

Chemical Analysis Report

CEN-DIST-2017-11-28-04

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **Haynes Crk Upper + HA**
Request ID: **RQ-2017-09-11-41**
Customer: **CEN-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
3319 Maguire Blvd., Suite 232
Orlando, FL 32803-3767
Attn: Mike Linger

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Certified by: Thekkekalathil Chandrasekhar, Chemist Administrator Date Certified: 15-DEC-2017 11:25



Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical group are included in this report: Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: HAYNES CREEK (UPPER) @ 550 M US OF BURRELL LOCK

Collection Date/Time: 11/27/2017 12:15

Field ID: G1CE0058

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1948633	EPA 180.1 Rev. 2.0	Turbidity	7.3	A	NTU	P335985	
	EPA 300.0 Rev. 2.1	Chloride	30		mg Cl/L	P336186	
		Sulfate	18		mg SO4/L	P336189	
	SM 2120 B	Color (true)	34		PCU	P335991	
	SM 2320 B-97	Total Alkalinity	101		mg CaCO3/L	P336464	
	SM 2540 C-97	TDS	215		mg/L	P336390	
	SM 2540 D-97	TSS	11		mg/L	P336364	
	SM 4500 F-C-97	Fluoride	0.18		mg F/L	P336468	
1948634	EPA 350.1 Rev. 2.0	Ammonia-N	0.028		mg N/L	P336411	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	1.8		mg N/L	P336288	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.007	I	mg N/L	P336162	
	EPA 365.1 Rev. 2.0	Total-P	0.032		mg P/L	P336206	
	SM 5310 B-00	Organic Carbon	17		mg C/L	P336198	
1948635	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P336024	

Ref. Method and Comment:

SM 2540 D-97: Batch relative percent difference is unavailable because of low analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P335985

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P336186

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P336189

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P336411

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P336288

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Quality Assurance Report

Method Blank Results

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336162

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336206

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336024

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Reference Method: SM 2120 B
Batch ID: P335991

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P336464

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO3/L

Reference Method: SM 2540 C-97
Batch ID: P336390

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P336364

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P336468

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P336198

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336186

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	103		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336189

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	98.9		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336411

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	108		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336288

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	103		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336162

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336206

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	98.2		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336024

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	100		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P336464

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	103		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P336468

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.3		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P336198

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	100		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P336186

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949099	Chloride	96.9		P	90 - 110
1949148	Chloride	95.8		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P336189

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1949099	Sulfate	99.0		P	90 - 110
1949148	Sulfate	98.6		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P336411

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948625	Ammonia-N	108	110	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P336288

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948618	Kjeldahl Nitrogen	102	105	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P336162

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948605	NO2NO3-N	98.0	98.0	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P336206

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948761	Total-P	101	99.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P336024

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948627	O-Phosphate-P	100	100	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P336468

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948737	Fluoride	97.4	97.4	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P336198

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1948469	Organic Carbon	94.8	96.2	P/P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P335985

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948633	Turbidity	0.545	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336186

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949148	Chloride	0.706	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P336189

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1949148	Sulfate	0.455	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P336411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948625	Ammonia-N	1.35	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P336288

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948618	Kjeldahl Nitrogen	2.13	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
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Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P336162

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948605	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P336206

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948761	Total-P	1.05	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P336024

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948627	O-Phosphate-P	0.0802	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P335991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948617	Color (true)	0.192	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P336464

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948737	Total Alkalinity	0.381	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P336390

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948568	TDS	6.90	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P336468

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948737	Fluoride	0.0	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P336198

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1948469	Organic Carbon	1.41	Spike	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
 Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A80557

Included Lab Sample IDs: 1948633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	100	P/P	95 - 105

Reference Method: SM 2120 B

Run ID: A80558

Included Lab Sample IDs: 1948633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	100	100	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A80571

Included Lab Sample IDs: 1948635

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.3	99.5	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A80623

Included Lab Sample IDs: 1948634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO ₂ NO ₃ -N	102	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A80632

Included Lab Sample IDs: 1948633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	100	101	P/P	90 - 110
Sulfate	99.6	99.2	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A80635

Included Lab Sample IDs: 1948634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	96.4	97.9	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A80677

Included Lab Sample IDs: 1948634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.8	102	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A80711

Included Lab Sample IDs: 1948634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	103	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A80724

Included Lab Sample IDs: 1948634

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	106	101	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A80732

Included Lab Sample IDs: 1948633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	99.7	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A80732

Included Lab Sample IDs: 1948633

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	98.6	100	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.

Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.

Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery	LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity				0.545	
EPA 300.0 Rev. 2.1	Chloride	103	95.8 96.9		0.706	
	Sulfate	98.9	98.6 99.0		0.455	
EPA 350.1 Rev. 2.0	Ammonia-N	108	108 110			1.35
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	103	102 105			2.13
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	104	98.0 98.0			0.0
EPA 365.1 Rev. 2.0	Total-P	98.2	101 99.8			1.05
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	100	100 100			0.0802
SM 2120 B	Color (true)				0.192	
SM 2320 B-97	Total Alkalinity	103			0.381	
SM 2540 C-97	TDS				6.90	
SM 4500 F-C-97	Fluoride	96.3	97.4 97.4			0.0
SM 5310 B-00	Organic Carbon	100	94.8 96.2			1.41

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
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Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1948633
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1948633
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1948633
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1948634
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1948634
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1948634
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1948634
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1948635
SM 2120 B / E31780	True Color measured at 450 nm	1948633
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1948633
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1948633
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1948633
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1948633
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1948634

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	11/28/2017			11/28/2017 15:59	DeAsia Armster	1948633
EPA 300.0 Rev. 2.1	11/28/2017			11/30/2017	Irina Carbone	1948633
EPA 350.1 Rev. 2.0	11/28/2017			12/05/2017	Sofia Elnemr	1948634
EPA 351.2 Rev. 2.0	11/28/2017	12/04/2017	Adrian Shelby	12/06/2017	Joseph Suarez	1948634
EPA 353.2 Rev. 2.0	11/28/2017			12/01/2017	Beverly Y. Sanders	1948634
EPA 365.1 Rev. 2.0	11/28/2017	12/01/2017	Sima Feizi	12/04/2017	Lipi Saha	1948634
EPA 365.1 Rev. 2.0 dissolved	11/28/2017			11/28/2017 15:19	Megan Treadwell	1948635
SM 2120 B	11/28/2017			11/28/2017 15:53	Tanya Welborn	1948633
SM 2320 B-97	11/28/2017			12/05/2017	Dale L. Simmons	1948633
SM 2540 C-97	11/28/2017			12/01/2017	Yijie Li	1948633
SM 2540 D-97	11/28/2017			12/01/2017	Yijie Li	1948633
SM 4500 F-C-97	11/28/2017			12/05/2017	Dale L. Simmons	1948633
SM 5310 B-00	11/28/2017			11/30/2017	Ping Hua	1948634