NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
WATER MONITORING AND STANDARDS
BUREAU OF MARINE WATER MONITORING
P.O. BOX 405
LEEDS POINT, NEW JERSEY 08220

QUALITY ASSURANCE PROJECT PLAN

for

Phytoplankton Monitoring Program

January 2016

Robert Schuster, NJDEP *NJDEP Project Manager*	Date
Mark Ferko, NJDEP *NJDEP QA Officer*	Date
Bill Heddendorf, NJDEP *NJDEP Laboratory Manager*	Date

Project / Task Organization

NJDEP Project Manager: Data Review

Robert Schuster
Bureau of Marine Water Monitoring
New Jersey Dept. of Environmental Protection
P.O. Box 405, Stoney Hill Road
Leeds Point, NJ 08220
Phone: (609) 748-2000
Fax: (609) 748-2014
Robert.Schuster@dep.nj.gov

NJDEP Laboratory QA Manager: Sampling Design

Bill Heddendorf
Bureau of Marine Water Monitoring
New Jersey Dept. of Environmental Protection
P.O. Box 405, Stoney Hill Road
Leeds Point, NJ 08220
Phone: (609) 748-2000
Fax: (609) 748-2014
Bill.Heddendorf@dep.nj.gov

NJDEP QA Manager: QA Approval

Marc Ferko
Office of Quality Assurance
New Jersey Dept. of Environmental Protection
P.O. Box 424
Trenton, NJ
Phone: (609) 292-3950
Fax: (609) 777-1774
Marc.Ferko@dep.nj.gov

NJDEP: Data Entry / Review

Michael Kusmiesz
Bureau of Marine Water Monitoring
New Jersey Dept. Environmental Protection
P.O. Box 405, Stoney Hill Road
Leeds Point, NJ 08220
Phone: (609) 748-2000
Fax: (609) 748-2014
Mike.Kusmiesz@dep.nj.gov

1.0 **Project Name**: Phytoplankton Monitoring Program

2.0 **Requesting Agency**: NJDEP Bureau of Marine Water Monitoring

3.0 **Date Requested**: Jan 2017

4.0 **Date of Project Initiation**:

5.0 **Project Fiscal Information**:

This project will be funded by NJ DEP Bureau of Marine Water Monitoring

6.0 **Project Officer**: Robert Schuster, Bureau Chief

7.0 **Quality Assurance**:

7.1 Office of Quality Assurance – Marc Ferko, Research Scientist, OQA
7.2 Mircobiological Parameters – Bill Heddendorf, Interim Laboratory Supervisor, BMWM
7.3 Inorganic QA Parameters – Eric Ernst, Environmental Specialist 3, BMWM

8.0 **Project Description**:

8.1 Objective and Coverage

Phytoplankton are abundant in marine and freshwater ecosystems and are an essential component of marine and aquatic food webs. Harmful algae are a small subset of species that negatively affect human, animal, and ecosystem health and coastal resources through the production of potent chemical toxins (algal toxins) or the buildup of excess biomass.

Harmful algal blooms occur in fresh and marine waters all over the world and can be expansive, covering many square miles. The frequency and distribution of HABs and their impacts have increased considerably in recent years, both in the United States and globally.

This program combines the use of aircraft remote sensing, routine sampling, and observations by other state and local government officials through the 24-hour hotline to provide an early warning system for HABs in order to minimize illnesses due to biotoxin shellfish poisoning.

8.2 **Data Usage**:

The data generated in this study will give the Bureau background levels of phytoplankton diversity

8.3 **Sampling Stations**:

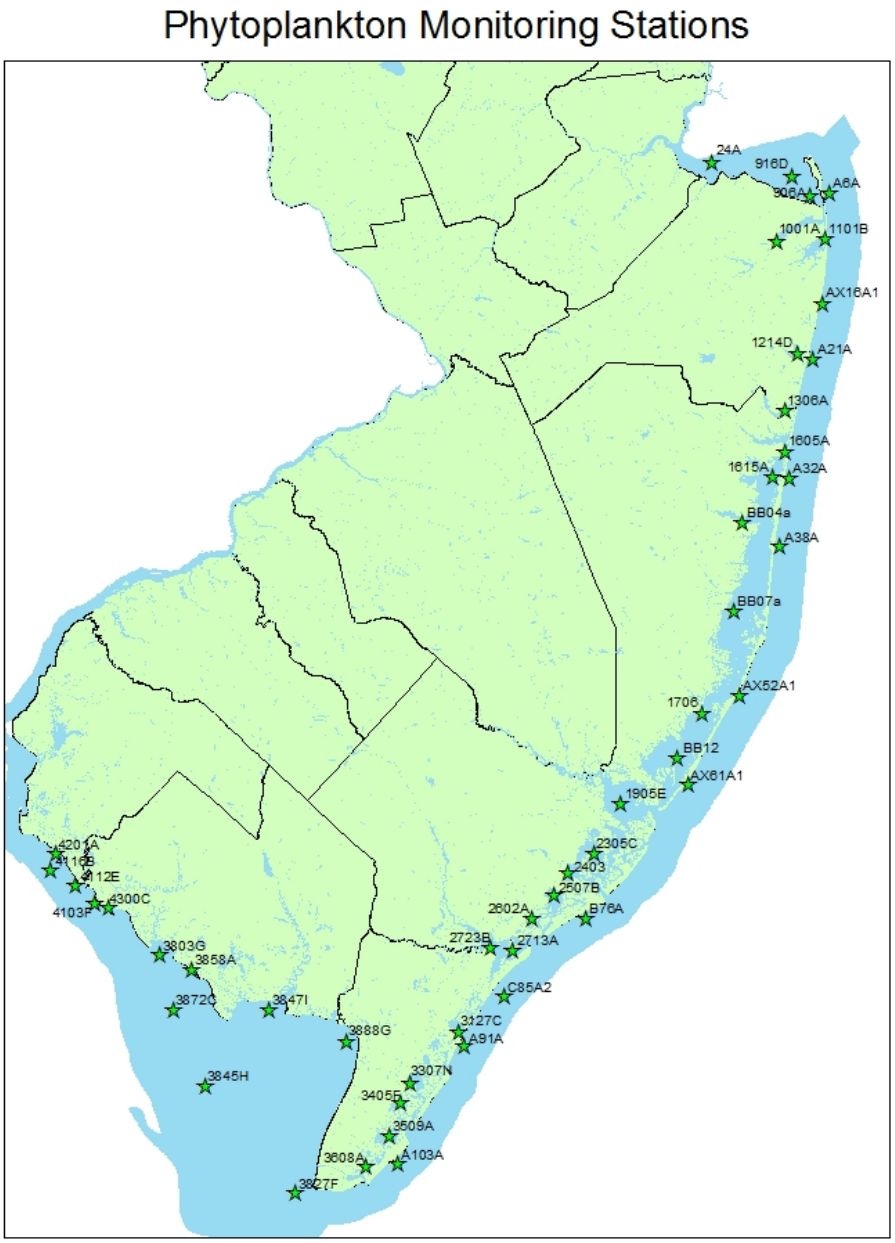

Table 1

Captain	Assignment	Bottle	Station	Location	Lattitude	Longitude
Hayek	431	12	B76A	Atlantic Ocean	39° 20' 27.20" N	74° 26' 43.22" W
Hayek	431	28	C85A2	Atlantic Ocean	39° 13' 30.43" N	74° 36' 10.55" W

Hayek	471	15	AX61A1	Atlantic Ocean	39° 32' 30.41" N	74° 14' 52.51" W
LeVance	151	21	1905E	Great Bay	39° 30' 47.41" N	74° 22' 40.51" W
LeVance	267	33	3509A	Grassy Sound	39° 0' 56.41" N	74° 49' 22.62" W
LeVance	277	26	3608A	Jarvis Sound	38° 58' 6.42" N	74° 52' 2.60" W
Murphy	67	17	1306A	Manasquan River	40° 6' 3.42" N	74° 3' 24.48" W
Murphy	481	3	AX52A1	Atlantic Ocean	39° 40' 24.42" N	74° 8' 52.48" W
Murphy	491	30	A32A	Atlantic Ocean	39° 59' 54.42" N	74° 2' 52.48" W
Murphy	491	38	A38A	Atlantic Ocean	39° 53' 48.44" N	74° 4' 4.48" W
Rand	17	17	24A	Raritan Bay	40° 28' 20.39" N	74° 11' 50.53" W
Rand	27	29	906A	Sandy Hook Bay	40° 25' 15.38" N	74° 0' 16.49" W
Rand	27	8	916D	Sandy Hook Bay	40° 27' 4.39" N	74° 2' 27.49" W
Rand	37	3	1001A	Navesink River	40° 21' 15.76" N	74° 4' 13.46" W
Rand	47	20	1101B	Shrewsbury River	40° 21' 30.38" N	73° 58' 37.49" W
Rand	57	13	1214D	Shark River	40° 11' 10.39" N	74° 1' 56.50" W
Rand	87	27	1615A	Barnegat Bay	40° 0' 6.41" N	74° 4' 56.50" W
Rand	521	24	A21A	Atlantic Ocean	40° 10' 37.42" N	74° 0' 11.48" W
Rand	541	16	A6A	Atlantic Ocean	40° 25' 30.40" N	73° 58' 4.51" W
Rand	541	29	AX16A1	Atlantic Ocean	40° 15' 36.40" N	73° 58' 58.48" W
Resciniti	247	14	3127C	Ludlam Bay	39° 10' 16.43" N	74° 41' 28.57" W
Resciniti	255	34	3405F	Jenkins Sound	39° 3' 50.40" N	74° 48' 8.60" W
Resciniti	287	30	3307N	Great Sound	39° 5' 40.42" N	74° 47' 5.60" W
Resciniti	315	1	4103F	Delaware Bay	39° 21' 36.40" N	75° 23' 40.70" W
Resciniti	315	7	4112E	Delaware Bay	39° 23' 12.41" N	75° 25' 52.72" W
Resciniti	315	13	4201A	Delaware Bay	39° 26' 1.39" N	75° 28' 11.71" W
Resciniti	327	20	3858A	Delaware Bay	39° 15' 42.41" N	75° 12' 22.68" W
Resciniti	332	34	3847I	Delaware Bay	39° 12' 6.41" N	75° 3' 22.64" W
Resciniti	347	1	3827F	Delaware Bay	38° 55' 42.42" N	75° 0' 16.63" W
Resciniti	348	16	3888G	Delaware Bay	39° 9' 18.40" N	74° 54' 28.62" W
Resciniti	357	20	4300C	Delaware Bay	39° 21' 17.10" N	75° 21' 58.43" W
Resciniti	362	8	3803G	Delaware Bay	39° 17' 0.42" N	75° 16' 4.69" W
Resciniti	376	5	3845H	Delaware Bay	39° 5' 18.42" N	75° 10' 40.66" W
Resciniti	377	4	4116B	Delaware Bay	39° 24' 30.42" N	75° 28' 46.70" W
Resciniti	378	7	3872C	Delaware Bay	39° 12' 3.42" N	75° 14' 25.69" W
Resciniti	401	6	A103A	Atlantic Ocean	38° 58' 24.42" N	74° 48' 28.58" W
Resciniti	401	27	A91A	Atlantic Ocean	39° 8' 59.42" N	74° 40' 52.57" W
Sloan	167	5	2305C	Reeds Bay	39° 26' 14.42" N	74° 25' 46.52" W
Sloan	172	21	2403	Absecon Bay	39° 24' 35.42" N	74° 28' 52.54" W
Sloan	182	3	2507B	Lakes Bay	39° 22' 30.43" N	74° 30' 23.54" W
Sloan	207	10	2602A	Beach Thorofare	39° 20' 29.44" N	74° 33' 2.56" W
Sloan	215	14	2713A	Great Egg Harbor	39° 17' 32.42" N	74° 35' 11.54" W
Sloan	227	14	2723B	Great Egg Harbor	39° 17' 49.42" N	74° 37' 43.57" W

ALL	BB	TBD	1605A	Barnegat Bay	40° 02' 17.95" N	74° 03' 15.55" W
ALL	BB	TBD	BB04a	Barnegat Bay	39° 55' 58.40" N	74° 08' 26.48" W
ALL	BB	TBD	BB07a	Barnegat Bay	39° 48' 04.63" N	74° 09' 25.62" W
ALL	BB	TBD	1706	Barnegat Bay	39° 38' 53.44" N	74° 13' 11.50" W
ALL	BB	TBD	BB12	Barnegat Bay	39° 34' 53.44" N	74° 16' 07.50" W

8.4 **Sample Parameters**:

Field measurements will include:

Chart 3

Parameter Name	**WQDE Name**	**Media**	**Units**
Water Temp	Temperature, Water	Water	deg C

Parameter	**Laboratory**	**Lab Number**	**Method**	**Method ID Context**	**Lower Reporting Limit**	**units**	**Holding Time**	**Preservative**
Enumeration of Phytoplankton	NJDEP LEEDS POINT LABORATORY - 01179	01179	10200-F	APHA	10	Cells/mL	24 hrs	Ice
Chlorophyll a	NJDEP LEEDS POINT LABORATORY - 01179	01179	10200-H	APHA	0.42	ug/l	24 hrs	Ice

8.5 **Sampling Frequency**:

Samples will be collected whenever a boat captain is in the growing area that the sample is located. The goal is to collect samples as close to monthly as possible.

Samples will also be taken in an as need basis when the Bureau is informed of an ongoing algal bloom whether it be from an outside agency or from the aircraft remote sensing flights.

8.6 **Sample Methods**:

All water quality sampling will be performed by a surface grab sampling method, except at ocean stations where sub surface samples will be taken at selected sites. Sampling will be performed in accordance with NJDEP's Field Sampling Procedures Manual, 2005.

8.7 **Sample Containers**:

Samples will be collected in clean 500mL amber HDPE bottles and labeled with station, time, and temperature data.

Project Organization and Responsibilities:

Sampling Operations and QA	Robert Schuster
Lab Analysis and QA	Eric Ernst
Data Processing and QC	Michael Kusmiesz
Data Quality Review	Bill Heddendorf

Lab Performance Auditing	NJ OQA
Lab Systems Auditing	NJ OQA
Field Systems Auditing	NJ OQA
Overall Quality Assurance	Bill Heddendorf
Project Coordination	Robert Schuster

Data Validation

Laboratory results will be validated by the Quality Assurance Officer according to the Standard Operating Procedures of the Leeds Point Lab.

8.8 **Data Quality Requirements and Assessments**:

Detection Limits

PARAMETER	MATRIX	DETECTION LIMIT
Chlorophyll a	Water	0.42 ug/L

8.9 **Data Representativeness**:

Sample sites were selected to gain an overall representation of phytoplankton levels along the entire coastal region of New Jersey.

9.0 **Chain of Custody**:

The tracking of each sample from acquisition to analysis will be well documented. Sample bottles are marked with the station along with the date, time, and temperature. This information along with the analytical results will be entered on the BMWM's computer data system. Samples will be collected, analyzed, and evaluated by staff within the BMWM and the tracking of the samples from collection to data entry will be well documented.

10.0 **Performance System Audits**:

Internal performance and system audits are performed routinely by the laboratory. Performance and system audits are also performed by the USEPA, the NJDEP Office of Quality Assurance, and the USFDA Shellfish Sanitation Program. Results of these audits are on file at the Leeds Point Laboratory.

Field audits include the collection and analysis trip and field blanks to assure aseptic technique and the use of a temperature control to assure that samples are adequately preserved (<4 degrees C).

11.0 **Corrective Action**:

Any changes to this Quality Assurance Project plan will be approved by the requesting agency and the project manager and amended accordingly.

12.0 **Data Reporting**:

12.1 **Field Data Records**:

Sampling personnel within the Bureau are responsible for recording field data. This data includes; collection times, collector ID, weather code, air temperature, water temperature, wind direction, wind velocity, and tidal stage. This information is entered on the Bureau's computer data system.

12.2 **Laboratory Data Documentation and Reduction**:

Laboratory records and data reduction is performed according to the Standard Operating Procedures of the Leeds Point Laboratory.

13.0 **Calibration Procedures and Preventive Maintenance**:

13.1 **Field Equipment Calibration and Record Keeping**:

Field equipment calibration will be performed according to the Standard Operating Procedures for the Leeds Point Laboratory and recorded in the appropriate notebook.

13.2 **Laboratory Equipment Calibration and Record Keeping**:

Laboratory equipment calibration will be performed according to the Standard Operating Procedures for the Leeds Point Laboratory and recorded in the appropriate notebook.

13.3 **Laboratory Preventive Maintenance**:

Laboratory equipment maintenance will be performed according to the Standard operating Procedures of the Leeds Point Laboratory.