

Chemical Analysis Report

NW-DIST-2018-03-06-02

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

Event Description: **West Lake Run**
Request ID: **RQ-2018-03-05-59**
Customer: **NW-DIST**
Project ID: **SMP**

Send Reports to:
FL Dept. of Environmental Protection
160 W Government St
Suite 208A
Pensacola, FL 32502-5794
Attn: Michael King

For additional information please contact
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Certified by: Liang Lin, Environmental Administrator

Date Certified: 29-MAR-2018 15:34

A handwritten signature in black ink, appearing to read "Liang Lin", is written on a light-colored, textured background.

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: Bear Lake (Center)

Collection Date/Time: 03/05/2018 11:45

Field ID: G4NW0361

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1972212	EPA 180.1 Rev. 2.0	Turbidity	0.90		NTU	P341077	
	EPA 300.0 Rev. 2.1	Chloride	2.2		mg Cl/L	P341226	
		Sulfate	0.52		mg SO4/L	P341230	
	SM 2120 B	Color (true)	31		PCU	P341030	
	SM 2320 B-97	Total Alkalinity	4.7		mg CaCO3/L	P341454	
	SM 2540 C-97	TDS	27		mg/L	P341469	
	SM 2540 D-97	TSS	4	I	mg/L	P341377	
	SM 4500 F-C-97	Fluoride	0.035	U	mg F/L	P341459	
1972213	EPA 350.1 Rev. 2.0	Ammonia-N	0.002	I	mg N/L	P341403	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.31		mg N/L	P341298	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.004	U	mg N/L	P341204	
	EPA 365.1 Rev. 2.0	Total-P	0.019		mg P/L	P341268	
	SM 5310 B-00	Organic Carbon	5.2		mg C/L	P341325	
1972214	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P341054	

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: P341077

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P341226

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 300.0 Rev. 2.1

Batch ID: P341230

Component	Result	Code	Units
Sulfate	0.20	U	mg SO4/L

Reference Method: EPA 350.1 Rev. 2.0

Batch ID: P341403

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

Reference Method: EPA 351.2 Rev. 2.0

Batch ID: P341298

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: P341204

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

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341268

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341054

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

Reference Method: SM 2120 B
Batch ID: P341030

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P341454

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

Reference Method: SM 2540 C-97
Batch ID: P341469

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P341377

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P341459

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P341325

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: P341226

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	95.5		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341230

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Sulfate	97.3		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341403

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	101		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341298

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	99.4		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341204

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO2NO3-N	105		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341268

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

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341054

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	101		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P341454

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	99.8		P	95 - 108

Reference Method: SM 4500 F-C-97
Batch ID: P341459

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.8		P	92 - 103

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 5310 B-00
 Batch ID: P341325

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	98.6		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341226

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972112	Chloride	94.8		P	90 - 110
1972159	Chloride	96.1		P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
 Batch ID: P341230

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972112	Sulfate	95.9		P	90 - 110
1972159	Sulfate	97.8		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
 Batch ID: P341403

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972162	Ammonia-N	101	102	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
 Batch ID: P341298

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972275	Kjeldahl Nitrogen	93.9	92.6	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
 Batch ID: P341204

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972213	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
 Batch ID: P341268

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972276	Total-P	101	97.8	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
 Batch ID: P341054

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972108	O-Phosphate-P	96.1	98.8	P/P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P341459

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972110	Fluoride	95.7	96.3	P/P	91 - 105

Reference Method: SM 5310 B-00
Batch ID: P341325

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1972106	Organic Carbon	108		P	85 - 115

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P341077

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972327	Turbidity	0.797	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341226

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972112	Chloride	4.35	Sample	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P341230

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972112	Sulfate	5.70	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P341403

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972162	Ammonia-N	0.968	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P341298

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972275	Kjeldahl Nitrogen	1.30	Spike	P	0 - 20

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P341204

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: P341204

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972213	NO2NO3-N	0.0	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P341268

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972276	Total-P	2.67	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P341054

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972108	O-Phosphate-P	2.77	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P341030

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972160	Color (true)	4.62	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P341454

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972110	Total Alkalinity	0.246	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P341469

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972113	TDS	6.17	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P341459

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972110	Fluoride	0.477	Spike	P	0 - 3.0

Reference Method: SM 5310 B-00
Batch ID: P341325

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1972106	Organic Carbon	0.161	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: SM 2120 B
Run ID: A82462
Included Lab Sample IDs: 1972212

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	101	98.1	P/P	85 - 115

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Run ID: A82474
Included Lab Sample IDs: 1972214

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	100	101	P/P	90 - 110

Reference Method: EPA 180.1 Rev. 2.0
Run ID: A82476
Included Lab Sample IDs: 1972212

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

Reference Method: EPA 353.2 Rev. 2.0
Run ID: A82506
Included Lab Sample IDs: 1972213

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	100	101	P/P	90 - 110

Reference Method: EPA 300.0 Rev. 2.1
Run ID: A82509
Included Lab Sample IDs: 1972212

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	95.5	98.3	P/P	90 - 110
Sulfate	96.9	99.5	P/P	90 - 110

Reference Method: SM 5310 B-00
Run ID: A82537
Included Lab Sample IDs: 1972213

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	98.0	97.4	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Run ID: A82550
Included Lab Sample IDs: 1972213

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	99.0	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A82557

Included Lab Sample IDs: 1972213

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	104	103	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A82571

Included Lab Sample IDs: 1972212

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	97.8	101	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A82571

Included Lab Sample IDs: 1972212

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	101	99.0	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A82573

Included Lab Sample IDs: 1972213

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	100	102	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					0.797	
EPA 300.0 Rev. 2.1	Chloride	95.5	94.8	96.1		4.35	
	Sulfate	97.3	95.9	97.8		5.70	
EPA 350.1 Rev. 2.0	Ammonia-N	101	101	102			0.968
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	99.4	93.9	92.6			1.30
EPA 353.2 Rev. 2.0	NO ₂ NO ₃ -N	105	104	104			0.0
EPA 365.1 Rev. 2.0	Total-P	102	101	97.8			2.67
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	101	96.1	98.8			2.77
SM 2120 B	Color (true)					4.62	
SM 2320 B-97	Total Alkalinity	99.8				0.246	
SM 2540 C-97	TDS					6.17	
SM 4500 F-C-97	Fluoride	96.8	95.7	96.3			0.477
SM 5310 B-00	Organic Carbon	98.6	108				0.161

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	1972212
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1972212
EPA 300.0 Rev. 2.1 / E31780	Sulfate in aqueous matrices	1972212
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1972213
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1972213
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1972213
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1972213
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1972214
SM 2120 B / E31780	True Color measured at 450 nm	1972212
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1972212
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1972212
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1972212
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1972212
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1972213

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	03/06/2018			03/06/2018 17:11	DeAsia Armster	1972212
EPA 300.0 Rev. 2.1	03/06/2018			03/08/2018	Julia Storbeck	1972212
EPA 350.1 Rev. 2.0	03/06/2018			03/09/2018	Ping Hua	1972213
EPA 351.2 Rev. 2.0	03/06/2018	03/09/2018	Adrian Shelby	03/13/2018	Joseph Suarez	1972213
EPA 353.2 Rev. 2.0	03/06/2018			03/08/2018	Lauren Bottorf	1972213
EPA 365.1 Rev. 2.0	03/06/2018	03/09/2018	Sima Feizi	03/12/2018	Beverly Y. Sanders	1972213
EPA 365.1 Rev. 2.0 dissolved	03/06/2018			03/06/2018 17:27	Megan Treadwell	1972214
SM 2120 B	03/06/2018			03/06/2018 16:45	Tanya Welborn	1972212
SM 2320 B-97	03/06/2018			03/13/2018	Dale L. Simmons	1972212
SM 2540 C-97	03/06/2018			03/07/2018	Yijie Li	1972212
SM 2540 D-97	03/06/2018			03/07/2018	Yijie Li	1972212
SM 4500 F-C-97	03/06/2018			03/13/2018	Dale L. Simmons	1972212
SM 5310 B-00	03/06/2018			03/08/2018	Megan Treadwell	1972213