



# **Southeast Alaska Network Streamflow Monitoring Program**

## *Indian River Streamflow Statistics for Water Years 2008- 2010, Sitka National Historical Park*

Natural Resource Data Series NPS/SEAN/NRDS—2012/269



**ON THE COVER**

Indian River in winter at Sitka National Historical Park  
NPS photo

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*Indian River Streamflow Statistics for Water Years  
2008-2010, Sitka National Historical Park*

Natural Resource Data Series NPS/SEAN/NRDS—2012/269

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March 2012

U.S. Department of the Interior  
National Park Service  
Natural Resource Stewardship and Science  
Fort Collins, Colorado

The National Park Service, Natural Resource Stewardship and Science office in Fort Collins, Colorado publishes a range of reports that address natural resource topics of interest and applicability to a broad audience in the National Park Service and others in natural resource management, including scientists, conservation and environmental constituencies, and the public.

The Natural Resource Data Series is intended for the timely release of basic data sets and data summaries. Care has been taken to assure accuracy of raw data values, but a thorough analysis and interpretation of the data has not been completed. Consequently, the initial analyses of data in this report are provisional and subject to change.

All manuscripts in the series receive the appropriate level of peer review to ensure that the information is scientifically credible, technically accurate, appropriately written for the intended audience, and designed and published in a professional manner. These data were third-party processed by a professional hydrologist according to United States Geological Survey streamgaging protocols.

Views, statements, findings, conclusions, recommendations, and data in this report do not necessarily reflect views and policies of the National Park Service, U.S. Department of the Interior. Mention of trade names or commercial products does not constitute endorsement or recommendation for use by the U.S. Government.

This report is available from the SEAN streamflow monitoring website ([http://science.nature.nps.gov/im/units/sean/SF\\_Main.aspx](http://science.nature.nps.gov/im/units/sean/SF_Main.aspx)) and the Natural Resource Publications Management website (<http://www.nature.nps.gov/publications/nrpm/>).

Please cite this publication as:

Sergeant, C. J., C. S. Smith. 2012. Southeast Alaska Network streamflow monitoring program: Indian River streamflow statistics for water years 2008-2010, Sitka National Historical Park. Natural Resource Data Series NPS/SEAN/NRDS—2012/269. National Park Service, Fort Collins, Colorado.

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## **Abstract**

The primary objective of the SEAN streamflow monitoring program is to monitor streamflow in all three SEAN parks and to quantify long-term trends in annual and seasonal streamflow patterns. Since 2007, NPS has cooperated with the City of Sitka and the Alaska Department of Fish and Game to operate two streamflow gages on the Indian River located upstream of the boundary line for Sitka National Historical Park. Between 1980 and 2006, USGS collected data from the same Indian River locations. This report presents summarized streamflow data from water years 2008-2010.

## **Acknowledgments**

B. Bigelow of Water Walkers Streamflow Monitoring, Alaska Department of Fish and Game staff, C. Smith, and G. Smith collected and reported data and maintained the Indian River stream gages.



## Introduction and methods

The primary objective of the SEAN streamflow monitoring program is to monitor streamflow in all three SEAN parks and to quantify long-term trends in annual and seasonal streamflow patterns. Since 2007, NPS has cooperated with the City of Sitka and the Alaska Department of Fish and Game (ADFG) to operate two streamflow gages ('upper' and 'lower') on the Indian River located upstream of the boundary of Sitka National Historical Park. Between 1980 and 2006, the United States Geological Survey (USGS) collected data from the same Indian River locations.

Historical USGS data for the upper gage (15087690) can be found at this website:

[http://waterdata.usgs.gov/ak/nwis/inventory/?site\\_no=15087690](http://waterdata.usgs.gov/ak/nwis/inventory/?site_no=15087690)

Lower gage USGS data (15087700) can be found at this website:

[http://ida.water.usgs.gov/ida/available\\_records.cfm?sn=15087700](http://ida.water.usgs.gov/ida/available_records.cfm?sn=15087700)

This report presents summary tables of streamflow data collected from water years 2008 to 2010 (a water year is October 1 through September 30). Detailed statistics and station summaries are provided for 2010, while a daily mean discharge table is presented for all available NPS data at the lower gage site. These data were third-party processed by a professional hydrologist according to United States Geological Survey streamgaging protocols.

### Upper gage location description and directions

Latitude 57° 04' 01" Longitude 135° 17' 42" in SW ¼ SE ¼ sec. 30 T 55 s., R64 E. (Sitka A-4 quad), hydrologic Unit 19010203, in Tongass National Forest, on Baranof Island, on right bank 2 miles upstream from mouth, and 1.4 miles northeast of Sitka; Drainage area 10.1 mi<sup>2</sup>.

From the intersection of Halibut Point road and Sawmill Creek road in Sitka, proceed southerly along Sawmill Creek road. Just prior to crossing Indian River, turn left onto gravel road. Proceed down this road about a mile to end at the trail head. Hike up the right bank of Indian River along this trail for about 1 mile (20 – 30 minutes) to gage site. The gage site is a reach where the trail is next to the river and very large boulders and bedrock are evident in the river.

### Lower gage location description and directions

Latitude 57° 03' 12" Longitude 135° 18' 52" in NE ¼, SW ¼, SE ¼, sec, 36 (Sitka A-4 quad), Hydrologic Unit 19010203, in Greater Sitka Borough, on Baranof Island, in Tongass National Forest, on right bank 500 ft upstream from Sawmill Creek Road, 600 ft downstream from Sheldon Jackson College Diversion, and 0.6 miles above the mouth; Drainage area 12.0 mi<sup>2</sup>.

From the town of Sitka Alaska, proceed southerly along Sawmill Creek road to bridge over Indian River. Park, and proceed up the right bank on foot about 500ft. to gage location. It may be the easiest to hike or walk upstream along the diversion pipeline (also above right bank) 500ft and then drop down onto the creek bank.

## **Upper gage methods summary for water year 2010**

Technical notes below are transcribed directly from files provided by B. Bigelow of Water Walkers Streamflow Monitoring, Inc.

### ***Gage***

A Druck 1830 submersible pressure transducer, a water temperature probe, and a recorder set to record stage at 15 minute intervals provided a good record of stage from December 4, 2009 to September 22, 2010. For the period October 1 through December 3, the gage shelter pipe was broken. Data from September 23 to 30 are estimated. Records for these periods are considered poor. Gage was replaced December 3 and provided about 0.5 days data. The mean for this last half of the day did not represent the mean daily discharge so it was estimated.

The recorder is housed in a small metal shelter mounted on top of a steel pipe bolted to a large boulder/bedrock outcrop. The gage is referenced to a set of RP/RMs with tape downs to the water surface. The primary reference is RP 100.

Recorder reliability and gage height corrections were checked three times during this period. The gage was installed December 3, 2009, and set to datum with no recorder correction. A visit on February 2, 2010 found a -0.06 recorder correction. Gage was again visited on June 24 and found a -0.01 recorder correction. And on September 22, a -0.03 recorder correction was found. All corrections were applied by prorated between visits.

### ***Datum***

Levels were run on June 24, 2010 by Water Walkers Streamflow Monitoring, Inc. RM-10 was used as base and found RM-13 0.008 ft low from 2009 levels. RP-100 was found 0.021ft low. RM 11 and RM 12 were found destroyed (only the holes in rock left). Prior to gage installation in June 2007 levels were run by Water Walkers Streamflow Monitoring, Inc and the National Park Service to reestablish references for gage datum. USGS gage datum was not found and arbitrary datum was used to establish RM's 10 – 13 and RP 100.

On August 17, 2009 at about 7:00 AM during a period of high flow, the stream gage was severely damaged. At 4:21 AM a peak flow of 2,960ft<sup>3</sup>/s was recorded at the gage. When found October 1, gage pipe was broken in two at the pipe joint and top of pipe and transducer were lying in the gage pool. The transducer was still in the water and recording but subject to significant movement. The gage was reinstalled on December 3, 2009 by the Alaska Department of Fish and Game. The period from October 1, 2009 through December 3 is estimated and considered poor.

### ***Rating***

Three discharge measurements (#510, #511, and #512) were made by the National Park Service during the 2010 water year. Discharge measurements were made February 3, June 24, and September 22 and ranged from 29.4 ft<sup>3</sup>/s to 37.6 ft<sup>3</sup>/s and from 7.99 ft to 8.18 ft of stage. Rating 13.1 Lower and 13.2 were continued in use for the 2010 water year.

Discharge measurement 510 made February 3, plotted -31% from Rating 13.1 with an optimum shift of -0.19 ft. Measurement 511 made June 24, plotted -42% from Rating 13.1 with an optimum shift of -0.30 ft. Measurement 512 made September 22, plotted -36% from Rating 13.1 with an optimum shift of -0.22 ft. Discharge measurements for the 2010 water year were rated

from good (+/- 5%) to fair (+/- 8%). Stage shift #1 was applied December 3 – February 3 at 15:30. Shift #1 applied a -0.30 shift from the bottom of the rating up to 8.05 ft, and then prorated to a 0.00 shift at 9.85 ft. Shift #2 was applied February 3 at 15:31 to March 23 at 19:15. Shift #2 applied a -0.19 shift from 0.00 ft up to 8.05 ft, and then prorated to a 0.00 shift at 9.85 ft. Shift #3 was applied March 23 at 15:16 to July 4 at 18:00. Shift #3 applied a -0.29 shift from 0.00 ft up to 8.2 ft, and then prorated to a 0.00 shift at 9.85 ft. Shift #4 was applied July 4 at 18:01 to September 30 and applied a -0.22 shift from 0.00 ft up to 8.00 ft and then prorated to a 0.00 shift at 10.80 ft.

### ***Special Methods***

Data from October 1, 2009 through December 3 is missing due to damaged shelter pipe and was estimated. September 23 to 30 is also estimated as data was unavailable at the time of this report. Records were estimated based on National Weather Service temperature and precipitation records, hydrographic comparison with Indian River at Sitka gage, and trends of the hydrograph.

### **Lower gage methods summary for water year 2010**

Technical notes below are transcribed directly from files provided by B. Bigelow of Water Walkers Streamflow Monitoring, Inc.

#### ***Gage***

A Druck 1830 submersible transducer, a water temperature probe, and a recorder set to record stage values at 15 minute intervals provided a good record of stage from October 1, 2009 to September 23, 2010. There was no ice affected record during this water year. The period September 24 to 30 had to be estimated as the records were not available at the time of this report.

The recorder is housed in a small metal shelter on top of a steel pipe bolted to large boulders/bedrock. The gage is referenced to a set of RP/RMs and tape downs to the water surface. The primary reference is RP-1 with a tape-down from RP-2 also as a check.

Recorder reliability and gage height corrections were checked 3 times during the 2010 water year. Gage was visited February 4, June 23, and September 23. Corrections to the recorder were +0.33, +0.32, and +0.33 respectively. All corrections were prorated between visits.

#### ***Datum***

Levels were run June 23, 2010 by the National Park Service and Water Walkers. RM-3 was used as base RM and found that compared to last levels of May 27, 2009, RP-1 was 0.006 higher, RP-2 0.005 lower, and RM-4 0.017 higher. The leveled present water surface matched exactly the tape-down from RP-1.

Each visit in 2010 had tape downs from both RP-1 and RP-2 to help verify gage height.

#### ***Rating***

Three discharge measurements were made by the National Park Service during the 2010 water year. Measurements were made February 4, June 23, and September 23. Measured discharges varied from a low of 14.3ft<sup>3</sup>/s to 40.0 ft<sup>3</sup>/s and gage heights ranging from 20.89 ft to 21.20 ft.

Rating 3.0 is the same as Rating 2.0 above 22.50 ft of stage. Rating 3.0 was put into effect October 1, 2007 and was applied for the entire 2010 water year. Discharge measurement #109 (February 4, 2010) plotted +9.4% from Rating 3 with an optimum shift of +0.03; measurement #110 (June 23, 2010) plotted +2.0% with an optimum shift of +0.01; #111 (September 23, 2010) plotted -18.3% with an optimum shift of -0.06.

The optimum shifts that vary from a +0.03 ft to a -0.06 ft indicate a shifting control condition. The control is unstable and fills with deposition as indicated by the negative shifts, and then scours with the positive shifts. Shifts were applied to compensate for these conditions using stage – shift curves indicated by the discharge measurements.

Shift Curve #1 was developed based on discharge measurements 108 (July 28, 2009), the last measurement of the 2009 water year, 109 (February 4, 2010), and 110 (June 23, 2010). Curve #1 shows a slight (0.02ft) scour of the control. It was applied October 1, 2009 to July 4, 2010 and has a +0.02 shift up to 21.20 ft stage, then rejoins the rating at 22.6 ft.

Shift curve #2 was developed based on discharge measurement #111 (September 23, 2010), the last measurement of the 2010 water year. Curve #2 indicates a 0.06 ft fill on the control following the July 4 high water and was applied July 4 to September 30. The curve consists of a -0.06ft shift up to 21.0ft then joins the rating at 22.60ft.

All discharge measurements plotted within 3.7% of Rating 3 after shifting.

### ***Special Methods***

Daily values for the period of missing record, September 24 to 30, was estimated based on National Weather Service weather records, hydrographic trends during similar weather events, and trends of upstream station Indian River near Sitka. Periods of ice affect were looked for using water temperature records, rainfall events and air temperature records for Sitka. No ice affected record was found.

There was an odd looking spike in the hydrograph for March 6 but did not appear to be ice affected record as there was little or no rain that day, water temperature was several degrees above freezing, air temp did not look low enough and the upstream station recorded the same spike. It may have been a snow/ice dam failure upstream or from an upstream tributary.

# Results

## Water year 2010 upper gage summary

### ***Period of Record***

September 1980 to September 1993 and October 1998 to March 2006 by USGS. June 2007 to current year by National Park Service and Water Walkers Streamflow Monitoring Inc.

### ***Gage***

Water stage recorder; Elevation at gage is 125 ft. above sea level, from topographic map. Prior to October 1998 at present site and at datum about 0.13 ft lower. Period October 1999 to March 2006, at site 200 ft. downstream and at different datum.

### ***Remarks***

Records good except for those above 400 ft<sup>3</sup>/s, which are fair and period October 1 through December 3 when gage was damaged and September 23 to 30 for which records were not available at the time of this report. These were estimated and considered poor.

### ***Extremes for period of record***

Maximum discharge 5,710 ft<sup>3</sup>/s September 4, 1990, gage height 13.51 ft, datum then in use. A low daily mean of 8.6 ft<sup>3</sup>/s was published for January 18, 1989.

### ***Extremes outside period of record***

Flood of November 19, 1993 reached a stage of 14.04 ft., site and datum then in use from recorder, discharge 6,460 ft<sup>3</sup>/s.

### ***Extremes for current year***

Maximum discharge, 972ft<sup>3</sup>/s July 4, gage height 10.86ft, Minimum 24.6 ft<sup>3</sup>/s, December 22, gage height 7.93ft, shifting control.

**Table 1.** Water year 2010 daily discharge and monthly summary statistics for the upper Indian River gage in cubic feet per second. 'e' denotes estimated flow.

DAY	OCT09	NOV09	DEC09	JAN10	FEB10	MAR10	APR10	MAY10	JUN10	JUL10	AUG10	SEP10
1	220 e	100 e	78 e	36	38	48	60	60	58	81	58	58
2	115 e	151 e	209 e	35	35	60	55	67	63	54	53	67
3	87 e	137 e	139 e	34	33	50	52	57	56	60	49	71
4	73 e	97 e	84	33	32	52	49	52	47	471	46	62
5	320 e	133 e	70	31	31	52	45	52	45	182	43	72
6	180 e	161 e	62	31	31	185	46	53	44	125	51	71
7	95 e	347 e	56	38	35	69	44	52	43	102	53	55
8	90 e	125 e	55	66	35	58	41	52	40	90	102	49
9	82 e	97 e	49	60	32	65	37	55	39	84	84	107
10	72 e	85 e	45	63	30	53	35	58	38	80	67	91
11	64 e	79 e	42	167	29	59	33	59	37	232	76	67
12	58 e	177 e	42	145	27	53	33	69	41	150	68	58
13	52 e	169 e	38	139	27	52	33	72	44	103	58	53
14	48 e	607 e	35	122	47	59	35	60	37	152	53	50
15	44 e	125 e	33	98	45	63	37	69	34	114	49	47
16	49 e	97 e	32	152	40	60	46	69	37	94	46	44
17	59 e	87 e	30	102	38	63	46	62	37	86	50	41
18	58 e	80 e	34	86	32	64	57	82	35	79	205	38
19	57 e	72 e	30	75	31	63	90	86	33	72	164	36
20	48 e	65 e	28	69	32	67	89	72	33	66	120	34
21	50 e	62 e	26	66	31	56	76	70	33	64	97	32
22	85 e	76 e	25	61	30	52	73	60	35	75	83	30
23	135 e	67 e	26	56	30	237	58	58	40	182	87	26 e
24	115 e	71 e	29	52	29	245	52	59	41	144	90	56 e
25	410 e	195 e	38	49	40	98	54	62	52	114	87	88 e
26	415 e	405 e	74	45	33	77	81	64	64	96	80	64 e
27	159 e	129 e	77	43	31	89	99	75	62	84	72	78 e
28	127 e	107 e	56	40	36	109	87	78	42	76	65	86 e
29	129 e	120 e	46	38		85	73	74	37	68	62	70 e
30	93 e	91 e	41	38		74	66	67	65	63	57	55 e
31	84 e		38	40		66		62		59	62	
<b>TOTAL</b>	3673	4314	1667	2110	940	2483	1682	1987	1312	3502	2337	1756
<b>MEAN</b>	118.5	143.8	54.0	68.1	33.6	80.1	56.1	64.1	43.7	113.0	75.4	58.5
<b>MAX</b>	415	607	209	167	47	245	99	86	65	471	205	107
<b>MIN</b>	44	62	25	31	27	48	33	52	33	54	43	26

## **Water year 2010 lower gage summary**

### ***Period of Record***

September 22, 1998 to September 30, 2003 gage operated by the United States Geological Survey. June 14, 2007 to current year gage is operated by Water Walkers Streamflow Monitoring, Inc., National Parks Service, and the Alaska Department of Fish and Game.

### ***Gage***

Water Stage Recorder; Elevation of gage is 30ft above sea level, from topographic map.

### ***Remarks***

Records are fair except for the last 7 days in September which are not available at the time of this report and are estimated and poor. Water is diverted for use at a fish hatchery, 600ft above the gage.

### ***Extremes for period of record***

Maximum discharge 5,740ft<sup>3</sup>/s October 19, 1998, gage height was 26.84ft; minimum daily 9.2ft<sup>3</sup>/s April 6 to 9, 2002.

### ***Extremes for current year***

Maximum discharge 1,920ft<sup>3</sup>/s October 25, gage height was 24.26ft; minimum 13.0ft<sup>3</sup>/s September 22, gage height 20.86ft.

**Table 2.** Water year 2010 daily discharge and monthly summary statistics for the lower Indian River gage in cubic feet per second. 'e' denotes estimated flow.

DAY	OCT09	NOV09	DEC09	JAN10	FEB10	MAR10	APR10	MAY10	JUN10	JUL10	AUG10	SEP10
1	255	94	75	34	33	45	66	63	58	92	38	34
2	125	154	213	33	31	61	61	73	63	57	34	44
3	83	142	149	32	29	50	57	61	56	61	30	49
4	69	95	96	30	27	57	54	54	48	620	26	40
5	343	138	78	29	26	57	50	55	46	209	23	51
6	204	180	69	28	26	311	52	55	44	120	31	50
7	102	370	63	34	29	77	51	54	43	86	33	36
8	89	133	58	66	30	59	48	54	41	72	84	32
9	78	95	53	60	27	75	44	57	40	65	62	93
10	67	81	49	61	24	52	40	60	39	62	42	72
11	60	74	45	213	23	58	38	61	38	281	49	48
12	53	191	41	188	22	52	37	71	42	159	39	39
13	47	186	38	181	21	54	37	77	46	78	31	35
14	42	645	35	154	46	63	40	63	38	145	27	32
15	39	128	32	112	46	65	41	71	35	95	23	30
16	44	96	30	216	38	60	52	72	38	69	21	28
17	54	84	29	126	36	66	51	64	38	60	22	26
18	53	75	34	95	28	68	61	83	35	54	227	25
19	52	67	29	78	26	63	99	90	33	48	173	22
20	43	61	26	70	27	69	105	73	32	43	98	18
21	43	57	24	65	26	52	86	72	33	41	70	17
22	80	53	23	59	25	47	85	62	35	50	55	16
23	146	64	24	54	24	370	65	59	40	202	57	14
24	124	68	28	49	23	392	57	60	41	143	61	e 30
25	435	201	39	45	35	125	58	63	52	95	58	e 46
26	435	423	85	41	29	89	85	63	66	73	51	e 34
27	177	134	90	39	26	112	108	74	68	60	44	e 34
28	129	108	60	36	32	142	95	79	44	52	38	e 48
29	130	120	47	33		100	77	75	38	46	35	e 52
30	91	89	41	34		85	70	67	71	41	31	e 44
31	80		37	36		74		62		38	38	
<b>TOTAL</b>	3772	4406	1740	2331	815	3050	180	2047	1341	3317	1651	1145
<b>MEAN</b>	121.7	146.9	56.1	75.2	29.1	98.4	62.3	66.0	44.7	107.0	53.3	38.2
<b>MAX</b>	435	645	213	216	46	392	108	90	71	620	227	93
<b>MIN</b>	39	53	23	28	21	45	37	54	32	38	21	14

**Table 3.** Water year 2009 daily discharge and monthly summary statistics for the lower Indian River gage in cubic feet per second.

DAY	OCT08	NOV08	DEC08	JAN09	FEB09	MAR09	APR09	MAY09	JUN09	JUL09	AUG09	SEP09
1	109	133	78	16	103	18	22	206	140	59	20	74
2	104	160	64	16	100	20	19	282	168	55	17	63
3	424	198	57	15	202	24	17	250	181	55	16	57
4	139	112	127	15	86	19	17	154	181	60	16	51
5	107	85	100	14	69	17	26	134	172	63	16	46
6	107	79	168	13	192	37	33	134	173	65	16	45
7	96	110	162	12	811	26	30	127	153	62	16	43
8	137	79	188	12	160	18	42	116	131	56	15	40
9	111	67	333	25	86	16	34	109	109	52	17	42
10	115	60	166	39	71	16	27	100	104	48	16	97
11	738	54	136	88	62	15	31	104	104	44	17	74
12	204	52	91	1146	56	180	28	109	92	42	15	61
13	284	54	72	472	51	93	25	107	86	41	14	128
14	520	86	62	454	46	45	24	103	84	39	14	65
15	1148	141	56	158	44	33	23	94	100	34	15	49
16	630	75	52	127	41	28	39	94	107	31	108	56
17	386	59	45	127	38	26	56	109	85	32	2016	102
18	234	52	39	153	35	25	51	117	84	34	287	87
19	317	48	36	130	32	24	47	114	76	30	105	74
20	170	47	33	120	30	23	46	107	70	32	82	72
21	231	50	30	126	28	22	54	95	74	33	82	95
22	444	94	27	89	27	21	48	92	68	30	142	249
23	785	116	27	73	25	21	47	94	85	28	196	125
24	601	87	27	65	23	23	54	106	73	25	114	129
25	148	90	24	59	22	21	60	164	65	22	148	210
26	133	159	23	68	21	29	56	160	61	22	133	945
27	141	75	22	114	20	35	65	134	63	23	96	194
28	221	111	21	71	19	30	102	115	65	24	135	110
29	692	117	19	883		26	142	177	71	23	181	82
30	149	101	18	673		51	176	176	63	24	132	113
31	105		17	128		28		136		22	92	
<b>TOTAL</b>	9731	2751	2319	5498	2501	1010	1439	4117	3088	1208	4288	3579
<b>MEAN</b>	313.9	91.7	74.8	177.4	89.3	32.6	48.0	132.8	102.9	39.0	138.3	119.3
<b>MAX</b>	1148	198	333	1146	811	180	176	282	181	65	2016	945
<b>MIN</b>	96	47	17	12	19	15	17	92	61	22	14	40

**Table 4.** Water year 2008 daily discharge and monthly summary statistics for the lower Indian River gage in cubic feet per second.

DAY	OCT07	NOV07	DEC07	JAN08	FEB08	MAR08	APR08	MAY08	JUN08	JUL08	AUG08	SEP08
1	140	500	35	30	30	43	30	82	121	86	67	73
2	458	705	31	69	27	47	31	94	117	97	56	73
3	288	245	27	110	25	68	34	102	135	96	50	69
4	125	151	26	49	23	53	49	84	117	86	46	61
5	413	119	25	35	22	44	50	82	99	104	44	54
6	564	101	25	30	20	58	44	99	97	92	44	46
7	161	82	24	27	18	74	39	81	101	73	43	72
8	106	70	25	25	16	68	37	73	84	101	40	222
9	84	64	49	25	16	50	35	70	77	149	37	115
10	119	69	36	23	19	58	42	86	73	86	34	291
11	142	76	99	22	43	58	66	99	73	69	33	291
12	156	57	140	30	59	50	206	106	77	73	38	176
13	318	54	171	33	62	48	195	117	74	66	42	119
14	153	65	82	25	76	54	97	161	68	57	41	266
15	131	52	66	34	96	47	99	273	65	55	34	235
16	97	62	65	408	49	51	212	333	73	55	35	133
17	81	72	53	144	51	108	102	531	90	59	44	698
18	235	51	47	618	53	99	77	209	82	232	43	149
19	119	44	43	178	76	73	68	149	73	537	37	256
20	85	41	39	102	76	54	62	156	74	153	35	303
21	88	22	39	82	73	48	61	161	96	108	30	158
22	156	36	43	72	59	56	66	140	85	102	28	129
23	94	37	49	65	46	68	79	129	73	90	43	270
24	88	67	78	58	41	49	84	189	78	81	149	123
25	86	56	57	73	39	44	73	256	68	99	212	102
26	291	68	65	82	41	42	78	219	65	110	163	96
27	424	59	47	49	49	39	121	176	67	97	81	90
28	242	48	37	43	59	36	119	156	173	91	77	178
29	277	42	37	39	53	33	90	161	92	79	73	488
30	850	38	33	36		31	81	151	74	69	102	168
31	792		30	32		30		131		65	85	
<b>TOTAL</b>	7363	3153	1623	2648	1317	1681	2427	4856	2641	3317	1886	5504
<b>MEAN</b>	237.5	105.1	52.4	85.4	45.4	54.2	80.9	156.6	88.0	107.0	60.8	183.5
<b>MAX</b>	850	705	171	618	96	108	212	531	173	537	212	698
<b>MIN</b>	81	22	24	22	16	30	30	70	65	55	28	46