Rookery Bay (RKB) National Estuarine Research Reserve (NERR) Nutrient Metadata (January 2017 – December 2017)

Latest Update: June 12th, 2018

Note: This is a provisional metadata document; it has not been authenticated as of its download date. Contents of this document are subject to change throughout the QAQC process and it should not be considered a final record of data documentation until that process is complete. Contact the CDMO (cdmosupport@belle.baruch.sc.edu) or Reserve with any additional questions.

I. Dataset and Research Descriptors

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2) Research Objectives

The four primary System Wide Monitoring Program (SWMP) stations and a secondary SWMP station are located in estuaries affected by watersheds demonstration different patterns of land-use. Their placement addresses priority resource management issues that are identified in the Reserve's management plan. Specifically, the data from these stations provide valuable information concerning the effects of land-use activities on the quantity, quality, and timing of freshwater inflow into the reserve. Each bay studied exhibits a pattern of altered freshwater inflow.

a) Monthly Grab Sampling Program – The principal objective of the monthly grab sampling is to determine spatial and temporal differences in water quality between sites representing different land-use patterns.

b) Diel Sampling Program – The principal objective of the diel sampling is to quantify temporal variability over a lunar tidal cycle and to determine the impact of tidal water exchange within Henderson Creek (a source of freshwater into the Rookery Bay waterbody).

3) Research Methods

a) Monthly Grab Sampling Program

Monthly grab samples were collected at all four SWMP water quality stations: Henderson Creek, Middle Blackwater River, Faka Union Bay, and Fakahatchee Bay. Beginning in October 2012, grab samples were also collected at Pumpkin Bay which was designated a Secondary SWMP Station by the CDMO in October of 2016. Duplicate grab samples were taken every month at each of the water quality stations following the National Estuarine Research Reserve System Nutrient and Chlorophyll Monitoring Program and Database Design SOP v1.8. Slack low tide was generally not considered for the grab sampling events due to the travel time between sites and the time constraints with the contracted laboratory. Rainfall conditions prior to grab sampling were generally not considered due to constraints with the contracted laboratory.

Sample bottles were pre-cleaned by the contracted laboratory following their Quality Assurance Management Plan (available by request). The bottle kits for each station were labeled with a unique sample identification number and chain of custody sheets were completed for tracking the samples during laboratory analysis and in the laboratory database. Tubing for the water sampling device (peristaltic pump), carboys (for deionized water), and filter holders were pre-cleaned using a Florida Department of Environmental Protection (FLDEP) decontamination procedure (FLDEP SOP FC1000/DEP-QAA-01/001) which involved: cleaning the with phosphate-free soap, rinsing three times with tap water, soaking from 4 - 24 hours in a 10% hydrochloric acid bath, rinsing three times with deionized water, and drying for 24 hours. One to two days prior to field sampling, the filter holders were assembled with in-line filters (0.7 µm glass microfiber filters and 0.45 µm membrane filters).

At each water quality station, grab samples for dissolved nutrients were collected 0.5 meter below the surface (near surface grab) using a peristaltic pump. A filter holder attached to the peristaltic pump tubing was used to filter for dissolved nutrients in the field. Nitrile gloves were worn through the entire process of sample collection and filtering. Unfiltered parameters included chlorophyll *a*, phaeophytin *a*, total phosphorous (TP), total Kjeldahl nitrogen (TKN), and total suspended solids (TSS). Filtered parameters included ammonium (NH4), nitrite + nitrate (NO2NO3), nitrite (NO2), and orthophosphate (PO4). Chlorophyll *a/* phaeophytin *a* and TSS sample bottles were rinsed three times with the sample water and then filled to the shoulder, capped and immediately stored in a cooler with ice. The nitrite/ orthophosphate bottle was rinsed three times with the filtered water and then filled with the filtrate, capped, and immediately stored in a cooler with ice. The sample bottles for ammonia, nitrite + nitrate, total Kjeldhal nitrogen, and total phosphorus contained sulfuric acid for preservation and therefore were not rinsed before adding the samples. All sample bottles were made of translucent high-density polyethylene (HDPE) with the exception of the chlorophyll *a*/ phaeophytin *a* bottle which was an opaque amber HDPE bottle. To avoid cross contamination, the peristaltic pump tubing was rinsed thoroughly with deionized water after each sampling at each station and then rinsed thoroughly with sample water before sampling at each new station. New gloves and filters were used at each site. Additionally, an equipment blank using deionized water was performed at the end of each sampling event following all the same procedures. Samples were shipped overnight to the FLDEP lab in Tallahassee, FL.

At each site physical/chemical water quality parameters were measured at the same depth as the nutrient samples were collected. A YSI EXO1 datasonde and hand held display were used to record the measurements. Recorded parameters included salinity (ppt), specific conductivity (mS/cm), temperature (°C), dissolved oxygen (% and mg/L), pH, and turbidity (NTU). Equipment calibration was done according to FLDEP SOP 001/01.

b) Diel Sampling Program

Monthly diel samples were collected at the depth of the water quality datasonde (0.25 meters above the bottom) every 2.5 hours over a lunar day (24hr:48 min) using an ISCO refrigerated auto-sampler (model 6712FR). The sampler was stationed at the Rookery Bay dock, approximately 100 meters from the water quality station. Prior to sampling, the polyethylene bottles used in the auto-sampler were washed following the same FLDEP decontamination procedure as described above in the grab sampling methods. A day before the sampling was to begin, the ISCO auto-sampler was set up and programmed. The siphon hose was rinsed with 900 ml ambient water prior to programming the auto-sampler. Sample bottles for the laboratory analysis were pre-cleaned by the contracted laboratory following their Quality Assurance Management Plan (available by request). Bottle kits for each sample interval (11) were labeled with a unique sample identification number and chain of custody sheets were completed for tracking the samples during laboratory analysis and in the laboratory database.

Sample filtration: Nitrile gloves were worn during sample processing. At Rookery Bay's laboratory, each polyethylene bottle containing 1000 ml of sample water was shaken to homogenize the sample. A peristaltic pump with a filter holder attached to the sampling tube was used to filter for dissolved nutrients. For dissolved phosphorus and nitrite, HDPE sample bottles were filled with the filtrate, capped, and immediately stored in a cooler with ice. For ammonium and nitrite + nitrate, the HDPE sample bottles contained sulfuric acid for

preservation and therefore were not rinsed before adding the filtrate, capped, and immediately stored in a cooler with ice. New filters were used for each sample. For the chlorophyll *a* samples, HDPE amber sample bottles were filled with at least 500 ml of unfiltered sample, capped, and immediately stored in a cooler with ice. Samples were shipped overnight to the FLDEP lab in Tallahassee, FL.

c) All Samples

Samples are placed on ice immediately after collection and kept on ice while shipped overnight to the to the FLDEP lab in Tallahassee, FL. Once at the lab, they are inventoried and placed in the appropriate refrigerator/freezer. Refrigerators range from 0 to 6.0˚C and freezers from -30.0 to -5.0˚C.

4) Site Location and character

Lower Henderson Creek (rkblhwq):

Lat/Long (Decimal Degrees): 26.0257 N, 81.7332 W

The "Lower Henderson" site is located at the mouth of Henderson Creek. The Lower Henderson Creek labeling is to clarify the site from other historical water quality stations. The sonde is affixed to a piling (manatee caution sign) located right of center (while facing downstream) of the creek channel, approximately 100 meters from RKB NERR's boat dock. The monitoring site is approximately 5 km downstream of a four-lane highway (SR 951) that crosses Henderson Creek. The creek is 5.8 km long (mainstream linear dimension), has an average mid-channel depth of approximately 2 meters at MHW, and an average width of 239 meters. At the sampling site, the depth is 2 meters at MHW and the width is 600 meters. Tides at Lower Henderson Creek are mixed and range from 0.23 m to 1.50 m (average 0.84 m). Salinity at this site ranged from 1.9 to 36.6 ppt during the year. Creek bottom habitats are predominantly fine sand and there is no bottom vegetation. The dominant marsh vegetation near the sampling site is red mangrove. The dominant natural vegetation of the watershed is hydric pine and cypress.

Upland land use near the sampling site includes residential areas with septic systems. Watershed activities that potentially impact the site include non-point source pollution from road runoff, drift of mosquito control pesticides, runoff from upstream agricultural areas and leachate from nearby residential septic systems and a weir structure located at SR 41. The amount of water released from this weir can sometimes mask natural tidal salinity patterns. The historic Henderson Creek watershed was approximately 50% under State ownership and much of this protected area had intact cypress sloughs and other wetland vegetation. Canals and water use for agriculture and human consumption have altered the hydroperiod of this watershed. Consequently, the Henderson creek watershed may receive non-point source pollution runoff from a variety of sources.

Middle Blackwater River (rkbmbwq):

Lat/Long (Decimal Degrees): 25.9343 N, 81.5946 W

The "Middle Blackwater River" sonde is located at the mouth of the river. The Middle Blackwater River labeling is to clarify the site from other historical water quality stations. The sonde is affixed to navigational marker #17 within the river channel. The average depth at this

marker is approximately 2 meters at MHW. The tidal range for Middle Blackwater River varies between 0.05 and 1.90 meters (average 0.95 m). Salinity at this site ranged from 1.5 to 37.0 ppt during the year. Salinities fluctuate with the tides and watershed rainfall. The substrate within the channel is a mixture of sand and silt with oyster shell with some organic matter mixed in. Mature red mangrove forests dominate the banks of the river.

Upstream influences consist of the Collier-Seminole State Park boat basin and upstream agricultural fields adjacent to Blackwater River's main feeder canal (SR 41 canal). Nonpoint source pollution from agricultural operations and golf courses may affect this site. In addition, canals and roads built during the 1960's (Picayune Strand, formerly Southern Golden Gate Estates) may have caused significant disruptions to overland sheet-flow reducing the amounts of freshwater flowing to this estuary. Despite these alterations, the salinity fluctuations of this site suggest that seasonal fluctuations in salinity are more closely correlated to watershed rainfall patterns than salinities of estuaries with water control structures, such as Henderson Creek.

Faka Union Bay (rkbfuwq):

Lat/Long (Decimal Degrees): 25.9005 N, 81.5159 W

The "Faka Union Bay" sonde is located at the mouth of the Faka Union Canal. The sonde is affixed to a manatee speed zone sign next to the main channel. The average depth at this site is approximately 2 meters at MHW. The tidal range for Faka Union Bay varies between 0.06 and 1.68 meters (average 0.79 m). Salinity at this site ranged from 0.3 to 35.3 ppt during the year. Salinities fluctuate daily with tides, seasonal rainfall, and management of upstream water control structures. The substrate within the channel is a mixture of sand and silt with some organic matter. Mature red mangrove forests and spoil islands dominate the banks of the canal.

Upstream influences consist of the Port of the Islands development and marina. The watershed consists of an elaborate canal system (Picayune Strand, formerly Southern Golden Gate Estates) which has altered natural water drainage patterns into Faka Union Bay.

Fakahatchee Bay (rkbfbwq):

Lat/Long (Decimal Degrees): 25.8922 N, 81.4770 W

The Fakahatchee Bay sonde is located at the mouth of two rivers, Fakahatchee River and East River. The sonde is placed in a 4" PVC housing secured to a 6" PVC pipe. The average depth at MHW is approximately 1.5 meters. The tide range for Fakahatchee varies between 0.00 and 1.84 meters (average 0.80 m). Salinity at this site ranged 0.6 to 35.6 ppt during the year. Salinities fluctuate daily with the tides and seasonal rainfall. The substrate within the channel is a mixture of sand, silt and some organic matter. Mature red mangrove forests dominate the banks of the rivers.

Upstream there are minimal influences from the Picayune Strand State Forest with non-point source pollutants possible from the culverts under I-75 and US 41. Fakahatchee Strand State Preserve and Big Cypress National Park manage the headwaters of Fakahatchee Bay. Fakahatchee Bay's watershed is considered the least altered.

Pumpkin Bay (rkbpbwq):

Lat/Long (Decimal Degrees): 25.9141 N, 81.5404 W

The site is located at the mouth of the Pumpkin River. The tide range for Pumpkin Bay varies between 0.00 and 1.64 meters (average 0.64 m). Salinity at this site ranged from 0.3 to 37.1 ppt during the year. The bottom habitat is predominantly fine sand and there is no bottom vegetation. Mature red mangrove forests dominate the Pumpkin River and the bay. Upland land use is minimal with the main influence US 41 and the Picayune Strand State Forest canal system, which has diverted freshwater. Typically, this site does not receive enough freshwater inflow.

Station Code	SWMP Status	Station Name	Location	Active Dates	Reason Decommissioned	Notes
FB	P	Fakahatchee Bay	25.8922 81.477	01/01/2002 00:00 - current	NA	NA
FU	P	Faka Union Bay	25.9005 81.5159	01/01/2002 00:00 – current	NA	NA
LH	P	Lower Henderson Creek	26.0257 81.7332	01/01/2001 00:00 – current	NA	NA
MB	P	Middle Blackwater River	25.9343 81.5946	01/01/2000 00:00 – current	NA	NA
PB	S	Pumpkin Bay	25.9141 81.5404	07/06/2016 00:00 – current	NA	NA

5) Coded variable definitions

rkblhnut **=** Rookery Bay Lower Henderson nutrients (monthly grabs and diel sampling)
rkbmbnut = Rookery Bay Middle Blackwater nutrients (monthly grabs)
rkbfunut = Rookery Bay Faka Union nutrients (monthly grabs)
rkbfbnut = Rookery Bay Fakahatchee Bay nutrients (monthly grabs)
rkbpbnut = Rookery Bay Pumpkin Bay nutrients (monthly grabs, Secondary SWMP station)

Monitoring Codes:
monthly grab sample program = 1
monthly diel sample program = 2

Replicate grab samples were denoted as 1 for the first sample and 2 for the second sample at each station in the "*Rep*" column. Since 1 diel sample was collected every 2.5 hrs., the replicate number was always denoted as 1 in the "*Rep*" column.

6) Data Collection Period

The System-Wide Monitoring Program nutrient sampling began in January 2002 at all the primary SWMP sampling stations. Sampling began in October 2012 at the Secondary SWMP station, rkbpbnut. For 2016, the data collection period was from January to December.

Monthly Grab Sampling

Station Code	Date Time Stamp (rep 1)	Date Time Stamp (rep 2)
rkblhnut	1/4/2017 12:54	1/4/2017 12:59
rkblhnut	2/7/2017 8:08	2/7/2017 8:13
rkblhnut	3/9/2017 8:26	3/9/2017 8:32
rkblhnut	4/5/2017 7:23	4/5/2017 7:28
rkblhnut	5/2/2017 7:30	5/2/2017 7:36
rkblhnut	6/8/2017 11:02	6/8/2017 11:08
rkblhnut	7/5/2017 7:08	7/5/2017 7:15
rkblhnut	8/8/2017 11:16	8/8/2017 11:22
rkblhnut	9/19/17 8:32	9/19/17 8:38
rkblhnut	10/4/17 7:02	10/4/17 7:08
rkblhnut	11/8/17 13:07	11/8/17 13:13
rkblhnut	12/6/17 12:28	12/6/17 12:35
rkbmbnut	1/4/2017 8:43	1/4/2017 8:49
rkbmbnut	2/7/2017 12:51	2/7/2017 12:56
rkbmbnut	3/9/2017 13:37	3/9/2017 13:44
rkbmbnut	4/5/2017 8:44	4/5/2017 8:51
rkbmbnut	5/2/2017 8:57	5/2/2017 9:03
rkbmbnut	6/8/2017 9:28	6/8/2017 9:34
rkbmbnut	7/5/2017 9:08	7/5/2017 9:15
rkbmbnut	8/8/2017 9:12	8/8/2017 9:17
rkbmbnut	9/19/17 10:30	9/19/17 10:34
rkbmbnut	10/4/17 11:09	10/4/17 11:15
rkbmbnut	11/8/17 11:13	11/8/17 11:19
rkbmbnut	12/6/17 10:18	12/6/17 10:26
rkbfunut	1/4/2017 10:20	1/4/2017 10:26
rkbfunut	2/7/2017 11:30	2/7/2017 11:43
rkbfunut	3/9/2017 11:46	3/9/2017 11:54
rkbfunut	4/5/2017 9:56	4/5/2017 10:03
rkbfunut	5/2/2017 10:11	5/2/2017 10:16
rkbfunut	6/8/2017 8:25	6/8/2017 8:32
rkbfunut	7/5/2017 10:18	7/5/2017 10:24
rkbfunut	8/8/2017 7:51	8/8/2017 7:58
rkbfunut	9/19/17 11:48	9/19/17 11:53
rkbfunut	10/4/17 9:00	10/4/17 9:06
rkbfunut	11/8/17 10:15	11/8/17 10:21

rkbfunut	12/6/17 9:23	12/6/17 9:29
rkbfbnut	1/4/2017 10:48	1/4/2017 10:54
rkbfbnut	2/7/2017 10:17	2/7/2017 10:24
rkbfbnut	3/9/2017 11:05	3/9/2017 11:10
rkbfbnut	4/5/2017 10:26	4/5/2017 10:34
rkbfbnut	5/2/2017 10:44	5/2/2017 10:49
rkbfbnut	6/8/2017 7:57	6/8/2017 8:03
rkbfbnut	7/5/2017 10:46	7/5/2017 10:53
rkbfbnut	8/8/2017 8:25	8/8/2017 8:31
rkbfbnut	9/19/17 12:22	9/19/17 12:29
rkbfbnut	10/4/17 9:36	10/4/17 9:42
rkbfbnut	11/8/17 9:48	11/8/17 9:54
rkbfbnut	12/6/17 8:52	12/6/17 9:00
rkbpbnut	1/4/2017 9:51	1/4/2017 9:57
rkbpbnut	2/7/2017 12:02	2/7/2017 12:07
rkbpbnut	3/9/2017 12:34	3/9/2017 12:39
rkbpbnut	4/5/2017 9:24	4/5/2017 9:31
rkbpbnut	5/2/2017 9:40	5/2/2017 9:45
rkbpbnut	6/8/2017 8:51	6/8/2017 8:56
rkbpbnut	7/5/2017 9:48	7/5/2017 9:53
rkbpbnut	8/8/2017 7:22	8/8/2017 7:28
rkbpbnut	9/19/17 11:15	9/19/17 11:21
rkbpbnut	10/4/17 10:21	10/4/17 10:26
rkbpbnut	11/8/17 9:01	11/8/17 9:07
rkbpbnut	12/6/17 8:18	12/6/17 8:23

Diel Sampling

Station Code	Date Time stamp (begin)	Date Time stamp (end)
rkblhnut	1/11/2017 7:00	1/12/2017 8:00
rkblhnut	2/8/2017 6:00	2/9/2017 7:00
rkblhnut	3/14/2017 9:00	3/15/2017 10:00
rkblhnut	4/11/2017 8:00	4/12/2017 9:00
rkblhnut	5/10/17 7:30	5/11/17 8:30
rkblhnut	6/14/2017 10:30	6/15/2017 11:30
rkblhnut	7/11/2017 9:00	7/12/2017 10:00
rkblhnut	8/16/2017 2:30	8/17/2017 3:30
rkblhnut	9/20/17 10:00	9/21/17 11:00
rkblhnut	10/11/17 13:30	10/12/17 14:30
rkblhnut	11/15/17 6:00	11/16/17 7:00
rkblhnut	12/13/17 5:00	12/14/17 6:00

7) Associated Researchers and Projects

As part of the SWMP, Rookery Bay NERR monitors 15-minute meteorological and water quality data which may be correlated with this nutrient/pigment dataset. The principal objective of these programs is to record long-term environmental data within Rookery Bay NERR in order to observe any changes or trends over time. The five water quality sites were also selected to represent various degrees of watershed hydrologic alteration. Both water quality and meteorological data are available at www.nerrsdata.org.

The nutrient data generated by Rookery Bay NERR are being used to analyze restoration targets established for the Picayune Strand Restoration Project (PSRP; formerly known as Southern Golden Gate Estates) which is a portion of the Comprehensive Everglades Restoration Plan (CERP). Additional datasets used in this analysis include a long-term fisheries survey (July 1998 to June 2013, October 2015 to the present), a shark demographics survey (May 2000 to the present), and an oyster reef/benthic crab survey (1999 to 2008). Florida DEP used the nutrient data to develop numeric nutrient criteria for the southwest region of Florida, which were approved by the Environmental Protection Agency.

8) Distribution

NOAA retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The NERRS retains the right to be fully credited for having collected and process the data. Following academic courtesy standards, the NERR site where the data were collected should be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. The data set enclosed within this package/transmission is only as good as the quality assurance and quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data.

Requested citation format:
NOAA National Estuarine Research Reserve System (NERRS). System-wide Monitoring Program. Data accessed from the NOAA NERRS Centralized Data Management Office website: www.nerrsdata.org; *accessed* 12 October 2017.

NERR nutrient data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Principal investigators and contact persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page www.nerrsdata.org. Data are available in comma separated version format.

II. Physical Structure Descriptors

9) Entry Verification

The analytical results (electronic files) were provided monthly from the contracted laboratory to Nick Roach, Nutrient Technician. Upon receiving the results, Nick reviewed the data for errors.

Nick was responsible for compilation and QA/QC of the final data set according to chapter 10 of the Centralized Data Management Office (CDMO) NERR SWMP Data Management Manual v 6.6. The data reported from the lab were in the required units making it unnecessary to convert the data prior to entering it into Microsoft Excel.

Nutrient data are entered into a Microsoft Excel worksheet and processed using the NutrientQAQC Excel macro. The NutrientQAQC macro sets up the data worksheet, metadata worksheets, and MDL worksheet; adds chosen parameters and facilitates data entry; allows the user to set the number of significant figures to be reported for each parameter and rounds using banker's rounding rules; allows the user to input MDL values and then automatically flags/codes measured values below MDL and inserts the MDL; calculates parameters chosen by the user and automatically flags/codes for component values below MDL, negative calculated values, and missing data; allows the user to apply QAQC flags and codes to the data; produces summary statistics; graphs selected parameters for review; and exports the resulting data file to the CDMO for tertiary QAQC and assimilation into the CDMO's authoritative online database.

10) Parameter Titles and Variable Names by Category

Required NOAA/NERRS System-wide Monitoring Program water quality parameters are denoted by an asterisk "*".

Data Category	Parameter	Variable Name	Units of Measure
Phosphorus and Nitrogen:			
	Orthophosphate, Filtered*	PO4F	mg/L as P
	Total Phosphorus	TP	mg/L as P
	Ammonium, Filtered*	NH4F	mg/L as N
	Nitrite, Filtered*	NO2F	mg/L as N
	Nitrate, Filtered*	NO3F	mg/L as N
	Nitrite + Nitrate, Filtered*	NO23F	mg/L as N
	Dissolved Inorganic Nitrogen	DIN	mg/L as N
	Total Kjeldahl Nitrogen	TKN	mg/L as N
	Total Organic Nitrogen	TON	mg/L as N
Chemical Composition:			
	Total Suspended Solids	TSS	mg/L
Plant Pigments:			
	Chlorophyll *a**	CHLA_N	µg/L
	Phaeophytin	PHEA	µg/L
Field Parameters (grabs only):			
	Water Temperature	WTEM_N	°C
	Specific Conductance	SCON_N	mS/cm
	Salinity	SALT_N	ppt

Dissolved Oxygen	DO_N	mg/L
%Dissolved Oxygen Saturation	DO_S_N	%
pH	PH_N	pH units
Turbidity	TURB_N	NTU/FNU

Notes:
1. Time is coded based on a 2400 clock and is referenced to Standard Time.
2. Reserves have the option of measuring either NO2 and NO3 or they may substitute NO23 for individual analyses if they can show that NO2 is a minor component relative to NO3.

11) Measured or Calculated Laboratory Parameters

a) Parameters Measured Directly

Phosphorus species:	PO4F, TP
Nitrogen species:	NH4F, NO2F, NO23F, TKN
Chemical Composition:	TSS
Plant Pigments:	CHLA and PHEA

b) Calculated Parameters

DIN:	NO23F +NH4F
TN:	TKN + NO2F
TON:	TKN – NH4F

12) Limits of Detection

Method Detection Limits (MDL), the minimum concentration of a parameter that an analytical procedure can reliably detect, were established by the Florida Department of Environmental Protection, Bureau of Laboratories. MDLs were determined using the U.S. Environmental Protection Agency MDL procedure found in Title 40 Code of Federal Regulations Part 136 (40 CFR 136, Appendix B, revision 1.11). Once the MDL was established using this method, verification was done prior to use. Verification included analyzing a known standard at 2-3 times the calculated MDL. Additionally, various checks and balances were used to ensure suitability of the MDL. Every year the labs employed verification checks on all MDLs. If the verification checks met the lab's acceptance criteria then the MDL was not recommended for change. The MDL for all parameters were determined by Florida Department of Environmental Protection, Bureau of Laboratories.

a) FLDEP laboratory MDL determination:

MDLs are set such that the risk of reporting a false positive is less than 1%. MDLs are determined using the method specified in the Federal Register, 40 CFR Part 136 Appendix B, using LCSs prepared near the estimated detection limit as surrogates to estimate methodological noise for censored methods (e.g., chromatographic methods which censor analytical noise) or, for uncensored methods, using actual method blanks to directly measure methodological noise. Where the possibility exists for significant systematic bias from sample preparation and handling or from the analytical determinative step (typically inorganic analyses), bias is taken into account when calculating detection limits. Published MDLs may be set higher than experimentally determined MDLs to (1) avoid observed positive interferences

from matrix effects or common reagent contaminants or (2) for reporting convenience (i.e., to group common compounds with similar but slightly different experimentally determined MDLs). MDLs are determined in a suitable analyte-free matrix when possible. For certain analytes and matrices, no suitable, analyte-free matrix may be available. In those cases, MDLs are determined in the absence of any matrix, but in the presence of all preparatory reagents carried through the full preparatory and determinative steps. LOD verification procedures may be found in SOP LB-031, Limit of Detection Verification. (From page 39 of FLDEP Laboratory Quality Manual 2016 located at: http://publicfiles.dep.state.fl.us/dear/labs/lab_qualitymanual_16.pdf)

2017 MDLs

Parameter	**Variable**	**MDL**	**Approved**
Orthophosphate	PO4F	0.004 mg/L	01/01/17-12/31/17
Ammonium	NH4F	0.002 mg/L	01/01/17-12/31/17
Nitrite	NO2F	0.002 mg/L	01/01/17-12/31/17
Nitrite +Nitrate	NO23F	0.004 mg/L	01/01/17-12/31/17
Chlorophyll *a*	CHLA	0.55 µg/L	01/01/17-12/31/17
Phaeophytin	PHEA	0.4 µg/L	01/01/17-12/31/17
Kjeldahl Nitrogen	TKN	0.08 mg/L	01/01/17-12/31/17
Total Phosphorus	TP	0.002 mg/L	01/01/17-12/31/17
Total Suspended Solids*	TSS	2 mg/L	01/01/17-12/31/17

*MDL for Total Suspended Solids is 3 when conductivity is > 15,000 µmhos/cm.
FLDEP MDLs for the chlorophyll suite of components may change by station and month based on the need to dilute samples during processing. The base MDL listed in the FLDEP SOP is based on the maximum filtration volume and minimum extract volume and will therefore be the lowest MDL. This MDL was last verified by the FLDEP laboratory 6/16/2015 (as presented in version BB-029-2.1 of the FLDEP SOP for Spectrophotometric Determination of Corrected and Uncorrected Chlorophyll *a* and Phaeophytin, available here: https://fldeploc.dep.state.fl.us/sop/sop3.asp?sect=BIOLOGY&cat=CHLOROPHYLL-BOD-SEDIMENT+GRAIN+SIZE&A1=Submit).

The sample MDL is calculated based on the number of times a sample must be diluted. For example, if a CHL_A sample must be diluted to twice its volume, the base MDL of 0.55 ug/L is multiplied by a dilution factor of two (0.55 ug/L x 2) thus resulting in an MDL of 1.10 ug/L. For samples that fall below the MDL and their MDL is greater than the base MDL, individual sample MDLs are listed in the table below. These data have been flagged and coded as -4 SBL in the dataset. A table of these instances can be found in the "Other Remarks/Notes" section of this metadata document.

13) Laboratory Methods

Chemical and biological analysis was performed by Florida Department of Environmental Protection, Bureau of Laboratories. FL DEP SOP hold times are as follows:

NH4F, Ammonia	Cool, ≤6 °C, H2SO4 to pH<2	28 days
NO2F, Nitrite	Cool, ≤6 °C	48 hours
NO23F, Nitrate-Nitrite	Cool, ≤6 °C, H2SO4 to pH<2	28 days

TP, Total Phosphorous	Cool, ≤6 °C, H2SO4 to pH<2	28 days
TKN, Total Kjeldahl Nitrogen	Cool, ≤6 °C, H2SO4 to pH<2	28 days
TON, Total Organic Nitrogen	Cool, ≤6 °C, H2SO4 to pH<2	28 days
PO4F, Orthophosphate	Cool, to ≤6 °C Analyze w/in 48 hours.	Filter w/in 15 minutes;
TSS, Total Suspended Solids	Cool, to ≤6 °C	7 days.

*Note that hold times INCLUDE time spent in transport and held at the laboratory.

a) Parameter: PO4F
EPA or other Reference Method: EPA 365.1
Method Reference: Standard Methods for Examination of Water and Wastewater, 20th ed.
Method Description: Ammonium molybdate and antimony potassium tartrate react in an acid medium with dilute solutions of phosphorus to form an antimony-phosphomolybdate complex. This complex is reduced to an intensely blue-colored complex by ascorbic acid. The color is proportional to the phosphorus concentration and is measured with a rapid flow autoanalyzer.
Preservation Method: Samples were filtered in the field and stored at 4 ºC until analysis.

b) Parameter: TP
EPA or other Reference Method: EPA 365.1
Method Reference: Standard Methods for Examination of Water and Wastewater, 20th ed.
Method Description: Ammonium molybdate and antimony potassium tartrate react in an acid medium with dilute solutions of phosphorus to form an antimony-phosphomolybdate complex. All of the phosphorus present in the sample regardless of forms is measured by the persulfate digestion procedure.
Preservation Method: Samples were preserved with H_2SO_4 and stored at 4 ºC until analysis.

c) Parameter: NH4F
EPA or other Reference Method: EPA 350.1 Rev. 2.0 (1993) (no distillation)
Method Reference: Methods for Chemical Analysis of Water and Wastes
Method Description: Alkaline phenol and hypochlorite react with ammonia to form indophenol blue that is proportional to the ammonia concentration. The blue color formed is intensified with sodium nitroprusside. The color's absorbance is directly proportional to analyte concentration and is measured with a rapid flow autoanalyzer.
Preservation Method: Samples were preserved with H_2SO_4 and stored at 4 ºC until analysis.

d) Paramter: NO2F
EPA or other Reference Method: EPA 353.2
Method Description: A filtered sample is passed through a column containing granulated copper-cadmium to reduce nitrate to nitrite. The nitrite (that was originally present plus reduced nitrate) is determined by diazotizing with sulfanilamide and coupling with N-(1-naphthyl)-ethylenediamine dihydrochloride to form a highly colored azo dye, which is measured colorimetrically with a rapid flow autoanalyzer
Preservation Method: Samples were filtered in the field and stored at 4 ºC until analysis.

e) Parameter: NO23F

EPA or other Reference Method: EPA 353.2
Reference Method: Methods for Chemical Analysis of Water and Wastes
Method Description: A filtered sample is passed through a column containing granulated copper-cadmium to reduce nitrate to nitrite. The nitrite (that was originally present plus reduced nitrate) is determined by diazotizing with sulfanilamide and coupling with N-(1-naphthyl)-ethylenediamine dihydrochloride to form a highly colored azo dye, which is measured colorimetrically with a rapid flow autoanalyzer
Preservation Method: Samples were preserved with H_2SO_4 and stored at 4 ºC until analysis.

f) Parameter: TKN
EPA or other Reference Method: EPA 351.2
Reference Method: Methods for Chemical Analysis of Water and Wastes
Method Description: A filtered sample is passed through a column containing granulated copper-cadmium to reduce nitrate to nitrite. The nitrite (that was originally present plus reduced nitrate) is determined by diazotizing with sulfanilamide and coupling with N-(1-naphthyl)-ethylenediamine dihydrochloride to form a highly colored azo dye, which is measured colorimetrically with a rapid flow autoanalyzer.
Preservation Method: Samples were preserved with H_2SO_4 and stored at 4 ºC until analysis.

g) Parameter: TSS
EPA or other Reference Method: Standard Methods 2540 D-1997
Method Description: A well-mixed sample is filtered through a pre-weighed glass fiber filter. The filter and any residue are then dried to a constant weight at 103-105 ºC. The filter is cooled in a desiccator, weighed and the result used to compute the TSS of the sample.
Preservation Method: Samples were stored at 4 ºC until analysis.

h) Parameter: CHLA and PHEA
EPA or other Reference Method: SM 10200 H
Method Reference: Standard Methods for the Examination of Water and Wastewater, 20th Edition
Method Description: An extractive spectrophotometric technique was used to determine chlorophyll *a* concentrations. Samples were filtered immediately at the laboratory. Filters were placed in a tissue grinder with 2-3 ml of 90% aqueous acetone. Extracts steeped for at least 2 hours at 4 °C in the dark. Extracts were analyzed using a UV/VIS Spectrophotometer.
Preservation Method: Stored at 4 ºC and filtered at the lab upon arrival.

14) Field and Laboratory QAQC programs

Based on Collier County Pollution Control and Prevention Department (CCPCP) Laboratory's Quality Assurance Management Plan version 04-02-08 (available by request) and FLDEP SOP 5361 QAQC manual and FLDEP Quality Manual (available by request).

a) Precision: is defined as the agreement or closeness of two or more results.

i) **Field Variability –** Duplicates (successive grabs at each station) were taken every month at each station.

ii) **Laboratory variability –** The RPD for matrix duplicates was measured either by the instrument or the analyst. When the average value of the concentration was above the PQL then the RPD must be no more than 20 % in order to be acceptable.

iii) **Inter-organizational splits –** The laboratory participates in external audit programs including split sample analysis with both public and private laboratories.

b) Accuracy: is defined as the agreement between the analytical results and the know concentration.

i) **Sample spikes-** A representative sample was spiked with known quantities (preferably approximately 2 to 10 times the practical quantitation limit (PQL)) of the analyte before processing. Percent recoveries were calculated for the added analyte. Matrix spike recoveries were indicators of sample matrix interference and contamination. The confidence range was set at ± 15 % for water matrices.

ii) **Standard reference material analysis -** Standard curves were checked against certified or other independently prepared standards during each analytical run. Control standards were analyzed at least every 20 samples. The correlation coefficient for a standard curve should be 0.995 or greater and the recovery for each calibrant above the PQL should be ± 10 %.

iii) **Cross calibration exercised –** The laboratory participates in a number of Performance Testing (PT) studies and interlaboratory comparison studies every year. They include PT studies that are required as part of our lab's NELAC certification and others such as those conducted by the USGS. The results from these studies are posted at http://depnet/burlabs/ptinfo.htm. In addition, our nutrients group also participates in two round robins conducted by the Regional Ambient Monitoring Program (RAMP).

c) Other QAQC methods: Field equipment blanks were taken every monthly grab sampling event to indicate any potential contamination problems during sampling.

15) QAQC flag definitions

QAQC flags provide documentation of the data and are applied to individual data points by insertion into the parameter's associated flag column (header preceded by an F_). QAQC flags are applied to the nutrient data during secondary QAQC to indicate data that are out of sensor range low (-4), rejected due to QAQC checks (-3), missing (-2), optional and were not collected (-1), suspect (1), and that have been corrected (5). All remaining data are flagged as having passed initial QAQC checks (0) when the data are uploaded and assimilated into the CDMO ODIS as provisional plus data. The historical data flag (4) is used to indicate data that were submitted to the CDMO prior to the initiation of secondary QAQC flags and codes (and the use of the automated primary QAQC system for WQ and MET data). This flag is only present in historical data that are exported from the CDMO ODIS.

-4	Outside Low Sensor Range
-3	Data Rejected due to QAQC
-2	Missing Data
-1	Optional SWMP Supported Parameter
0	Data Passed Initial QAQC Checks
1	Suspect Data
4	Historical Data: Pre-Auto QAQC
5	Corrected Data

16) QAQC code definitions

QAQC codes are used in conjunction with QAQC flags to provide further documentation of the data and are also applied by insertion into the associated flag column. There are three (3) different code categories, general, sensor, and comment. General errors document general problems with the sample or sample collection, sensor errors document common sensor or parameter specific problems, and comment codes are used to further document conditions or a problem with the data. Only one general or sensor error and one comment code can be applied to a particular data point. However, a record flag column (F_Record) in the nutrient data allows multiple comment codes to be applied to the entire data record.

General errors

GCM	Calculated value could not be determined due to missing data
GCR	Calculated value could not be determined due to rejected data
GDM	Data missing or sample never collected
GQD	Data rejected due to QA/QC checks
GQS	Data suspect due to QA/QC checks
GSM	See metadata

Sensor errors

SBL	Value below minimum limit of method detection
SCB	Calculated value could not be determined due to a below MDL component
SCC	Calculation with this component resulted in a negative value
SNV	Calculated value is negative
SRD	Replicate values differ substantially
SUL	Value above upper limit of method detection

Parameter Comments

CAB	Algal bloom
CDR	Sample diluted and rerun
CHB	Sample held beyond specified holding time
CIP	Ice present in sample vicinity
CIF	Flotsam present in sample vicinity
CLE	Sample collected later/earlier than scheduled
CRE	Significant rain event
CSM	See metadata
CUS	Lab analysis from unpreserved sample

Record comments

CAB	Algal bloom
CHB	Sample held beyond specified holding time
CIP	Ice present in sample vicinity
CIF	Flotsam present in sample vicinity
CLE	Sample collected later/earlier than scheduled
CRE	Significant rain event

CSM	See metadata
CUS	Lab analysis from unpreserved sample

Cloud cover

CCL	clear (0-10%)
CSP	scattered to partly cloudy (10-50%)
CPB	partly to broken (50-90%)
COC	overcast (>90%)
CFY	foggy
CHY	hazy
CCC	cloud (no percentage)

Precipitation

PNP	none
PDR	drizzle
PLR	light rain
PHR	heavy rain
PSQ	squally
PFQ	frozen precipitation (sleet/snow/freezing rain)
PSR	mixed rain and snow

Tide stage

TSE	ebb tide
TSF	flood tide
TSH	high tide
TSL	low tide

Wave height

WH0	0 to <0.1 meters
WH1	0.1 to 0.3 meters
WH2	0.3 to 0.6 meters
WH3	0.6 to > 1.0 meters
WH4	1.0 to 1.3 meters
WH5	1.3 or greater meters

Wind direction

N	from the north
NNE	from the north northeast
NE	from the northeast
ENE	from the east northeast
E	from the east
ESE	from the east southeast
SE	from the southeast
SSE	from the south southeast
S	from the south
SSW	from the south southwest
SW	from the southwest

WSW	from the west southwest
W	from the west
WNW	from the west northwest
NW	from the northwest
NNW	from the north northwest

Wind speed

WS0	0 to 1 knot
WS1	> 1 to 10 knots
WS2	> 10 to 20 knots
WS3	> 20 to 30 knots
WS4	> 30 to 40 knots
WS5	> 40 knots

17) Other remarks/notes

Data may be missing due to problems with sample collection or processing. Laboratories in the NERRS System submit data that are censored at a lower detection rate limit, called the Method Detection Limit or MDL. MDLs for specific parameters are listed in the Laboratory Methods and Detection Limits Section (Section II, Part 12) of this document. Concentrations that are less than this limit are censored with the use of a QAQC flag and code, and the reported value is the method detection limit itself rather than a measured value. For example, if the measured concentration of NO23F was 0.0005 mg/l as N (MDL=0.0008), the reported value would be 0.0008 and would be flagged as out of sensor range low (-4) and coded SBL. In addition, if any of the components used to calculate a variable are below the MDL, the calculated variable is removed and flagged/coded -4 SCB. If a calculated value is negative, it is rejected and all measured components are marked suspect. If additional information on MDL's or missing, suspect, or rejected data is needed, contact the Research Coordinator at the Reserve submitting the data.

Hold Time Table

Station Code	Date Collected	PO4F	TP	NH4	NO2	NO23	TKN	CHLA	PHEA	TSS
rkbmbnut	1/4/2017 8:43	1/6/2017 14:58	1/12/201 7 13:29	1/10/201 7 13:50	1/6/2017 16:08	1/12/201 7 9:33	1/10/201 7 15:47	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkbmbnut	1/4/2017 8:49	1/6/2017 15:07	1/12/201 7 13:30	1/10/201 7 13:51	1/6/2017 16:17	1/12/201 7 9:46	1/10/201 7 15:49	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkbpbnut	1/4/2017 9:51	1/6/2017 15:08	1/12/201 7 13:31	1/10/201 7 14:00	1/6/2017 16:19	1/12/201 7 9:49	1/10/201 7 15:26	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkbpbnut	1/4/2017 9:57	1/6/2017 15:09	1/12/201 7 13:18	1/10/201 7 14:02	1/6/2017 16:20	1/12/201 7 9:51	1/10/201 7 15:50	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkbfunut	1/4/2017 10:20	1/6/2017 15:09	1/12/201 7 13:32	1/11/201 7 15:01	1/6/2017 16:22	1/12/201 7 9:54	1/10/201 7 15:52	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkbfunut	1/4/2017 10:26	1/6/2017 15:10	1/12/201 7 13:33	1/11/201 7 15:04	1/6/2017 16:23	1/12/201 7 9:56	1/10/201 7 15:53	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkbfbnut	1/4/2017 10:48	1/6/2017 15:11	1/12/201 7 13:34	1/10/201 7 14:20	1/6/2017 16:25	1/12/201 7 10:09	1/10/201 7 15:55	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkbfbnut	1/4/2017 10:54	1/6/2017 15:16	1/17/201 7 11:30	1/10/201 7 14:21	1/6/2017 16:27	1/12/201 7 10:12	1/10/201 7 15:56	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkblhnut	1/4/2017 12:54	1/6/2017 15:17	1/17/201 7 11:31	1/10/201 7 15:38	1/6/2017 16:28	1/12/201 7 10:14	1/10/201 7 15:57	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkblhnut	1/4/2017 12:59	1/6/2017 15:18	1/17/201 7 11:32	1/10/201 7 15:40	1/6/2017 16:36	1/12/201 7 10:17	1/10/201 7 15:59	1/12/201 7 13:15	1/12/201 7 13:15	1/10/201 7 15:36
rkblhnut	1/11/201 7 7:00	1/12/201 7 14:52		1/13/201 7 15:03	1/12/201 7 11:29	1/20/201 7 10:06		1/23/201 7 8:00	1/23/201 7 8:00	
rkblhnut	1/11/201 7 9:30	1/12/201 7 14:58		1/13/201 7 16:34	1/12/201 7 11:32	1/20/201 7 10:07		1/23/201 7 8:00	1/23/201 7 8:00	
rkblhnut	1/11/201 7 12:00	1/12/201 7 15:08		1/13/201 7 15:14	1/12/201 7 11:33	1/20/201 7 10:08		1/23/201 7 8:00	1/23/201 7 8:00	
rkblhnut	1/11/201 7 14:30	1/12/201 7 15:08		1/13/201 7 16:35	1/12/201 7 11:34	1/20/201 7 10:09		1/23/201 7 8:00	1/23/201 7 8:00	
rkblhnut	1/11/201 7 17:00	1/13/201 7 15:23		1/13/201 7 16:11	1/13/201 7 12:38	1/20/201 7 10:24		1/24/201 7 7:15	1/24/201 7 7:15	
rkblhnut	1/11/201 7 19:30	1/13/201 7 14:48		1/13/201 7 16:13	1/13/201 7 12:41	1/20/201 7 10:25		1/24/201 7 7:15	1/24/201 7 7:15	
rkblhnut	1/11/201 7 22:00	1/13/201 7 15:24		1/13/201 7 16:14	1/13/201 7 12:42	1/20/201 7 10:26		1/24/201 7 7:15	1/24/201 7 7:15	
rkblhnut	1/12/201 7 0:30	1/13/201 7 15:25		1/13/201 7 16:16	1/13/201 7 12:43	1/20/201 7 10:27		1/24/201 7 7:15	1/24/201 7 7:15	
rkblhnut	1/12/201 7 3:00	1/13/201 7 15:26		1/13/201 7 16:17	1/13/201 7 12:46	1/20/201 7 10:28		1/24/201 7 7:15	1/24/201 7 7:15	
rkblhnut	1/12/201 7 5:30	1/13/201 7 15:27		1/13/201 7 16:19	1/13/201 7 12:47	2/2/2017 13:49		1/24/201 7 7:15	1/24/201 7 7:15	
rkblhnut	1/12/201 7 8:00	1/13/201 7 15:28		1/13/201 7 16:20	1/13/201 7 12:48	2/2/2017 13:55		1/24/201 7 7:15	1/24/201 7 7:15	
rkblhnut	2/7/2017 8:08	2/8/2017 16:14	2/15/201 7 10:31	2/10/201 7 14:22	2/8/2017 15:04	2/16/201 7 10:15	2/13/201 7 12:29	2/13/201 7 8:50	2/13/201 7 8:50	2/10/201 7 15:45
rkblhnut	2/7/2017 8:13	2/8/2017 16:15	2/15/201 7 10:32	2/10/201 7 14:23	2/8/2017 15:06	2/16/201 7 10:17	2/13/201 7 12:30	2/13/201 7 8:50	2/13/201 7 8:50	2/10/201 7 15:45
rkbfbnut	2/7/2017 10:17	2/8/2017 16:15	2/15/201 7 10:40	2/10/201 7 14:25	2/8/2017 15:00	2/16/201 7 10:18	2/13/201 7 11:57	2/13/201 7 8:50	2/13/201 7 8:50	2/10/201 7 15:45
rkbfbnut	2/7/2017 10:24	2/8/2017 16:16	2/15/201 7 10:41	2/16/201 7 12:56	2/8/2017 15:08	2/16/201 7 10:19	2/13/201 7 12:32	2/13/201 7 8:50	2/13/201 7 8:50	2/10/201 7 15:45
rkbfunut	2/7/2017 11:30	2/8/2017 16:17	2/15/201 7 10:42	2/10/201 7 14:28	2/8/2017 15:12	2/16/201 7 10:20	2/13/201 7 12:33	2/13/201 7 8:50	2/13/201 7 8:50	2/10/201 7 15:45
rkbfunut	2/7/2017 11:43	2/8/2017 16:18	2/15/201 7 10:43	2/10/201 7 14:29	2/8/2017 15:14	2/16/201 7 10:21	2/13/201 7 12:35	2/13/201 7 8:50	2/13/201 7 8:50	2/10/201 7 15:45
rkbpbnut	2/7/2017 12:02	2/8/2017 16:19	2/15/201 7 10:44	2/10/201 7 16:06	2/8/2017 15:21	2/16/201 7 10:35	2/13/201 7 14:58	2/14/201 7 7:45	2/14/201 7 7:45	2/10/201 7 15:45
rkbpbnut	2/7/2017 12:07	2/8/2017 16:24	2/15/201 7 10:30	2/10/201 7 16:21	2/8/2017 15:15	2/16/201 7 10:36	2/13/201 7 14:43	2/14/201 7 7:45	2/14/201 7 7:45	2/10/201 7 15:45
rkbmbnut	2/7/2017 12:51	2/8/2017 16:25	2/15/201 7 10:45	2/10/201 7 13:47	2/8/2017 15:16	2/16/201 7 10:37	2/13/201 7 15:00	2/14/201 7 7:45	2/14/201 7 7:45	2/10/201 7 15:45
rkbmbnut	2/7/2017 12:56	2/8/2017 16:26	2/15/201 7 10:48	2/10/201 7 13:48	2/8/2017 15:17	2/16/201 7 10:38	2/13/201 7 15:01	2/14/201 7 7:45	2/14/201 7 7:45	2/10/201 7 15:45
rkblhnut	2/8/2017 6:00	2/9/2017 14:06		2/10/201 7 14:02	2/9/2017 13:57	2/16/201 7 11:02		2/14/201 7 9:30	2/14/201 7 9:30	
rkblhnut	2/8/2017 8:30	2/9/2017 14:29		2/10/201 7 14:03	2/9/2017 14:01	2/16/201 7 11:04		2/14/201 7 9:30	2/14/201 7 9:30	
rkblhnut	2/8/2017 11:00	2/9/2017 14:30		2/10/201 7 14:05	2/9/2017 14:03	2/16/201 7 11:05		2/14/201 7 9:30	2/14/201 7 9:30	

rkblhnut	2/8/2017 13:30	2/9/2017 14:30		2/15/2017 13:36	2/9/2017 14:05	2/16/2017 11:06		2/14/2017 14:45	2/14/2017 14:45	
rkblhnut	2/8/2017 16:00	2/9/2017 14:31		2/15/2017 13:38	2/9/2017 14:09	2/16/2017 11:07		2/14/2017 14:45	2/14/2017 14:45	
rkblhnut	2/8/2017 18:30	2/10/2017 17:10		2/17/2017 12:31	2/10/2017 14:35	2/17/2017 8:15		2/20/2017 7:40	2/20/2017 7:40	
rkblhnut	2/8/2017 21:00	2/10/2017 16:51		2/17/2017 12:33	2/10/2017 14:38	2/17/2017 8:16		2/20/2017 7:40	2/20/2017 7:40	
rkblhnut	2/8/2017 23:30	2/10/2017 17:15		2/17/2017 12:40	2/10/2017 14:39	2/17/2017 8:17		2/20/2017 7:40	2/20/2017 7:40	
rkblhnut	2/9/2017 2:00	2/10/2017 17:16		2/16/2017 13:07	2/10/2017 14:40	2/17/2017 8:30		2/20/2017 7:40	2/20/2017 7:40	
rkblhnut	2/9/2017 4:30	2/10/2017 17:17		2/16/2017 13:08	2/10/2017 14:43	2/17/2017 8:32		2/20/2017 7:40	2/20/2017 7:40	
rkblhnut	2/9/2017 7:00	2/10/2017 17:18		2/16/2017 13:10	2/10/2017 14:44	2/17/2017 8:33		2/20/2017 7:40	2/20/2017 7:40	
rkblhnut	3/9/2017 8:26	3/10/2017 18:50	3/17/2017 14:11	3/13/2017 17:27	3/10/2017 13:58	3/17/2017 9:57	3/17/2017 18:32	3/21/2017 9:50	3/21/2017 9:50	3/10/2017 18:21
rkblhnut	3/9/2017 8:32	3/10/2017 18:52	3/17/2017 14:12	3/13/2017 17:38	3/10/2017 14:03	3/17/2017 9:58	3/17/2017 18:34	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkbfbnut	3/9/2017 11:05	3/10/2017 18:53	3/17/2017 14:13	3/13/2017 17:39	3/10/2017 14:05	3/17/2017 10:12	3/24/2017 10:43	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkbfbnut	3/9/2017 11:10	3/10/2017 18:58	3/17/2017 14:14	3/13/2017 17:41	3/10/2017 14:06	3/17/2017 10:13	3/24/2017 10:46	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkbfunut	3/9/2017 11:46	3/10/2017 18:59	3/17/2017 14:07	3/13/2017 17:42	3/10/2017 14:11	3/17/2017 10:14	3/17/2017 18:38	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkbfunut	3/9/2017 11:54	3/10/2017 19:00	3/17/2017 14:15	3/13/2017 17:44	3/10/2017 14:13	3/17/2017 10:15	3/17/2017 18:39	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkbpbnut	3/9/2017 12:34	3/10/2017 19:01	3/17/2017 14:23	3/13/2017 17:45	3/10/2017 14:14	3/17/2017 10:17	3/20/2017 7:07	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkbpbnut	3/9/2017 12:39	3/10/2017 19:01	3/17/2017 14:25	3/13/2017 17:47	3/10/2017 14:15	3/17/2017 10:18	3/20/2017 7:08	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkbmbnut	3/9/2017 13:37	3/10/2017 19:02	3/17/2017 14:26	3/13/2017 17:54	3/10/2017 14:16	3/17/2017 10:19	3/20/2017 7:10	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkbmbnut	3/9/2017 13:44	3/10/2017 19:03	3/17/2017 14:27	3/13/2017 17:56	3/10/2017 14:19	3/17/2017 10:20	3/17/2017 17:59	3/21/2017 11:05	3/21/2017 11:05	3/10/2017 18:21
rkblhnut	3/14/2017 9:00	3/15/2017 10:57		3/15/2017 14:13	3/15/2017 15:56	3/17/2017 11:55		3/23/2017 9:05	3/23/2017 9:05	
rkblhnut	3/14/2017 11:30	3/15/2017 10:59		3/15/2017 14:15	3/15/2017 15:59	3/17/2017 11:56		3/23/2017 9:05	3/23/2017 9:05	
rkblhnut	3/14/2017 14:00	3/15/2017 11:00		3/15/2017 14:12	3/15/2017 16:00	3/17/2017 11:57		3/23/2017 9:05	3/23/2017 9:05	
rkblhnut	3/14/2017 16:30	3/16/2017 14:40		3/21/2017 14:19	3/16/2017 12:39	3/23/2017 9:57		3/23/2017 13:35	3/23/2017 13:35	
rkblhnut	3/14/2017 19:00	3/16/2017 14:41		3/21/2017 14:21	3/16/2017 12:40	3/23/2017 9:58		3/23/2017 13:35	3/23/2017 13:35	
rkblhnut	3/14/2017 21:30	3/16/2017 13:59		3/17/2017 13:03	3/16/2017 12:29	3/23/2017 9:38		3/23/2017 13:35	3/23/2017 13:35	
rkblhnut	3/15/2017 0:00	3/16/2017 14:35		3/17/2017 13:04	3/16/2017 12:32	3/23/2017 9:39		3/23/2017 13:35	3/23/2017 13:35	
rkblhnut	3/15/2017 2:30	3/16/2017 14:36		3/17/2017 13:06	3/16/2017 12:33	3/23/2017 9:41		3/23/2017 13:35	3/23/2017 13:35	
rkblhnut	3/15/2017 5:00	3/16/2017 14:37		3/17/2017 13:07	3/16/2017 12:34	3/23/2017 9:54		3/23/2017 13:35	3/23/2017 13:35	
rkblhnut	3/15/2017 7:30	3/16/2017 14:38		3/17/2017 13:09	3/16/2017 12:37	3/23/2017 9:55		3/23/2017 13:35	3/23/2017 13:35	
rkblhnut	3/15/2017 10:00	3/16/2017 14:39		3/21/2017 14:15	3/16/2017 12:38	3/23/2017 9:56		3/23/2017 13:35	3/23/2017 13:35	
rkblhnut	4/5/2017 7:23	4/6/2017 14:25	4/10/2017 14:20	4/6/2017 15:49	4/6/2017 15:48	4/12/2017 8:58	4/13/2017 11:16	4/10/2017 7:25	4/10/2017 7:25	4/10/2017 14:45
rkblhnut	4/5/2017 7:28	4/6/2017 14:39	4/10/2017 14:19	4/6/2017 15:53	4/6/2017 15:50	4/12/2017 8:59	4/17/2017 11:27	4/10/2017 7:25	4/10/2017 7:25	4/10/2017 14:45
rkbmbnut	4/5/2017 8:44	4/6/2017 14:40	4/10/2017 14:21	4/6/2017 16:01	4/6/2017 15:50	4/12/2017 9:01	4/11/2017 13:32	4/10/2017 7:25	4/10/2017 7:25	4/10/2017 14:45

rkbmbnut	4/5/2017 8:51	4/6/2017 14:45	4/10/201 7 14:22	4/6/2017 16:02	4/6/2017 15:51	4/12/201 7 11:01	4/11/201 7 13:36	4/10/201 7 7:25	4/10/201 7 7:25	4/10/201 7 14:45
rkbpbnut	4/5/2017 9:24	4/6/2017 14:46	4/10/201 7 14:23	4/6/2017 16:04	4/6/2017 15:52	4/12/201 7 9:03	4/11/201 7 13:37	4/10/201 7 7:25	4/10/201 7 7:25	4/10/201 7 14:45
rkbpbnut	4/5/2017 9:31	4/6/2017 14:47	4/10/201 7 14:24	4/6/2017 16:05	4/6/2017 15:53	4/12/201 7 9:04	4/11/201 7 13:39	4/10/201 7 7:25	4/10/201 7 7:25	4/10/201 7 14:45
rkbfunut	4/5/2017 9:56	4/6/2017 14:48	4/10/201 7 14:32	4/6/2017 16:07	4/6/2017 15:53	4/12/201 7 9:05	4/11/201 7 13:25	4/10/201 7 7:25	4/10/201 7 7:25	4/10/201 7 14:45
rkbfunut	4/5/2017 10:03	4/6/2017 14:48	4/10/201 7 14:32	4/6/2017 16:08	4/6/2017 15:54	4/12/201 7 9:07	4/11/201 7 13:40	4/10/201 7 7:25	4/10/201 7 7:25	4/10/201 7 14:45
rkbfbnut	4/5/2017 10:26	4/6/2017 14:49	4/10/201 7 14:33	4/6/2017 16:10	4/6/2017 15:54	4/12/201 7 9:20	4/13/201 7 11:25	4/10/201 7 7:25	4/10/201 7 7:25	4/10/201 7 14:45
rkbfbnut	4/5/2017 10:34	4/6/2017 14:50	4/13/201 7 13:53	4/6/2017 16:11	4/6/2017 18:15	4/12/201 7 9:21	4/13/201 7 11:26	4/10/201 7 7:25	4/10/201 7 7:25	4/10/201 7 14:45
rkblhnut	4/11/201 7 8:00	4/12/201 7 14:07		4/12/201 7 13:28	4/12/201 7 13:03	4/18/201 7 9:39		4/17/201 7 8:05	4/17/201 7 8:05	
rkblhnut	4/11/201 7 10:30	4/12/201 7 14:07		4/12/201 7 13:30	4/12/201 7 13:05	4/18/201 7 9:40		4/17/201 7 8:05	4/17/201 7 8:05	
rkblhnut	4/11/201 7 13:00	4/12/201 7 14:08		4/12/201 7 13:31	4/12/201 7 13:05	4/18/201 7 9:41		4/17/201 7 8:05	4/17/201 7 8:05	
rkblhnut	4/11/201 7 15:30	4/13/201 7 13:15		4/13/201 7 16:47	4/13/201 7 13:19	4/18/201 7 10:26		4/18/201 7 8:00	4/18/201 7 8:00	
rkblhnut	4/11/201 7 18:00	4/13/201 7 13:16		4/13/201 7 16:52	4/13/201 7 13:22	4/18/201 7 10:27		4/18/201 7 8:00	4/18/201 7 8:00	
rkblhnut	4/11/201 7 20:30	4/13/201 7 13:21		4/13/201 7 16:53	4/13/201 7 13:23	4/18/201 7 10:28		4/18/201 7 8:00	4/18/201 7 8:00	
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rkblhnut	4/12/201 7 4:00	4/13/201 7 13:24		4/13/201 7 16:58	4/13/201 7 13:26	4/18/201 7 10:32		4/18/201 7 8:00	4/18/201 7 8:00	
rkblhnut	4/12/201 7 6:30	4/13/201 7 14:05		4/13/201 7 17:05	4/13/201 7 13:27	4/18/201 7 10:33		4/18/201 7 8:00	4/18/201 7 8:00	
rkblhnut	4/12/201 7 9:00	4/13/201 7 14:12		4/13/201 7 17:07	4/13/201 7 13:28	4/18/201 7 10:34		4/18/201 7 8:00	4/18/201 7 8:00	
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rkblhnut	5/2/2017 7:36	5/3/2017 14:16	5/8/2017 11:54	5/3/2017 17:06	5/3/2017 14:31	5/8/2017 9:41	5/9/2017 10:38	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkbmbnut	5/2/2017 8:57	5/4/2017 17:11	5/8/2017 11:55	5/3/2017 17:07	5/3/2017 14:32	5/8/2017 9:42	5/9/2017 10:39	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkbmbnut	5/2/2017 9:03	5/3/2017 14:50	5/8/2017 11:56	5/3/2017 17:09	5/3/2017 14:34	5/8/2017 9:44	5/9/2017 10:40	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkbpbnut	5/2/2017 9:40	5/4/2017 17:00	5/8/2017 11:57	5/3/2017 17:16	5/3/2017 14:36	5/8/2017 9:45	5/9/2017 10:42	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkbpbnut	5/2/2017 9:45	5/3/2017 14:52	5/8/2017 11:58	5/3/2017 17:18	5/3/2017 14:37	5/8/2017 9:46	5/9/2017 10:43	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkbfunut	5/2/2017 10:11	5/3/2017 14:24	5/8/2017 12:56	5/3/2017 17:19	5/3/2017 14:38	5/8/2017 12:35	5/9/2017 10:45	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkbfunut	5/2/2017 10:16	5/4/2017 17:19	5/8/2017 12:57	5/3/2017 17:21	5/3/2017 14:39	5/8/2017 12:36	5/10/201 7 9:52	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkbfbnut	5/2/2017 10:44	5/3/2017 14:54	5/8/2017 12:58	5/3/2017 17:22	5/3/2017 14:41	5/8/2017 10:03	5/10/201 7 10:27	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkbfbnut	5/2/2017 10:49	5/3/2017 14:55	5/8/2017 12:59	5/3/2017 17:24	5/3/2017 14:47	5/8/2017 12:39	5/10/201 7 10:29	5/9/2017 7:35	5/9/2017 7:35	5/5/2017 15:41
rkblhnut	5/10/17 7:30	5/11/201 7 15:52		5/11/201 7 14:15	5/11/201 7 14:20	5/18/201 7 9:03		5/19/201 7 7:40	5/19/201 7 7:40	
rkblhnut	5/10/17 10:00	5/11/201 7 15:53		5/11/201 7 14:16	5/11/201 7 14:21	5/22/201 7 10:17		5/19/201 7 8:35	5/19/201 7 8:35	
rkblhnut	5/10/17 12:30	5/11/201 7 16:00		5/11/201 7 14:18	5/11/201 7 14:22	5/22/201 7 10:18		5/19/201 7 8:35	5/19/201 7 8:35	
rkblhnut	5/10/17 15:00	5/12/201 7 13:20		5/15/201 7 13:29	5/12/201 7 13:03	5/18/201 7 12:34		5/22/201 7 7:35	5/22/201 7 7:35	

rkblhnut	5/10/17 17:30	5/12/201 7 13:21		5/15/201 7 13:41	5/12/201 7 13:05	5/18/201 7 12:00		5/22/201 7 7:35	5/22/201 7 7:35	
rkblhnut	5/10/17 20:00	5/12/201 7 13:22		5/15/201 7 13:42	5/12/201 7 13:05	5/18/201 7 12:30		5/22/201 7 7:35	5/22/201 7 7:35	
rkblhnut	5/10/17 22:30	5/12/201 7 13:23		5/15/201 7 13:44	5/12/201 7 13:06	5/25/201 7 8:11		5/22/201 7 7:35	5/22/201 7 7:35	
rkblhnut	5/11/17 1:00	5/12/201 7 13:23		5/15/201 7 13:45	5/12/201 7 13:06	5/18/201 7 9:46		5/22/201 7 7:35	5/22/201 7 7:35	
rkblhnut	5/11/17 3:30	5/12/201 7 13:24		5/15/201 7 13:47	5/12/201 7 13:07	5/18/201 7 9:47		5/22/201 7 7:35	5/22/201 7 7:35	
rkblhnut	5/11/17 6:00	5/12/201 7 13:25		5/15/201 7 13:48	5/12/201 7 13:07	5/18/201 7 9:48		5/22/201 7 7:35	5/22/201 7 7:35	
rkblhnut	5/11/17 8:30	5/12/201 7 12:56		5/15/201 7 13:50	5/12/201 7 13:08	5/18/201 7 9:49		5/22/201 7 7:35	5/22/201 7 7:35	
rkbfbnut	6/8/2017 7:57	6/9/2017 15:25	6/13/201 7 11:59	6/9/2017 11:43	6/9/2017 15:02	6/12/201 7 9:37	6/15/201 7 14:42	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkbfbnut	6/8/2017 8:03	6/9/2017 15:26	6/13/201 7 12:00	6/9/2017 11:47	6/9/2017 15:07	6/12/201 7 9:38	6/15/201 7 14:43	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkbfunut	6/8/2017 8:25	6/9/2017 15:34	6/13/201 7 12:01	6/9/2017 11:49	6/9/2017 15:08	6/12/201 7 9:51	6/15/201 7 14:45	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkbfunut	6/8/2017 8:32	6/9/2017 15:35	6/13/201 7 12:11	6/9/2017 11:50	6/9/2017 15:10	6/12/201 7 9:52	6/15/201 7 14:47	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkbpbnut	6/8/2017 8:51	6/9/2017 15:36	6/13/201 7 12:12	6/9/2017 11:52	6/9/2017 15:11	6/12/201 7 9:54	6/15/201 7 14:48	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkbpbnut	6/8/2017 8:56	6/9/2017 15:37	6/13/201 7 12:13	6/9/2017 11:53	6/9/2017 15:13	6/12/201 7 9:55	6/15/201 7 14:50	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkbmbnut	6/8/2017 9:28	6/9/2017 15:38	6/13/201 7 12:14	6/9/2017 11:55	6/9/2017 15:14	6/12/201 7 9:56	6/15/201 7 14:51	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkbmbnut	6/8/2017 9:34	6/9/2017 15:38	6/13/201 7 12:15	6/9/2017 12:02	6/9/2017 15:15	6/12/201 7 9:57	6/15/201 7 14:53	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkblhnut	6/8/2017 11:02	6/9/2017 15:07	6/13/201 7 12:15	6/9/2017 12:04	6/9/2017 15:16	6/12/201 7 9:58	6/15/201 7 14:19	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkblhnut	6/8/2017 11:08	6/9/2017 15:43	6/13/201 7 12:10	6/9/2017 12:05	6/9/2017 15:22	6/12/201 7 10:00	6/15/201 7 14:54	6/13/201 7 7:35	6/13/201 7 7:35	6/14/201 7 15:38
rkblhnut	6/14/201 7 10:30	6/15/201 7 16:00		6/16/201 7 13:10	6/15/201 7 12:30	6/23/201 7 8:24		6/19/201 7 13:50	6/19/201 7 13:50	
rkblhnut	6/14/201 7 13:00	6/15/201 7 16:01		6/16/201 7 13:20	6/15/201 7 12:31	6/23/201 7 8:26		6/19/201 7 13:50	6/19/201 7 13:50	
rkblhnut	6/14/201 7 15:30	6/15/201 7 16:02		6/16/201 7 13:22	6/15/201 7 12:29	6/23/201 7 8:27		6/19/201 7 13:50	6/19/201 7 13:50	
rkblhnut	6/14/201 7 18:00	6/16/201 7 16:29		6/20/201 7 15:09	6/16/201 7 14:01	6/20/201 7 9:35		6/21/201 7 8:15	6/21/201 7 8:15	
rkblhnut	6/14/201 7 20:30	6/16/201 7 16:30		6/20/201 7 15:10	6/16/201 7 14:04	6/20/201 7 9:36		6/21/201 7 8:15	6/21/201 7 8:15	
rkblhnut	6/14/201 7 23:00	6/16/201 7 16:31		6/20/201 7 15:06	6/16/201 7 14:05	6/20/201 7 9:37		6/21/201 7 8:15	6/21/201 7 8:15	
rkblhnut	6/15/201 7 1:30	6/16/201 7 16:32		6/20/201 7 14:52	6/16/201 7 14:06	6/20/201 7 9:38		6/21/201 7 8:15	6/21/201 7 8:15	
rkblhnut	6/15/201 7 4:00	6/16/201 7 16:32		6/20/201 7 15:00	6/16/201 7 14:07	6/20/201 7 9:39		6/21/201 7 8:15	6/21/201 7 8:15	
rkblhnut	6/15/201 7 6:30	6/16/201 7 16:37		6/20/201 7 15:01	6/16/201 7 14:08	6/20/201 7 9:41		6/21/201 7 8:15	6/21/201 7 8:15	
rkblhnut	6/15/201 7 9:00	6/16/201 7 16:38		6/20/201 7 15:03	6/16/201 7 14:09	6/20/201 7 9:42		6/21/201 7 8:15	6/21/201 7 8:15	
rkblhnut	6/15/201 7 11:30	6/16/201 7 16:39		6/20/201 7 15:04	6/16/201 7 14:10	6/20/201 7 9:43		6/21/201 7 8:15	6/21/201 7 8:15	
rkblhnut	7/5/2017 7:08	7/6/2017 17:05	7/10/201 7 12:57	7/7/2017 12:07	7/6/2017 14:35	7/11/201 7 9:10	7/12/201 7 14:04	7/10/201 7 15:20	7/10/201 7 15:20	7/7/2017 16:10
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rkbmbnut	7/5/2017 9:15	7/6/2017 15:17	7/11/201 7 11:15	7/7/2017 12:12	7/6/2017 14:43	7/11/201 7 9:13	7/12/201 7 14:12	7/10/201 7 15:20	7/10/201 7 15:20	7/7/2017 16:10

rkbpbnut	7/5/2017 9:48	7/6/2017 15:18	7/11/201 7 11:16	7/7/2017 12:13	7/6/2017 14:45	7/11/201 7 9:30	7/12/201 7 14:13	7/10/201 7 15:20	7/10/201 7 15:20	7/7/2017 16:10
rkbpbnut	7/5/2017 9:53	7/6/2017 15:18	7/11/201 7 11:17	7/7/2017 12:15	7/6/2017 14:46	7/11/201 7 9:31	7/13/201 7 9:07	7/10/201 7 15:20	7/10/201 7 15:20	7/7/2017 16:10
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rkbfbnut	7/5/2017 10:46	7/6/2017 15:20	7/11/201 7 11:20	7/7/2017 14:09	7/6/2017 14:49	7/11/201 7 9:35	7/13/201 7 9:12	7/10/201 7 15:20	7/10/201 7 15:20	7/7/2017 16:10
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rkblhnut	7/11/201 7 9:00	7/12/201 7 14:16		7/18/201 7 13:42	7/12/201 7 14:23	7/20/201 7 9:27		7/17/201 7 9:30	7/17/201 7 9:30	
rkblhnut	7/11/201 7 11:30	7/12/201 7 14:21		7/18/201 7 15:00	7/12/201 7 14:20	7/20/201 7 9:28		7/17/201 7 9:30	7/17/201 7 9:30	
rkblhnut	7/11/201 7 14:00	7/12/201 7 14:22		7/18/201 7 13:48	7/12/201 7 14:24	7/20/201 7 9:29		7/17/201 7 9:30	7/17/201 7 9:30	
rkblhnut	7/11/201 7 16:30	7/14/201 7 15:00		7/18/201 7 12:54	7/14/201 7 11:43	7/20/201 7 9:49		7/19/201 7 8:25	7/19/201 7 8:25	
rkblhnut	7/11/201 7 19:00	7/14/201 7 14:49		7/18/201 7 12:56	7/14/201 7 11:46	7/20/201 7 9:50		7/19/201 7 8:25	7/19/201 7 8:25	
rkblhnut	7/11/201 7 21:30	7/14/201 7 15:01		7/18/201 7 13:03	7/14/201 7 11:47	7/20/201 7 9:52		7/19/201 7 8:25	7/19/201 7 8:25	
rkblhnut	7/12/201 7 0:00	7/14/201 7 15:02		7/18/201 7 13:05	7/14/201 7 11:48	7/20/201 7 9:53		7/19/201 7 8:25	7/19/201 7 8:25	
rkblhnut	7/12/201 7 2:30	7/13/201 7 14:40		7/18/201 7 12:48	7/13/201 7 12:01	7/20/201 7 9:30		7/18/201 7 9:45	7/18/201 7 9:45	
rkblhnut	7/12/201 7 5:00	7/13/201 7 14:41		7/18/201 7 12:50	7/13/201 7 12:04	7/20/201 7 9:31		7/18/201 7 9:45	7/18/201 7 9:45	
rkblhnut	7/12/201 7 7:30	7/13/17 14:41		7/18/17 12:51	7/13/17 12:05	7/20/17 9:33		7/18/17 9:45	7/18/17 9:45	
rkblhnut	7/12/201 7 10:00	7/13/17 14:47		7/18/17 12:53	7/13/17 12:06	7/20/17 9:34		7/18/17 9:45	7/18/17 9:45	
rkbpbnut	8/8/2017 7:22	8/9/17 14:56	8/14/17 13:24	8/11/17 11:57	8/9/17 12:40	8/14/17 8:08	8/14/17 18:32	8/14/17 8:00	8/14/17 8:00	8/10/17 15:41
rkbpbnut	8/8/2017 7:28	8/9/17 14:18	8/14/17 13:25	8/11/17 11:59	8/9/17 12:44	8/14/17 8:10	8/14/17 18:33	8/14/17 8:00	8/14/17 8:00	8/10/17 15:41
rkbfunut	8/8/2017 7:51	8/9/17 14:43	8/15/17 12:54	8/11/17 12:30	8/9/17 12:46	8/15/17 9:05	8/15/17 11:18	8/14/17 8:00	8/14/17 8:00	8/10/17 15:41
rkbfunut	8/8/2017 7:58	8/9/17 14:44	8/15/17 12:55	8/11/17 12:32	8/9/17 12:47	8/15/17 9:06	8/15/17 11:19	8/14/17 8:00	8/14/17 8:00	8/10/17 15:41
rkbfbnut	8/8/2017 8:25	8/9/17 14:57	8/14/17 13:26	8/11/17 12:06	8/9/17 12:49	8/14/17 8:11	8/14/17 18:35	8/14/17 8:00	8/14/17 8:00	8/10/17 15:41
rkbfbnut	8/8/2017 8:31	8/9/17 14:58	8/14/17 13:27	8/11/17 12:08	8/9/17 12:51	8/14/17 8:12	8/14/17 18:36	8/14/17 8:00	8/14/17 8:00	8/10/17 15:41
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rkblhnut	8/8/2017 11:16	8/9/17 14:26	8/14/17 13:30	8/11/17 12:12	8/9/17 12:54	8/14/17 8:27	8/15/17 14:41	8/14/17 8:00	8/14/17 8:00	8/10/17 15:41
rkblhnut	8/8/2017 11:22	8/9/17 15:05	8/14/17 13:41	8/11/17 12:14	8/9/17 13:00	8/14/17 8:29	8/15/17 14:49	8/14/17 8:00	8/14/17 8:00	8/10/17 15:41
rkblhnut	8/16/201 7 2:30	8/17/17 14:20		8/18/17 13:27	8/17/17 12:42	8/23/17 8:47		8/23/17 7:40	8/23/17 7:40	
rkblhnut	8/16/201 7 5:00	8/17/17 14:21		8/18/17 13:29	8/17/17 12:43	8/23/17 8:48		8/23/17 7:40	8/23/17 7:40	
rkblhnut	8/16/201 7 7:30	8/17/17 13:55		8/18/17 13:36	8/17/17 12:44	8/23/17 8:49		8/23/17 7:40	8/23/17 7:40	
rkblhnut	8/16/201 7 10:00	8/17/17 14:22		8/18/17 13:38	8/17/17 12:44	8/23/17 8:50		8/23/17 7:40	8/23/17 7:40	
rkblhnut	8/16/201 7 12:30	8/18/17 12:26		8/23/17 13:31	8/18/17 12:17	8/23/17 9:12		8/23/17 14:25	8/23/17 14:25	

rkblhnut	8/16/2017 15:00	8/18/17 12:35		8/23/17 13:39	8/18/17 12:20	8/23/17 9:13		8/23/17 14:25	8/23/17 14:25	
rkblhnut	8/16/2017 17:30	8/18/17 12:36		8/23/17 13:40	8/18/17 12:21	8/23/17 9:14		8/23/17 14:25	8/23/17 14:25	
rkblhnut	8/16/2017 20:00	8/18/17 12:37		8/23/17 13:42	8/18/17 12:22	8/23/17 9:15		8/23/17 14:25	8/23/17 14:25	
rkblhnut	8/16/2017 22:30	8/18/17 12:33		8/23/17 13:43	8/18/17 12:23	8/23/17 9:17		8/23/17 14:25	8/23/17 14:25	
rkblhnut	8/17/2017 1:00	8/18/17 12:38		8/23/17 13:45	8/18/17 12:24	8/23/17 9:18		8/23/17 14:25	8/23/17 14:25	
rkblhnut	8/17/2017 3:30	8/18/17 12:39		8/23/17 13:46	8/18/17 12:25	8/23/17 9:19		8/23/17 14:25	8/23/17 14:25	
rkblhnut	9/19/17 8:32	9/20/17 14:53	9/22/17 11:57	9/22/17 13:35	9/20/17 13:05	9/25/17 10:01	9/27/17 8:52	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkblhnut	9/19/17 8:38	9/20/17 14:54	9/22/17 11:58	9/22/17 13:36	9/20/17 13:10	9/25/17 10:02	9/27/17 8:53	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkbmbnut	9/19/17 10:30	9/20/17 14:55	9/26/17 10:31	9/25/17 14:11	9/20/17 14:25	9/22/17 10:01	9/27/17 12:29	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkbmbnut	9/19/17 10:34	9/20/17 14:56	9/26/17 10:32	9/25/17 14:13	9/20/17 14:30	9/22/17 10:02	9/27/17 12:33	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkbpbnut	9/19/17 11:15	9/20/17 14:56	9/22/17 11:59	9/25/17 14:34	9/20/17 13:12	9/25/17 10:03	9/27/17 8:55	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkbpbnut	9/19/17 11:21	9/20/17 14:57	9/22/17 12:00	9/25/17 14:35	9/20/17 13:13	9/25/17 10:04	9/27/17 8:56	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkbfunut	9/19/17 11:48	9/20/17 14:58	9/26/17 10:33	9/25/17 14:14	9/20/17 14:31	9/22/17 10:03	9/27/17 12:35	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkbfunut	9/19/17 11:53	9/20/17 14:59	9/26/17 10:35	9/25/17 14:16	9/20/17 14:32	9/22/17 10:04	9/27/17 12:40	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkbfbnut	9/19/17 12:22	9/20/17 15:04	9/28/17 10:23	9/25/17 14:37	9/20/17 13:15	9/25/17 10:06	9/27/17 9:01	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkbfbnut	9/19/17 12:29	9/20/17 15:05	9/28/17 10:27	9/25/17 14:38	9/20/17 13:16	9/25/17 10:07	9/27/17 9:03	9/25/17 10:10	9/25/17 10:10	9/25/17 14:21
rkblhnut	9/20/17 10:00	9/21/17 19:24		9/25/17 14:28	9/21/17 13:29	10/2/17 9:10		9/26/17 14:35	9/26/17 14:35	
rkblhnut	9/20/17 12:30	9/21/17 19:17		9/25/17 14:40	9/21/17 13:32	10/2/17 9:11		9/26/17 14:35	9/26/17 14:35	
rkblhnut	9/20/17 15:00	9/21/17 19:25		9/25/17 14:47	9/21/17 13:33	10/2/17 9:12		9/26/17 14:35	9/26/17 14:35	
rkblhnut	9/20/17 17:30	9/22/17 15:23		9/25/17 14:50	9/22/17 13:14	10/2/17 9:27		9/27/17 13:45	9/27/17 13:45	
rkblhnut	9/20/17 20:00	9/22/17 15:30		9/26/17 16:05	9/22/17 13:17	10/2/17 9:28		9/27/17 13:45	9/27/17 13:45	
rkblhnut	9/20/17 22:30	9/22/17 15:43		9/26/17 16:15	9/22/17 13:18	10/2/17 9:29		9/27/17 13:45	9/27/17 13:45	
rkblhnut	9/21/17 1:00	9/22/17 15:44		9/26/17 16:17	9/22/17 13:19	10/2/17 9:30		9/27/17 13:45	9/27/17 13:45	
rkblhnut	9/21/17 3:30	9/22/17 15:45		9/26/17 16:18	9/22/17 13:22	10/2/17 9:31		9/27/17 13:45	9/27/17 13:45	
rkblhnut	9/21/17 6:00	9/22/17 15:28		9/26/17 16:20	9/22/17 13:24	10/2/17 9:32		9/27/17 13:45	9/27/17 13:45	
rkblhnut	9/21/17 8:30	9/22/17 15:29		9/26/17 16:21	9/22/17 13:25	10/2/17 9:34		9/27/17 13:45	9/27/17 13:45	
rkblhnut	9/21/17 11:00	9/22/17 15:17		9/26/17 16:23	9/22/17 13:26	10/2/17 9:35		9/27/17 13:45	9/27/17 13:45	
rkblhnut	10/4/2017 7:02	10/5/17 15:42	10/11/17 15:16	10/11/17 16:28	10/5/17 14:06	10/16/17 9:12	10/9/17 17:04	10/11/17 8:05	10/11/17 8:05	10/6/17 16:20
rkblhnut	10/4/2017 7:08	10/5/17 15:43	10/11/17 15:17	10/11/17 16:30	10/5/17 14:11	10/16/17 9:13	10/9/17 17:08	10/11/17 8:05	10/11/17 8:05	10/6/17 16:20
rkbfunut	10/4/2017 9:00	10/5/17 15:44	10/12/17 13:49	10/11/17 15:09	10/5/17 14:25	10/11/17 11:30	10/12/17 20:01	10/11/17 8:05	10/11/17 8:05	10/6/17 16:20
rkbfunut	10/4/2017 9:06	10/5/17 15:45	10/12/17 13:50	10/11/17 15:10	10/5/17 14:28	10/11/17 11:31	10/12/17 20:02	10/11/17 8:05	10/11/17 8:05	10/6/17 16:20
rkbfbnut	10/4/2017 9:36	10/5/17 15:46	10/12/17 13:46	10/11/17 16:19	10/5/17 14:13	10/16/17 9:15	10/12/17 20:04	10/11/17 8:05	10/11/17 8:05	10/6/17 16:20

rkbfbnut	10/4/2017 9:42	10/5/17 15:47	10/12/17 13:47	10/11/17 16:31	10/5/17 14:14	10/16/17 9:16	10/12/17 20:05	10/11/17 8:05	10/11/17 8:05	10/6/17 16:20
rkbpbnut	10/4/2017 10:21	10/5/17 15:02	10/11/17 11:22	10/13/17 12:42	10/5/17 14:16	10/16/17 9:17	10/12/17 20:07	10/12/17 12:50	10/12/17 12:50	10/6/17 16:20
rkbpbnut	10/4/2017 10:26	10/5/17 15:54	10/11/17 11:23	10/13/17 12:43	10/5/17 14:17	10/16/17 9:18	10/12/17 20:08	10/12/17 12:50	10/12/17 12:50	10/6/17 16:20
rkbmbnut	10/4/2017 11:09	10/5/17 15:55	10/11/17 11:24	10/13/17 12:51	10/5/17 14:19	10/16/17 9:19	10/18/17 15:08	10/12/17 12:50	10/12/17 12:50	10/6/17 16:20
rkbmbnut	10/4/2017 11:15	10/5/17 15:56	10/11/17 11:25	10/13/17 12:52	10/5/17 14:20	10/16/17 9:20	10/18/17 15:09	10/12/17 12:50	10/12/17 12:50	10/6/17 16:20
rkblhnut	10/11/17 13:30	10/13/17 12:31		10/18/17 12:30	10/13/17 13:09	10/20/17 9:05		10/18/17 13:15	10/18/17 13:15	
rkblhnut	10/11/17 16:00	10/13/17 12:28		10/18/17 12:26	10/13/17 13:10	10/20/17 9:06		10/18/17 13:15	10/18/17 13:15	
rkblhnut	10/11/17 18:30	10/13/17 12:32		10/18/17 12:32	10/13/17 13:11	10/20/17 9:07		10/18/17 13:15	10/18/17 13:15	
rkblhnut	10/11/17 21:00	10/13/17 12:32		10/18/17 12:33	10/13/17 13:11	10/20/17 9:09		10/18/17 13:15	10/18/17 13:15	
rkblhnut	10/11/17 23:30	10/13/17 12:33		10/18/17 12:35	10/13/17 13:12	10/20/17 9:10		10/18/17 13:15	10/18/17 13:15	
rkblhnut	10/12/17 2:00	10/13/17 12:34		10/18/17 12:36	10/13/17 13:12	10/20/17 9:11		10/18/17 13:15	10/18/17 13:15	
rkblhnut	10/12/17 4:30	10/13/17 13:34		10/18/17 12:44	10/13/17 13:13	10/20/17 9:12		10/18/17 13:15	10/18/17 13:15	
rkblhnut	10/12/17 7:00	10/13/17 13:32		10/18/17 12:45	10/13/17 13:13	10/20/17 9:13		10/18/17 14:00	10/18/17 14:00	
rkblhnut	10/12/17 9:30	10/13/17 13:35		10/18/17 12:47	10/13/17 13:14	10/20/17 9:15		10/18/17 14:00	10/18/17 14:00	
rkblhnut	10/12/17 12:00	10/13/17 13:36		10/18/17 12:48	10/13/17 13:14	10/20/17 9:28		10/18/17 14:00	10/18/17 14:00	
rkblhnut	10/12/17 14:30	10/13/17 13:45		10/18/17 13:04	10/13/17 14:24	10/20/17 9:29		10/18/17 14:00	10/18/17 14:00	
rkbpbnut	11/8/2017 9:01	11/9/17 19:25	11/17/17 13:24	11/28/17 17:10	11/9/17 15:51	11/21/17 12:31	11/27/17 17:49	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkbpbnut	11/8/2017 9:07	11/9/17 19:26	11/17/17 13:29	11/28/17 17:14	11/9/17 15:55	11/21/17 12:32	11/27/17 17:57	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkbfbnut	11/8/2017 9:48	11/9/17 15:46	11/17/17 13:29	11/28/17 17:22	11/9/17 15:57	11/21/17 12:33	11/27/17 17:59	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkbfbnut	11/8/2017 9:54	11/9/17 15:46	11/17/17 13:30	11/28/17 17:23	11/9/17 15:59	11/21/17 12:34	11/27/17 18:00	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkbfunut	11/8/2017 10:15	11/9/17 15:06	11/17/17 13:10	11/22/17 16:26	11/9/17 16:12	11/20/17 10:10	11/28/17 17:06	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkbfunut	11/8/2017 10:21	11/9/17 15:08	11/17/17 13:11	11/22/17 16:28	11/9/17 16:09	11/20/17 10:11	11/28/17 17:07	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkbmbnut	11/8/2017 11:13	11/9/17 19:26	11/16/17 11:48	11/28/17 17:25	11/9/17 16:00	11/21/17 12:35	11/27/17 19:03	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkbmbnut	11/8/2017 11:19	11/9/17 19:27	11/16/17 11:49	11/28/17 17:26	11/9/17 16:02	11/21/17 12:37	11/27/17 19:04	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkblhnut	11/8/2017 13:07	11/9/17 15:41	11/17/17 13:40	11/28/17 17:28	11/9/17 16:03	11/21/17 12:38	11/27/17 19:12	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkblhnut	11/8/2017 13:13	11/9/17 15:44	11/17/17 13:41	11/28/17 17:29	11/9/17 16:04	11/21/17 12:39	11/27/17 19:14	11/28/17 8:10	11/28/17 8:10	11/13/17 13:45
rkblhnut	11/15/17 6:00	11/16/17 15:00		11/30/17 13:48	11/16/17 13:47	11/28/17 11:44		12/1/17 8:25	12/1/17 8:25	
rkblhnut	11/15/17 8:30	11/16/17 15:01		11/30/17 13:49	11/16/17 13:50	11/28/17 11:40		12/1/17 8:25	12/1/17 8:25	
rkblhnut	11/15/17 11:00	11/16/17 15:02		11/30/17 13:51	11/16/17 13:51	11/28/17 11:41		12/1/17 8:25	12/1/17 8:25	
rkblhnut	11/15/17 13:30	11/16/17 13:56		12/1/17 12:39	11/16/17 13:52	11/28/17 11:42		12/1/17 8:25	12/1/17 8:25	
rkblhnut	11/15/17 16:00	11/17/17 14:40		12/1/17 12:43	11/17/17 11:55	11/30/17 9:42		12/4/17 8:20	12/4/17 8:20	
rkblhnut	11/15/17 18:30	11/17/17 14:40		12/1/17 12:45	11/17/17 11:58	11/30/17 11:47		12/4/17 8:20	12/4/17 8:20	

rkblhnut	11/15/17 21:00	11/17/17 14:37		12/1/17 12:46	11/17/17 11:59	11/30/17 9:44		12/4/17 8:20	12/4/17 8:20	
rkblhnut	11/15/17 23:30	11/17/17 14:41		12/1/17 12:48	11/17/17 12:00	11/30/17 9:46		12/4/17 8:20	12/4/17 8:20	
rkblhnut	11/16/17 2:00	11/17/17 14:42		12/1/17 12:49	11/17/17 12:01	11/30/17 9:47		12/5/17 7:45	12/5/17 7:45	
rkblhnut	11/16/17 4:30	11/17/17 14:43		12/1/17 12:51	11/17/17 12:02	11/30/17 11:50		12/5/17 7:45	12/5/17 7:45	
rkblhnut	11/16/17 7:00	11/17/17 14:48		12/1/17 12:58	11/17/17 12:03	11/30/17 9:49		12/5/17 7:45	12/5/17 7:45	
rkbpbnut	12/6/17 8:18	12/7/17 12:51	12/13/17 17:39	12/19/17 16:52	12/7/17 13:59	12/8/17 12:45	12/14/17 9:15	12/21/17 13:10	12/21/17 13:10	12/8/17 16:30
rkbpbnut	12/6/17 8:23	12/7/17 12:54	12/13/17 17:40	12/19/17 17:00	12/7/17 13:54	12/8/17 12:46	12/14/17 9:18	12/21/17 13:10	12/21/17 13:10	12/8/17 16:30
rkbfbnut	12/6/17 8:52	12/7/17 12:55	12/13/17 17:41	12/19/17 17:45	12/7/17 14:00	12/8/17 12:47	12/18/17 10:28	12/21/17 13:10	12/21/17 13:10	12/8/17 16:30
rkbfbnut	12/6/17 9:00	12/7/17 12:56	12/13/17 17:42	12/19/17 17:46	12/7/17 14:02	12/8/17 12:48	12/18/17 10:33	12/21/17 13:10	12/21/17 13:10	12/8/17 16:30
rkbfunut	12/6/17 9:23	12/7/17 12:56	12/13/17 17:43	12/19/17 17:04	12/7/17 14:03	12/19/17 12:18	12/18/17 10:35	12/28/17 8:45	12/28/17 8:45	12/8/17 16:30
rkbfunut	12/6/17 9:29	12/7/17 12:57	12/13/17 17:44	12/19/17 17:06	12/7/17 14:05	12/19/17 12:19	12/18/17 10:36	12/28/17 8:45	12/28/17 8:45	12/8/17 16:30
rkbmbnut	12/6/17 10:18	12/7/17 13:02	12/13/17 13:58	12/26/17 17:14	12/7/17 14:06	12/8/17 12:52	12/18/17 10:38	12/28/17 8:45	12/28/17 8:45	12/8/17 16:30
rkbmbnut	12/6/17 10:26	12/7/17 13:03	12/13/17 14:00	12/26/17 17:15	12/7/17 14:07	12/8/17 12:53	12/18/17 10:39	12/28/17 8:45	12/28/17 8:45	12/8/17 16:30
rkblhnut	12/6/17 12:28	12/7/17 13:04	12/19/17 18:17	12/26/17 17:17	12/7/17 14:08	12/8/17 13:08	12/18/17 10:41	12/28/17 8:45	12/28/17 8:45	12/8/17 16:30
rkblhnut	12/6/17 12:35	12/7/17 13:05	12/14/17 11:59	12/26/17 17:18	12/7/17 14:14	12/8/17 13:09	12/18/17 10:42	12/28/17 8:45	12/28/17 8:45	12/8/17 16:30
rkblhnut	12/13/17 5:00	12/14/17 15:54		12/29/17 12:06	12/14/17 14:23	12/18/17 9:16		1/3/18 8:50	1/3/18 8:50	
rkblhnut	12/13/17 7:30	12/14/17 15:51		12/29/17 12:07	12/14/17 14:26	12/18/17 9:17		1/3/18 8:50	1/3/18 8:50	
rkblhnut	12/13/17 10:00	12/14/17 15:55		12/29/17 12:09	12/14/17 14:27	12/18/17 9:18		1/3/18 8:50	1/3/18 8:50	
rkblhnut	12/13/17 12:30	12/14/17 15:56		12/29/17 12:10	12/14/17 14:28	12/18/17 9:19		1/3/18 8:50	1/3/18 8:50	
rkblhnut	12/13/17 15:00	12/15/17 14:48		12/29/17 12:12	12/15/17 12:13	12/18/17 9:25		1/4/18 9:00	1/4/18 9:00	
rkblhnut	12/13/17 17:30	12/15/17 14:59		12/29/17 12:13	12/15/17 12:14	12/18/17 9:40		1/3/18 10:00	1/3/18 10:00	
rkblhnut	12/13/17 20:00	12/15/17 14:59		12/28/17 14:00	12/15/17 12:15	12/18/17 9:41		1/3/18 10:00	1/3/18 10:00	
rkblhnut	12/13/17 22:30	12/15/17 15:00		12/28/17 14:07	12/15/17 12:16	12/18/17 9:42		1/3/18 10:00	1/3/18 10:00	
rkblhnut	12/14/17 1:00	12/15/17 15:01		12/28/17 14:09	12/15/17 12:17	12/18/17 9:43		1/3/18 10:00	1/3/18 10:00	
rkblhnut	12/14/17 3:30	12/15/17 15:02		12/28/17 14:10	12/15/17 12:18	12/18/17 9:45		1/3/18 10:00	1/3/18 10:00	
rkblhnut	12/14/17 6:00	12/15/17 15:06		12/28/17 14:31	12/15/17 12:19	12/18/17 9:46		1/3/18 10:00	1/3/18 10:00	

CSM flags

January

- For all 01/04/2017 grab samples OP, NO2, CHLA, and PHEA samples, DEP flagged as out of hold time due to the samples arriving a day later than expected, but was still within the CDMO's hold time criteria.
- The TSS grab sample taken at 01/04/2017 08:43 was A-qualified, "Value reported is the mean of two or more determinations."

- The TP grab sample taken at 01/04/2017 10:54 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” The QC code MS was listed “Recovery for the batch matrix spike was outside of existing control limits.”
- The CHLA and PHEA grab samples taken at 01/04/2017 12:59 were A-qualified, “Value reported is the mean of two or more determinations.”
- The TSS grab sample taken at 01/04/2017 at 12:59 was A-qualified, “Value reported is the mean of two or more determinations.”

February

- The TP grab sample taken at 02/07/2017 12:07 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” The QC code MS was listed “Recovery for the batch matrix spike was outside of existing control limits.”

March

- The TSS grab sample taken at 03/09/2017 13:44 was A-qualified, “Value reported is the mean of two or more determinations.”

April

- The TSS grab sample taken at 04/05/2017 07:23 was A-qualified, “Value reported is the mean of two or more determinations.”
- The CHLA and PHEA grab sample taken at 04/05/2017 10:26 was A- qualified, “Value reported is the mean of two or more determinations.”
- The TSS grab sample taken at 04/05/2017 10:34 was A-qualified, “Value reported is the mean of two or more determinations.”

May

- The OP grab sample taken at 05/02/2017 07:30 was Q-qualified, “sample held beyond normal holding time.” Sample was still within CDMO hold time window.
- The OP grab sample taken at 05/02/2017 08:57 was Q-qualified, “sample held beyond normal holding time.” Sample was still within CDMO hold time window.
- The OP grab sample taken at 05/02/2017 09:40 was Q-qualified, “sample held beyond normal holding time.” Sample was still within CDMO hold time window.
- The OP grab sample taken at 05/02/2017 10:16 was Q-qualified, “sample held beyond normal holding time.” Sample was still within CDMO hold time window.
- The TSS grab sample taken at 05/02/2017 10:44 was A-qualified, “Value reported is the mean of two or more determinations.”
- The TSS grab sample taken at 05/02/2017 10:49 was A-qualified, “Value reported is the mean of two or more determinations.”

- During May diel sampling, after 12:30 sample, a manatee carcass was placed within 30 feet of the ISCO sampler at an unknown time. Samples are flagged as suspect because samples may be artificially high.

June

- The NO2 grab sample taken at 06/08/2017 07:57 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” QC code MS was also attached “Recovery for the batch matrix spike (MS) was outside existing control limits.”
- The CHLA and PHEA grab sample taken at 06/08/2017 08:25 was A-qualified, “Value reported is the mean of two or more determinations.”
- The CHLA and PHEA diel sample taken at 06/14/2017 23:00 was A-qualified, “Value reported is the mean of two or more determinations.”

July

- The NH4 and NO2NO3 grab sample taken at 07/05/2017 09:08 was Y-qualified, “The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.” The H2SO4 acid was not added to the sample bottle.
- The CHLA and PHEA grab sample taken at 07/05/2017 09:48 was A-qualified, “Value reported is the mean of two or more determinations.”
- The TSS grab sample taken at 07/05/2017 10:46 was A-qualified, “Value reported is the mean of two or more determinations.”
- The TSS grab sample taken at 07/05/2017 10:53 was A-qualified, “Value reported is the mean of two or more determinations.”
- Samples taken on 07/11/2017 at 16:30, 19:00, and 21:30 as well as the sample taken at 07/12/2017 00:00 were delivered late to the lab. The data for CHLA, PHEA, OP, and NO2 has been Q-qualified, “Sample held beyond normal holding time.” While the Florida Department of Environmental Protection qualified samples as over hold time, they still fall within the acceptable CDMO hold time. The cooler was 2.1 degrees Celsius when it arrived, still below the 4 degree Celsius threshold for storage.
- The CHLA diel sample taken at 07/11/2017 16:30 was A-qualified, “Value reported is the mean of two or more determinations.”
- The CHLA and PHEA diel sample taken at 07/12/2017 02:30 was A-qualified, “Value reported is the mean of two or more determinations.”

August

- The NO2 grab sample taken at 08/08/2017 07:22 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” The QC code MS was listed “Recovery for the batch matrix spike was outside of existing control limits.”

- The TKN grab sample taken at 08/08/2017 11:16 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” The QC code MS was listed “Recovery for the batch matrix spike was outside of existing control limits.”
- The NO2 grab sample taken at 08/08/2017 11:22 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” The QC code MS was listed “Recovery for the batch matrix spike was outside of existing control limits.”
- The TSS grab sample taken at 08/08/2017 11:22 was A-qualified, “Value reported is the mean of two or more determinations.”

September

- All sampling done in September occurred later than scheduled. Sampling was done after hurricane IRMA which made landfall in south Marco Island on September 10th 2017).
- The NO2 grab sample taken at 09/19/2017 08:32 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” The QC code MS was listed “Recovery for the batch matrix spike was outside of existing control limits.”
- The TSS grab sample taken at 09/19/2017 08:38 was A-qualified, “Value reported is the mean of two or more determinations.”
- The NO2 grab sample taken at 09/19/2017 10:30 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” The QC code MS was listed “Recovery for the batch matrix spike was outside of existing control limits.”
- The TSS grab sample taken at 09/19/2017 10:34 was A-qualified, “Value reported is the mean of two or more determinations.”
- The CHLA grab sample taken at 09/19/2017 11:48 was A-qualified, “Value reported is the mean of two or more determinations.”
- The NH4 grab sample taken at 09/19/2017 12:29 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.”
- The NO2 diel sample taken at 09/20/2017 10:00 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.” The QC code MS was listed “Recovery for the batch matrix spike was outside of existing control limits.”
- The CHLA grab sample taken at 09/20/2017 12:30 was A-qualified, “Value reported is the mean of two or more determinations.”

October

- The TSS grab sample taken at 10/04/2017 10:26 was A-qualified, “Value reported is the mean of two or more determinations.”
- The TSS grab sample taken at 10/04/2017 11:15 was A-qualified, “Value reported is the mean of two or more determinations.”

- The CHLA and PHEA grab sample taken at 10/11/2017 18:30 was A-qualified, “Value reported is the mean of two or more determinations.”

November

- The NH4 grab sample taken at 11/08/2017 09:07 was J-qualified, “Estimated value and/or the analysis did not meet established quality control criteria.”
- The TSS grab sample taken at 11/08/2017 09:48 was A-qualified, “Value reported is the mean of two or more determinations.”
- The CHLA and PHEA grab sample taken at 11/08/2017 09:54 was A-qualified, “Value reported is the mean of two or more determinations.”
- The CHLA diel sample taken at 11/15/2017 11:00 was A-qualified, “Value reported is the mean of two or more determinations.”

December

- The TSS grab sample taken at 12/06/2017 09:00 was A-qualified, “Value reported is the mean of two or more determinations.”
- The CHLA and PHEA grab sample taken at 12/06/01 09:29 was A-qualified, “Value reported is the mean of two or more determinations.”

MDL Changes

Due to the need for sample dilution by the lab for the sample to be analyzed, some chlorophyll *a*, pheaphytin *a*, nitrite+nitrate, and TSS MDLs are elevated. Some values are flagged as below sensor limits <-4> [SBL] while the value reported is higher than the normal MDL. See MDL section for more information. These samples are as follows:

Parameter	DateTimeStamp	Site	MDL	Units
NO2NO3	5/2/2017 10:49	rkbfbnut	0.008	ug/L
NO2NO3	5/10/2017 15:00	rkblhnut	0.008	ug/L
NO2NO3	5/10/2017 17:30	rkblhnut	0.008	ug/L
TSS	11/8/17 9:54	rkbfbnut		
TSS	12/6/17 8:52	rkbfbnut		
TSS	12/6/17 9:00	rkbfbnut		
TSS	12/6/2017 9:23	rkbfunut	3	ug/L
CHLA_N	1/12/2017 5:30	rkblhnut	1.1	ug/L
CHLA_N	6/8/2017 9:34	rkbmbnut	0.92	ug/L
CHLA_N	12/14/2017 3:30	rkblhnut	1.1	ug/L
PHEA	1/4/2017 8:43	rkbmbnut	1	ug/L
PHEA	1/12/2017 5:30	rkblhnut	0.8	ug/L
PHEA	4/11/2017 10:30	rkblhnut	1	ug/L
PHEA	5/10/2017 10:00	rkblhnut	3.2	ug/L
PHEA	5/10/2017 12:30	rkblhnut	2.3	ug/L
PHEA	8/8/2017 9:12	rkbmbnut	0.44	ug/L
PHEA	9/19/2017 11:15	rkbpbnut	0.8	ug/L
PHEA	9/19/2017 11:21	rkbpbnut	0.8	ug/L
PHEA	9/19/2017 12:22	rkbfbnut	0.5	ug/L
PHEA	9/19/2017 12:29	rkbfbnut	0.57	ug/L
PHEA	12/13/2017 5:00	rkblhnut	0.8	ug/L
PHEA	12/13/2017 7:30	rkblhnut	0.8	ug/L
PHEA	12/13/2017 12:30	rkblhnut	0.8	ug/L
PHEA	12/14/2017 3:30	rkblhnut	0.8	ug/L

Weather conditions based on Big Cypress Basin (BCB) Hydrologic Summary and Rainfall Reports:

January: Basin-wide precipitation remained scant last month, although showing much improvement since December. Incoming winter frontal systems generated an average of 1.58 inches across the BCB. However, this total is still below the Basin's monthly historic weighted average, typically 2.06 inches for January. From a historic perspective, rainfall received last month was also far less than the record 10.6 inches received during this period a year ago.

February: Dry conditions intensified last month, as the impact of the rainfall deficit widened across the Big Cypress Basin [BCB]. Rainfall totals for February remained below par, although an incoming cold front did bring some much needed precipitation towards the end of the month. Rainfall across the BCB was insufficient to top the historic average in February. With one notable exception, arriving around February 23rd, incoming winter frontal systems were generally unproductive in terms of precipitation. The recorded Basin-wide average was 1.25 inches. This tally was 36% below the Basin's monthly historic weighted average, typically 1.95 inches for February. From a historic perspective, rainfall received last month was also far less than the record 5.14 inches received in 1998.

March: In March, basin-wide precipitation for the month remained sub-par, providing little relief to the dry conditions which have characterized this dry season since last November. For the fifth consecutive month, rainfall across the BCB remained well below the Basin's historic average. Incoming cold fronts did little to alleviate this deficit which now stands at 2.5 inches for the year. The March recorded Basin-wide average was 0.85 inches. This tally was 61% below the monthly historic weighted average, typically 2.18 inches for the BCB in March. From a historic perspective, rainfall received last month was also far less than the March record 6.10 inches received in 2010.

April: The ongoing dry weather trend across the Big Cypress Basin [BCB] showed some marginal improvement during this past month. Rainfall totals in April saw a modest increase over March, however this uptick was insufficient to alter the Basin-wide dry conditions which have characterized the season thus far. Overall monthly precipitation remained woefully low, helping to spawn numerous wildfires, particularly in the inland areas of Collier County. On a positive note, an incoming frontal system around April 23rd brought some much needed rain, and assisted firefighters in controlling a large forest fire which had developed in southern Golden Gate Estates. For the sixth consecutive month, rainfall across the BCB has been below the Basin's historic average. Incoming frontal weather systems helped, but did not alleviate this deficit which is now 3.5 inches for 2017. The April recorded Basin-wide average was 1.43 inches, as measured by twenty-two (22) reporting stations (ref. Figures 1, 2, Table 1). This total is still 40% lower than the typical April monthly average, which is 2.38 inches across the BCB. From a historic perspective, rainfall last month was dismally low, in particular when compared to 2010 when a record 5.7 inches fell across the Basin.

May: Dry season weather conditions, having been relentless thus far in 2017, began to abate across the Big Cypress Basin [BCB] in May. Helped by some late-arriving frontal activity, the Basin saw an uptick in rainfall during the second half of the month. In fact, for the first time this year, monthly precipitation was up to par, although these totals remained low in absolute terms, and barely registered in the BCB groundwater levels and canal systems. The unrelenting dry spell over the Lower West coast began to dissipate somewhat in May, which helped boost rainfall totals slightly above the Basin's historical average. However, the year to date deficit remains considerable, now down 3.3 inches for 2017. The month's Basin-wide rainfall average was 3.81 inches. This tops the typical May monthly average by 5%, a positive development for the BCB. From a historic perspective, rainfall last month was also within the average, although very modest when compared to 1991 when a record 8.6 inches fell across the Basin

June: Coinciding with the end of May, the dry season conditions across the Big Cypress Basin [BCB] underwent a complete reversal at the beginning of the month. Within the first week of June, some areas of the BCB had received record amounts of rainfall, and by month's end totals had ramped up dramatically throughout the entire Basin. This abrupt transition into wet season and the associated drenching rainfall can be fairly described as historic, marking this past month as the wettest June over the past twenty-seven (27) years of BCB record-keeping, and the 2nd wettest in the annals of the District, spanning a period of 91 years. The wet conditions in June broke the lengthy dry spell which had gripped the BCB for the previous six months. Basin-wide rainfall average was a record-breaking 21.32 inches for the month. This translates to 132% increase over the typical June monthly average, normally 9.17 inches across the Basin. As previously outlined, this month's total was the highest ever recorded for the BCB in June, going back to 1990.

July: Following the more dramatic events experienced in June, the weather in July remained generally uneventful, with typical wet season patterns across the Big Cypress Basin [BCB]. However, these conditions did not hold for the entire month, and beginning on the very last day of July, the Lower West Coast became once again the focus of a larger weather system, **Tropical Storm EMILY**, which dumped over six (6) inches of rain across the BCB, giving a very wet start to the month of August. Boosted by rainfall from the late-arriving Tropical Storm, precipitation was comfortably above par for the month. The basin-wide July average was 11.59 inches, representing a 37% increase over the monthly norm,

typically 8.43 inches. Although the Basin experienced exceptionally dry conditions earlier this year, rainfall over the past two months has now been considerable. Cumulative totals for 2017 now tops 41.84 inches, only some 11 inches less than the typical 53 inches expected during an average year. From a historic perspective, the rain totals last month were also significant, although far less than the July 2001 record total of 14.6 inches.

August: The high rainfall events experienced in July continued apace across the Big Cypress Basin [BCB] through the month of August. Basin watersheds still fully staged from **Tropical Storm EMILY** had little opportunity to recover, as heavy rainfall continued unabated during the following weeks. In the last half of August the BCB began to feel the effects from a low pressure system which had formed off the west coast of Florida. Although it failed to intensify into a named storm, principally due to the influence of Hurricane HARVEY, this weather system (**INVEST 92L**) dumped significant rainfall over a large swath of central Florida and the Gulf coast. Locally, rainfall across the BCB was heavy, with recorded totals averaging over eight (8) inches by August 28th when the system finally moved north and out of the District. Precipitation was well above the normal average in August. The basin-wide monthly average was 15.21 inches, representing a 64% increase over the 9.27 inches typically collected. Rainfall for the 2017 wet season has thus far been very considerable. The annual cumulative total now tops 56.90 inches, well in excess of the typical 53 inches expected during an average year. From a historic perspective, rainfall this month was similarly record-shattering, surpassing August 1995 which averaged 14.9 inches across the BCB.

September: Events in September were overshadowed by the arrival of **Hurricane IRMA**. The storm cut a direct path northward through the entire state, traversing from the Keys and exiting through north Florida. Locally, impacts were considerable, with hurricane force winds and significant rainfall across the Lower West Coast and the Big Cypress Basin [BCB]. This event was preceded by an equally wet August, which gave scant opportunity for the BCB watersheds to recover before IRMA made landfall on September 10th. Thus far the 2017 wet season rainfall has been unrelenting, with Basin-wide precipitation totals now well in excess of the typical annual average. As would be expected, canal and groundwater levels experienced significantly high stages during the month, and record amounts of runoff entered the BCB drainage systems from surrounding saturated watersheds. Following a trend uninterrupted since the start of the 2017 wet season, precipitation remained well above the normal average for September. The basin-wide monthly average was 17.49 inches, representing a 106 % increase over the 8.48 inches typically collected. Thus far, the 2017 rainfall total is now 74.1 inches, which also represents a considerable increase (56 %) over the 47.6 inches typically recorded through this period in an average year. Taken from a historical perspective, rainfall this
month was similarly record-shattering and well in excess of 2001, previously the wettest September on record, which had averaged 15.7 inches across the reporting stations of the BCB.

HURRICANE IRMA – SUPPLEMENTAL REPORT:

OVERVIEW:

Hurricane IRMA became the 10th named storm of the 2017 Hurricane Season on August 30th, a status which it maintained through September 12th, two days after making landfall on the lower west coast of Florida. By the first week of September, tropical cyclone activity in the Gulf and Caribbean had shifted into high gear, with three (3) named storms being tracked simultaneously by the NHC, of which two (2) were major (>Cat 3) hurricanes, including IRMA which was directly threatening mainland Florida. The pace of events quickly escalated, and by midweek Thursday, 7th September, after the storm had tracked northwesterly through the Caribbean, the possibility of a south Florida landfall became increasingly obvious - even if certainty over the system's forecast track remained more elusive. The predicted storm track, initially centered on the east coast, shifted westward, and by Friday 8th had become fully focused on the west coast of Florida. This shift was of great interest to system water managers since it now suggested the possibility of much higher rainfall across the BCB. After first making landfall in the Florida

Keys early Sunday, September 10th, IRMA moved northwards finally coming ashore over Collier County on Marco Island at around 3 pm, as a Category 3 Hurricane. Shortly thereafter, the eye of the storm tracked through Naples with maximum sustained winds in excess of 115 mph, and by late evening, had exited northwards into Lee County. Although damages due high winds were considerable, with a maximum gust of 142 mph reported at Naples Airport, the area was spared from a storm surge whose predicted severity (12 ft to 15 ft) would have been devastating to coastal communities. Around Naples, the eventual recorded tidal surge was about 4.25 feet as noted at the Naples Beach Pier, and much less in the interior waterbody of Naples Bay. The tidal fluctuation associated with the passing storm was possibly of greater significance, recording a swing of almost 10 feet on the Gulf-side and 8 feet in the interior, at the US 41 Bridge near Tin City. Rainfall from the event was similarly widespread and significant, followed by equally high runoff which raised canal levels and flooded some portions of the Basin in the storm's immediate aftermath.

STORM EVENT RAINFALL:

Much of the rain associated with the hurricane occurred as the system moved north across Collier County, such that relatively dry conditions quickly followed within 48 hours of landfall. The RAINDAR rainfall distribution suggests that the heaviest band of precipitation occurred in the inland areas of the County, with more moderate impacts to the coastal zone. Aside from wetter conditions inland, rainfall distribution appears to have been relatively uniform across the localities served by the BCB canal system. To provide further analysis of the rainfall coverage, two BCB stations were selected from the 24-hour and 48-hour dataset which had registered significant rainfall and were deemed representative of the inland and coastal areas of the Basin. These exhibits also confirm that event intensities were highest during the initial phase of the storm and that over 90% of the collected totals occurred within 24 hours of IRMA's landfall. In the coastal zone, the highest precipitation was recorded at the Collier Government Center Station (COLGOV), and inland at the Immokalee Station (IFAS); the two sites collecting 11.51 inches and 13.60 inches respectively in 24 hours, and 12.39 inches and 14.63 inches within 48 hours. Although maximum recorded intensities were somewhat lower for other BCB sites, the pattern of rainfall intensity was similar, and this may provide suitable guidance from which some useful basin-wide estimates may be drawn. Based on a conservative assessment of this collected data, we can estimate that that most localities within the BCB experienced rainfall intensities in excess of a 25-yr/ 1-day event frequency, and that precipitation frequencies for the 3-day event ranged between a 10-yr and 25-yr return period.

BCB WATERSHED IMPACTS AND RECOVERY:

The intensity and depth of rainfall from IRMA was immediately felt over most areas of Collier County. Water levels in all BCB systems, which had been operationally lowered by a pre-storm draw-down, registered a rapid rise as runoff from the surrounding watersheds quickly filled canals, swales and ditches. By late evening Sunday, and in the early hours of Monday morning, most canals were experiencing historically high stages and soaring discharge rates as this drainage worked its way through all the available conveyances of the system. Control structures which had been kept open throughout the storm were temporarily overwhelmed by high flow volumes, and canals overtopped at many locations throughout the BCB. Even as hurricane force winds began to moderate, left in the wake were downed trees and assorted debris tossed around by the storm, although these impacts turned out to be less consequential to the BCB canal system.

October: Following the dramatic events of September, which included the arrival of Hurricane IRMA, the Big Cypress Basin [BCB] turned relatively quiet in October. Rainfall for the month still bested the average, but weather conditions became noticeably drier as the Basin officially entered Dry Season. Accordingly, the canal operational criteria across the BCB were adjusted to reflect the changed conditions, and all systems were transitioned to optimize water conservation and protect groundwater levels. Signaling the official end of the 2017 Wet Season, precipitation dropped significantly in October.

The basin-wide monthly average was 5.30 inches, albeit still more than 50% higher than the 3.40 inches typically collected. Thus far, this year's accumulated rainfall total is 78.9 inches, a considerable increase (56 %) over the 51 inches normally recorded through this period in an average year. Although respectably above-average, rainfall this month remained far short of the 1995 historic high, when average precipitation recorded was 13.3 inches across the BCB.

November: November was the first full month of dry season, and weather conditions across the Big Cypress Basin [BCB] were the driest of the year. Predictably, water levels in the BCB canals showed a downward trend throughout the month, although most systems continued to track the historical averages. Rainfall across the BCB was well below the norm in November. Basin-wide, the collected average was a dismal 0.31 inches. This represents a significant deficit (83%) from the November historical average, typically 1.78 inches for the month. From a historic perspective, precipitation last month was also far less than the record 7.5 inches received in 1998. However, the accumulated rainfall for 2017 is still at a historic high, 79.9 inches or 51% more than the 52.8 inches typically received through this period in an average year. This is mostly attributable to the wet season rainfall and the impacts from multiple large events earlier in the year.

December: December marked the close of a very active year for the Big Cypress Basin [BCB]. Winter weather patterns held sway and dry conditions persisted throughout the month. Rainfall continued to be slight, generally associated with incoming frontal systems. In a repeat of the previous month, rainfall across the Basin was once again below par in December. The collected average was 1.15 inches, approximately 26% lower than the 1.54 inches typically expected. From a historical perspective, basin-wide precipitation last month was also well below the 5.8 inches received in 1997, a period of record maximum for the Basin. December capped off a record year for rainfall received across the BCB. The final tally from local Basin gage stations topped 81.0 inches, marking 2017 as the wettest year since 1995, the previous record year which barely edged out at 81.4 inches

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