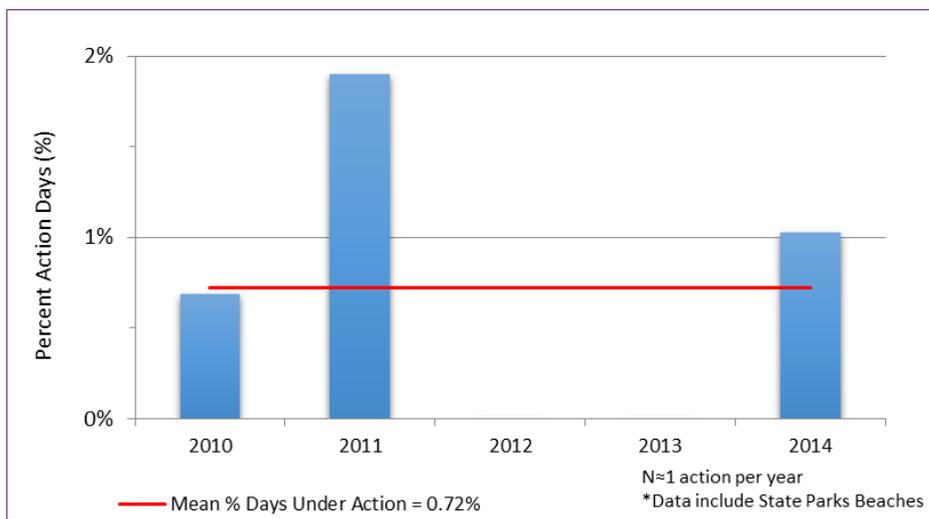


Figure 16b, Percent Days under Action (Advisory and Closure) in Oswego County*, 2010-2014



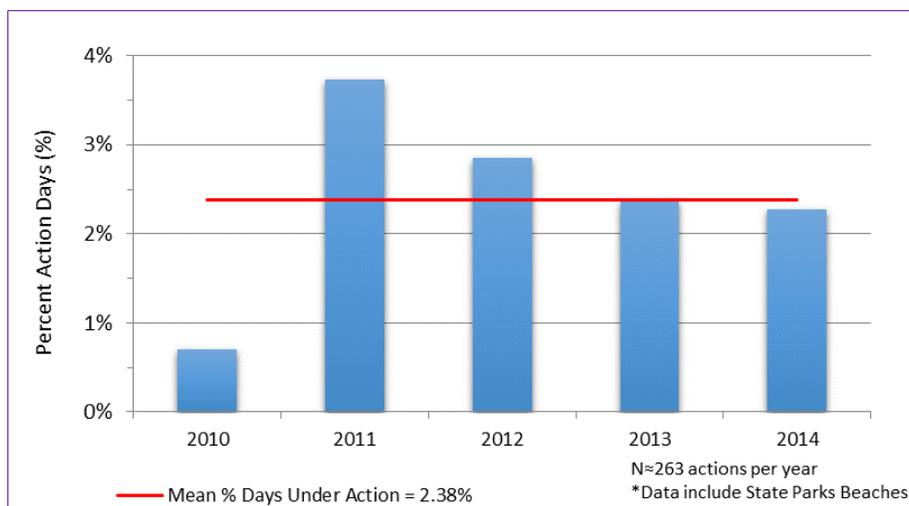
Suffolk County – Monitoring and Notification Results

There are 189 BEACH Act beaches located in Suffolk County on the Atlantic Ocean and Long Island Sound. There were 3,550 samples collected and analyzed from the beaches in Suffolk County in 2014. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 17a). The mean exceedance rate per year in Suffolk is included for reference. In 2014, the exceedance rate at the beaches was 4.82% (samples = 171), below the county mean and 4.48% below the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 17b). The mean percent days under action per year in Suffolk is included for reference. In 2014, 2.3% of swim season days were under action for the beaches in Suffolk County; this is below the county mean and is 2.01% below the 2014 State rate (4.28%). Note, there are beaches located in this county that are operated by the New York State Office of Parks, Recreation, and Historical Preservation, i.e. State Parks.

Figure 17a, Monitoring Results Percent Exceedances in Suffolk County*, 2010-2014



Figure 17b, Percent Days under Action (Advisory and Closure) in Suffolk County*, 2010-2014



Wayne County – Monitoring and Notification Results

Two BEACH Act beaches are located in Wayne County on Lake Ontario. There were 14 samples collected and analyzed in 2014 from the beaches in Wayne. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 18a). The mean exceedance rate per year in Wayne is included for reference. In 2014, the exceedance rate at the beaches was 0% (samples = 0), below the county mean and 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 18b). The mean percent days under action per year in Wayne is included for reference. In 2014, no actions were issued for the beaches in Wayne County.

Figure 18a, Monitoring Results Percent Exceedances in Wayne County, 2010-2014

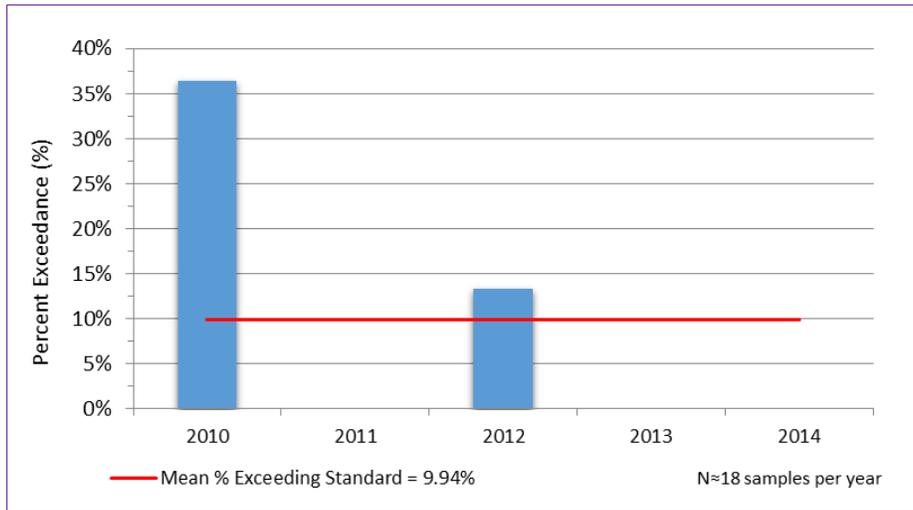
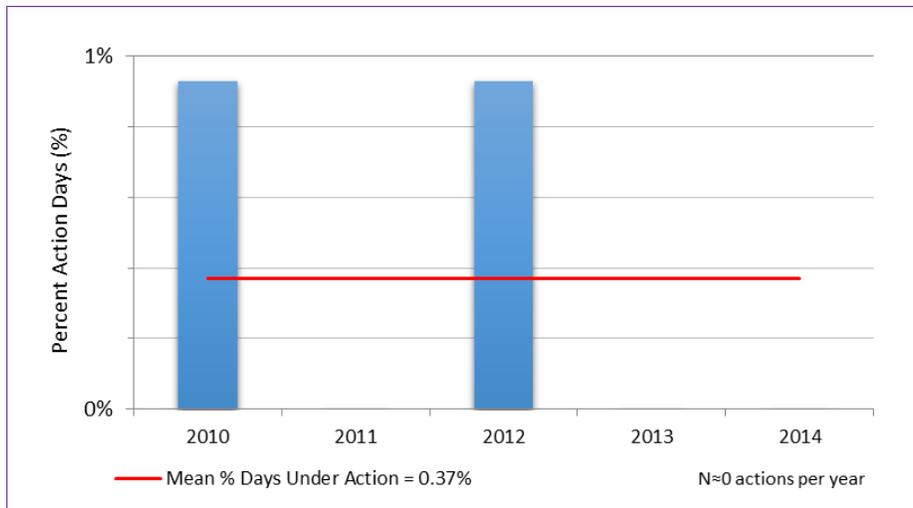


Figure 18b, Percent Days under Action (Advisory and Closure) in Wayne County, 2010-2014



Westchester County – Monitoring and Notification Results

Twenty-three BEACH Act beaches are located in Westchester County on Long Island Sound. There were 455 samples collected and analyzed in 2014. Historical sample results were assessed to determine the difference in rate of water quality standard exceedances (Figure 19a). The mean exceedance rate per year in Westchester County is included for reference. In 2014, the exceedance rate at the beaches was 8.57% (samples = 39), below the county mean and 0.73% below the 2014 State rate (9.30%). Historical notification results were assessed to determine the difference in percent days under advisory or closure i.e. actions (Figure 19b). The mean percent days under action per year in Westchester is included for reference. In 2014, 4.9% of swim season days were under action for the beaches in Westchester County; this exceeds the county mean and is 0.66% above the 2014 State rate (4.28%).

Figure 19a, Monitoring Results Percent Exceedances in Westchester County, 2010-2014

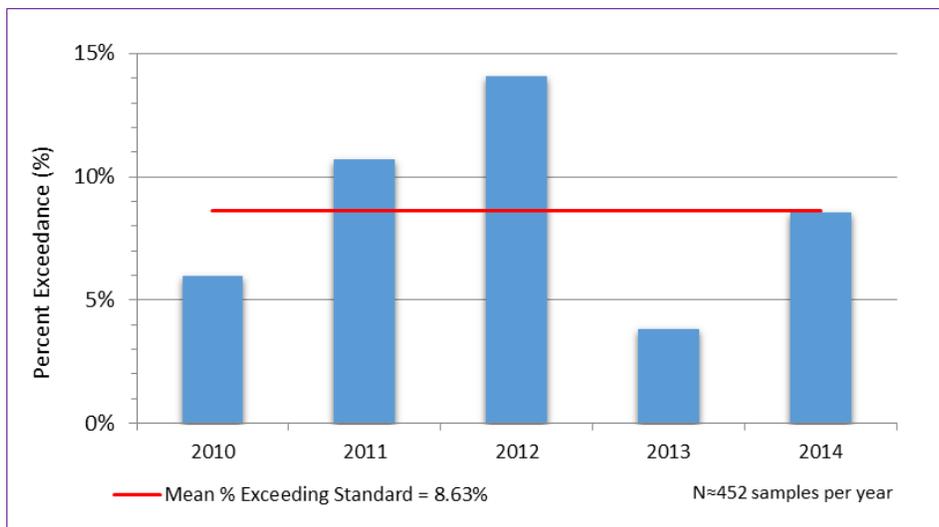
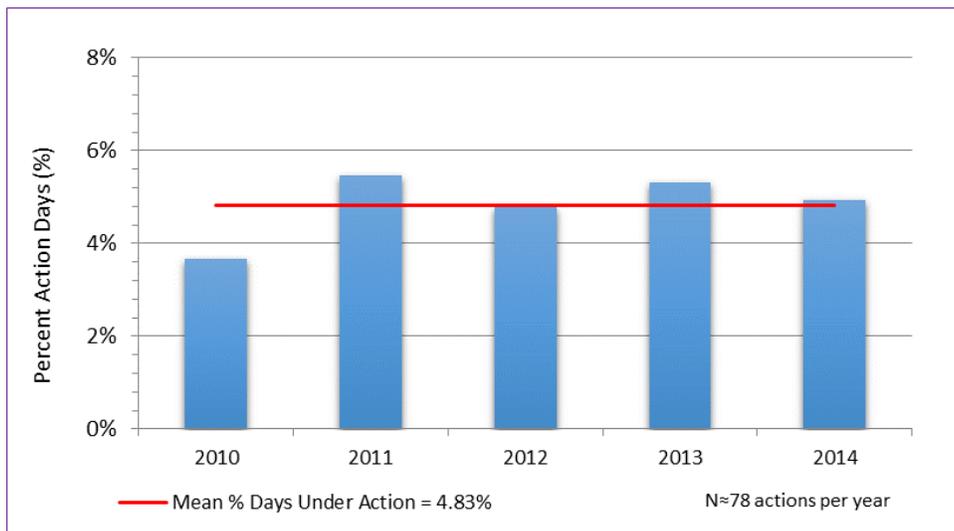


Figure 19b, Percent Days under Action (Advisory and Closure), Westchester County, 2010-2014



Monitoring and Notification Summary 2010-2014

Monitoring and notification results by county for five years 2010-2014 are provided in Table 1. Parameters, by year, include number of beaches monitored, number of samples collected, percent sample exceedance, number of closures or advisories (i.e. actions), number of days lost in the swim season, and percent days under action during the swim season. Mean values by county are included for reference.

Table 1. Retrospective Monitoring and Notification Results by County

County Specific Data		Year					
		2010	2011	2012	2013	2014	Mean
Cayuga	# Beaches	1	1	1	1	1	1
	# Samples	35	39	37	54	52	43
	% Exceedance	5.71%	0.00%	5.41%	3.70%	1.92%	3.35%
	# Actions	0	0	0	0	0	0
	Days Lost	0	0	0	0	0	0
	% Action Days	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Chautauqua	# Beaches	9	9	9	9	9	9
	# Samples	354	161	167	346	341	274
	% Exceedance	31.36%	19.88%	17.96%	26.88%	28.45%	24.91%
	# Actions	24	17	15	18	28	20
	Days Lost	136	47	48	97	49	75
	% Action Days	22.70%	7.85%	8.01%	16.19%	8.18%	12.59%
Erie	# Beaches	10	10	10	9	10	10
	# Samples	432	683	780	736	759	678
	% Exceedance	21.06%	16.40%	6.41%	25.95%	28.59%	19.68%
	# Actions	57	77	46	98	129	81
	Days Lost	89	113	50	153	188	119
	% Action Days	11.29%	14.34%	6.35%	19.42%	23.86%	15.05%
Jefferson	# Beaches	2	2	7	7	7	5
	# Samples	23	43	287	261	277	178
	% Exceedance	4.35%	13.95%	10.80%	11.88%	6.50%	9.50%
	# Actions	0	0	8	9	5	4
	Days Lost	0	0	31	15	7	11
	% Action Days	0.00%	0.00%	3.95%	1.91%	0.89%	1.35%
Monroe	# Beaches	4	4	4	4	4	4
	# Samples	430	541	557	515	393	487
	% Exceedance	23.72%	25.14%	27.83%	26.60%	22.90%	25.24%
	# Actions	60	56	36	29	44	45
	Days Lost	74	78	71	71	66	72
	% Action Days	20.85%	21.97%	20.00%	20.00%	18.59%	20.28%
Nassau	# Beaches	69	68	68	69	69	69
	# Samples	2431	2154	2141	2193	2207	2225
	% Exceedance	7.28%	8.40%	6.21%	4.74%	7.20%	6.77%
	# Actions	67	127	168	145	91	120
	Days Lost	192	307	357	311	345	302
	% Action Days	2.84%	4.53%	5.27%	4.59%	5.09%	4.46%

Table 1. Continued.

County Specific Data		Year					
		2010	2011	2012	2013	2014	Mean
Niagara	# Beaches	2	2	3	3	3	3
	# Samples	42	45	79	93	57	63
	% Exceedance	42.24	31.11%	13.92%	17.20%	8.77%	23.53%
	# Actions	4	8	6	8	7	7
	Days Lost	13	23	13	19	10	16
	% Action Days	6.99%	12.37%	6.99%	10.22%	5.38%	8.39%
NYC	# Beaches	36	25	25	25	25	27
	# Samples	1439	1711	1564	1571	1506	1558
	% Exceedance	7.85%	9.82%	10.10%	7.96%	6.71%	8.49%
	# Actions	68	162	119	130	122	120
	Days Lost	208	483	460	241	366	352
	% Action Days	5.05%	11.73%	11.17%	5.85%	8.21%	8.40%
Oswego	# Beaches	6	6	6	6	6	6
	# Samples	84	83	75	75	52	74
	% Exceedance	2.38%	1.20%	1.33%	0.00%	1.92%	1.37%
	# Actions	2	1	0	0	1	1
	Days Lost	4	12	0	0	6	4
	% Action Days	0.69%	1.90%	0.00%	0.00%	1.03%	0.72%
Suffolk	# Beaches	185	188	189	189	189	188
	# Samples	3480	3202	3116	3901	3550	3450
	% Exceedance	5.09%	7.37%	6.55%	6.59%	4.82%	6.08%
	# Actions	77	300	391	294	253	263
	Days Lost	140	746	569	473	459	477
	% Action Days	0.70%	3.73%	2.85%	2.37%	2.27%	2.38%
Wayne	# Beaches	3	2	2	2	2	2
	# Samples	33	14	15	13	14	18
	% Exceedance	36.36%	0.00%	13.33%	0.00%	0.00%	9.94%
	# Actions	1	0	1	0	0	0
	Days Lost	2	0	2	0	0	1
	% Action Days	0.93%	0.00%	0.93%	0.00%	0.00%	0.37%
Westchester	# Beaches	23	23	23	23	23	23
	# Samples	470	457	461	419	455	452
	% Exceedance	5.96%	10.72%	14.10%	3.82%	8.57%	8.63%
	# Actions	71	87	83	78	69	78
	Days Lost	94	140	122	136	137	126
	% Action Days	3.67%	5.47%	4.77%	5.31%	4.94%	4.83%

Project Successes

Overall, the BEACH Act implementation in NY State during the 2014 season can be labeled a success. All regulated bathing beaches were monitored for appropriate bacterial indicators and public notification events or beach closures were implemented in accordance with the requirements of the BEACH Act grant guidance. For the first time, NY used a centralized web-based data system to collect, compile, and transmit data deliverables to US EPA.

Since 2002, Federal BEACH Act grant funds have enhanced beach water quality monitoring programs for coastal waters in NY State. As a result, local jurisdictions have monitored more beach sites and collected more samples than before the BEACH Act was enacted. Two jurisdictions were not monitoring coastal beaches previously. The BEACH Act grant has helped standardize monitoring and notification programs at NY's coastal beaches. The program has increased the knowledge and expertise within NY State, which has in turn been applied to monitoring programs for our State's inland waters as well. The BEACH Act has improved NY State's capacities for conducting beach sanitary surveys and pollution source assessments including the use of qPCR for bacterial indicators. Most importantly, the BEACH Act has resulted in the protection of the health of millions of beach patrons across the State from swimming in contaminated bathing water that can result in serious illness.