Final Project Report: 2007-PACIFIC-705A "Road Use Monitoring"

Executive Summary

The Clark County Desert Conservation Program (DCP) contracted for a one year project that would assist them with the monitoring of road use in desert areas in and around the Boulder City Conservation Easement (BCCE). The BCCE covers 86,423 acres (39,974 hectares [ha]) of land owned by the City of Boulder City (Figure 1) in eastern Clark County, Nevada. The easement is held by Clark County and is managed by the DCP.

The goal of this project was to monitor road use in desert areas in and around the BCCE to help inform management of this area. Pacific Traffic and Transit Data Services was retained by the DCP to monitor amounts and times of road use on certain roads in and near the BCCE. This work was to be done using county-supplied traffic counter equipment. Pacific Transit and Transit Data Services was contracted to complete three objectives: 1) install and maintain the traffic counters, 2) retrieve the counter data and deliver the data to the DCP on a on a monthly basis, and 3) retrieve and deliver the traffic counters back to the DCP at the end of the contract.

All of the objectives for the project were successfully completed by Pacific Traffic and Transit Data Services. Twelve traffic counters were properly installed and 12 months of traffic data and also field reports concerning the physical status of the counters were delivered to the DCP. All the traffic counter equipment was returned back to the DCP.

Introduction

The Clark County Desert Conservation Program (DCP) manages land in Boulder City, Clark County, identified as the Boulder City Conservation Easement (BCCE), to provide and maintain high-quality habitat for species covered in the Multiple Species Habitat Conservation Plan. To assist in managing this habitat for desert tortoises and other covered species, Clark County monitors and manages the recreational use of roads throughout the BCCE. The BCCE occupies 86,423-acre (34,974 hectare) BCCE and is located at the upper reaches of the Eldorado Valley, southwest of the populated area of Boulder City.

Pacific Traffic and Transit Data Services was retained on this project by the DCP to monitor amounts and times of road use on certain roads in the Piute-Eldorado Valley in and near the BCCE. The project, which ran from June 1, 2012 through August 15, 2013, was initiated to help inform management of the area in support of the MSHCP.

The objectives of the project were:

Traffic Counter Installation and Maintenance– Install traffic counters at 12 proposed road monitoring sites selected by DCP staff (Figure 1). Visit counter locations monthly to determine the condition of the counters (e.g. battery strength) and correct any problems with the counters.

Retrieve/Submit Counter Data– On a monthly basis download traffic data from the counters. Submit traffic data and report any traffic counter maintenance issues to the DCP.

Retrieve and deliver the traffic counter equipment- At the end of the field work collect all traffic counter equipment and deliver it to the DCP.

Methods and Material

The TRAFx vehicle traffic counter system was purchased by the county and used by Pacific Traffic and Transit Data Services to perform the road monitoring on the BCCE. The vehicle traffic counter system consists of vehicle counters, a data dock, and processing software:

Vehicle counter- The battery-operated TRAFx counters use a magnetometer and embedded software to detect passing vehicles. The 14 cm X 10.5 cm-sized units can count passing vehicles up to 6 meters away and are utilized by burying them at the roadside.

Data dock- The 5 cm X 8.6 cm-sized TRAFx data dock is the interface between the traffic counters and a computer. It is used to download traffic counter data in the field. The dock is plugged into the traffic counter and data from the traffic counter is then copied into the data dock. For future use the counters are replaced into the ground. Once back in the office the copied data on the data dock can then be downloaded onto a computer for processing.

Processing Software- TRAFx DataNet is software that facilitates viewing and managing of the traffic counter data. It can be used to generate charts, reports, and totals from the counter data.

To accomplish the project objectives the following tasks were performed:

Road counters were installed at 12 county-designated sites by the contractor. Coordinates of the sites were provided to the contractor by the DCP. After installation of the counters the precise coordinate locations of the installed counters were obtained using a global positioning system device and photo documentation showing the general location of installation sites were gathered. This data was delivered to the County.

The counter sites were visited by the contractor at least once a month for a year. During the visits, traffic data was collected for from all of the TRAFx counters. This data, which provides information on road use for all seasons and times of day, was submitted to the DCP on a monthly basis. In addition, the counters were checked during the monthly visits for any maintenance issues, e.g., low batteries. Repairs were made to the counters and if needed any malfunctioning counters were replaced with county-supplied units. Reports concerning the condition of the traffic counters were forwarded to the county.

Upon completion of the 12 month monitoring period the traffic counters were retrieved from the field by Pacific Traffic and Transit Data Services and returned back to the DCP.

During and after the project the DCP staff used the TRAFx DataNet to generate charts and spreadsheets to help evaluate the counter data submitted by Pacific Traffic and Transit Data Services. Various TRAFx DataNet-generated charts, such as occurrences of traffic broken out by hour of the day, day of the week, and monthly (Figures 2, 3, and 4 respectively), were generated and reviewed for each of the monitoring sites. In addition, summary reports for the individual monitoring sites were generated and reviewed (Figure 5).

Results

All of the objectives for the project were successfully completed by Pacific Traffic and Transit Data Services. The twelve TRAFx counters were properly installed, and 12 months of monthly traffic data and field reports concerning the physical status of the counters were delivered to the DCP. At the end the fieldwork the TRAFx counter equipment was returned along back to the DCP.

Evaluation/Discussion of Results

Subsequent to the completion of the project the DCP staff tested the road monitors under varying physical settings and counters system configurations.

The DCP staff placed the traffic counters at varying distance away from the road so as to try and maximize their effectiveness. In addition road monitors were tested by using different sensitivity settings on the traffic counters. It was found that the manufacturer-recommended settings worked the best.

During course of project some counters were washed or bulldozed away. This further emphasizes the need to place the counters in a safe and stable location.

Bad readings (obvious anomalous spikes in road use) were received by the traffic counters placed along roads located under high voltage lines. They were moved the counters to other locations along the roads for better readings but this was to no avail. Note: the manufacture does warn against use under high-voltage powerlines as these can generate problematic electro-magnetic fields.

Conclusion/Recommendations

- In most cases TRAFx traffic counter system is recommended for road monitoring on BCCE. However, it is useless to use the counter under high voltage lines as the counters are a magnetometer device. Limited testing indicates it make no difference if lines are AC or DC.
- Place counters in secure/stable locations.
- Use TRAFx sensitivity settings for best results.

Literature Cited

http://www.trafx.net/products.htm (last viewed 3/10/14)

Figure 1

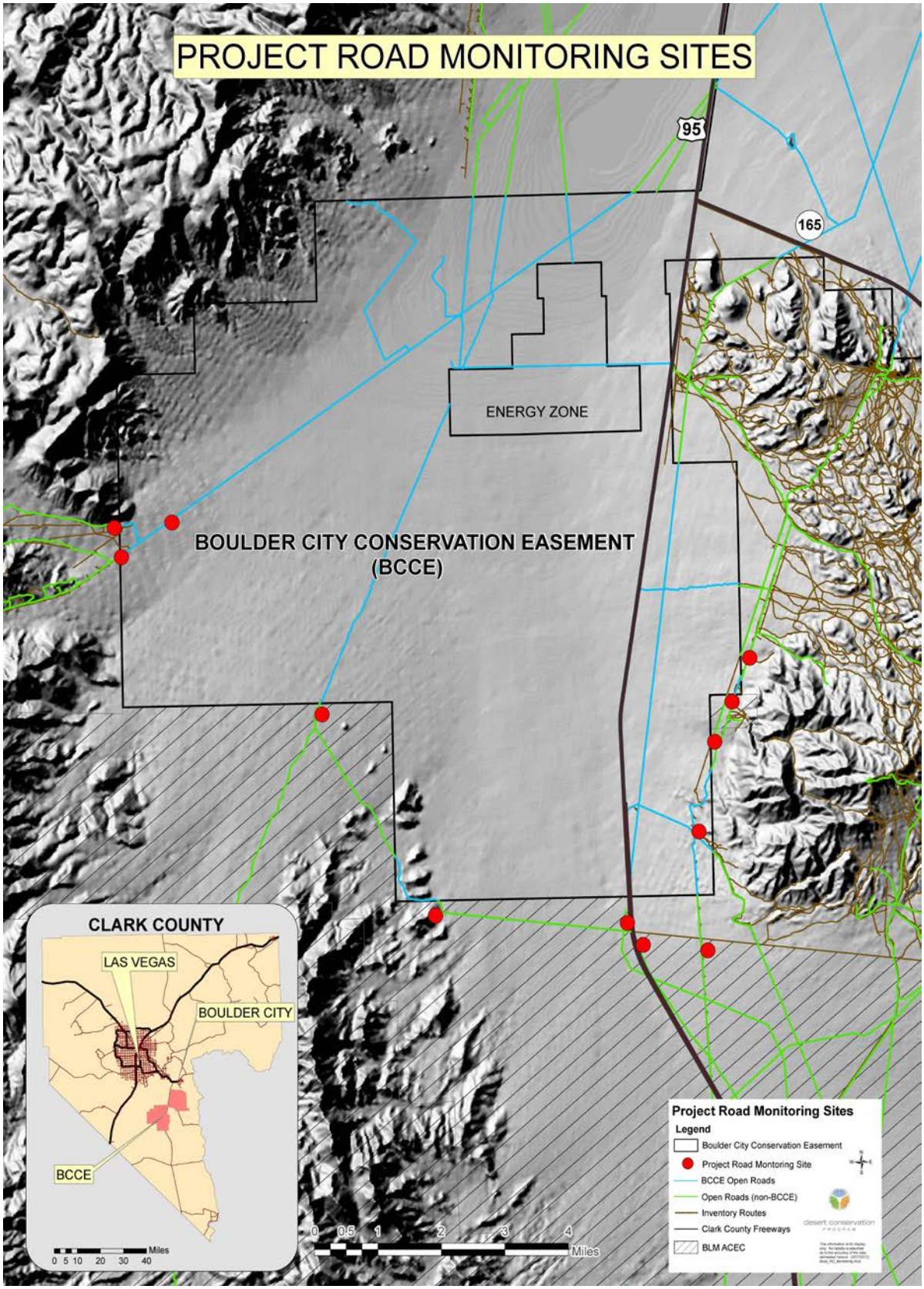
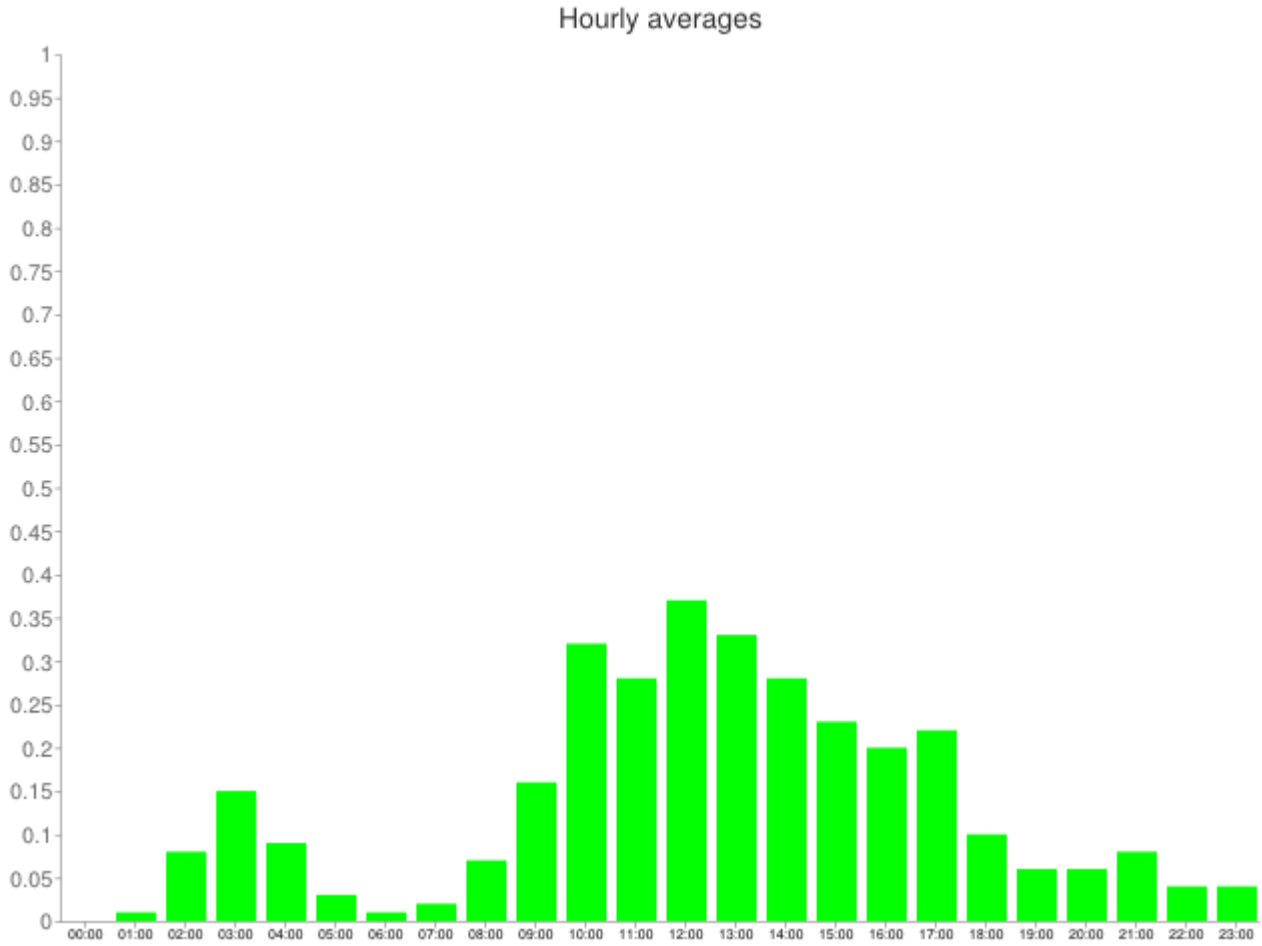

PROJECT ROAD MONITORING SITES
95
165
ENERGY ZONE
BOULDER CITY CONSERVATION EASEMENT
(BCCE)
CLARK COUNTY
LAS VEGAS
BOULDER CITY
BCCE
Miles
0 5 10 20 30 40
0 0.5 1 2 3 4
Miles
Project Road Monitoring Sites
Legend
Boulder City Conservation Easement
Project Road Monitoring Site
BCCE Open Roads
Open Roads (non-BCCE)
Inventory Routes
Clark County Freeways
BLM ACEC
desert conservation

Figure 2

Hours of the day

From 2012-07-03 to 2013-06-29

Report generated on 2014-03-13 16:19:14 (UTC -06:00) by Mata@clarkcountynv.gov TRAFx DataNet (http://www.trafx.net/)



Site Name	Average	Median	STDV	Min	Max
DCP 705 B	0.1	0.1	0.1	0.0	0.4

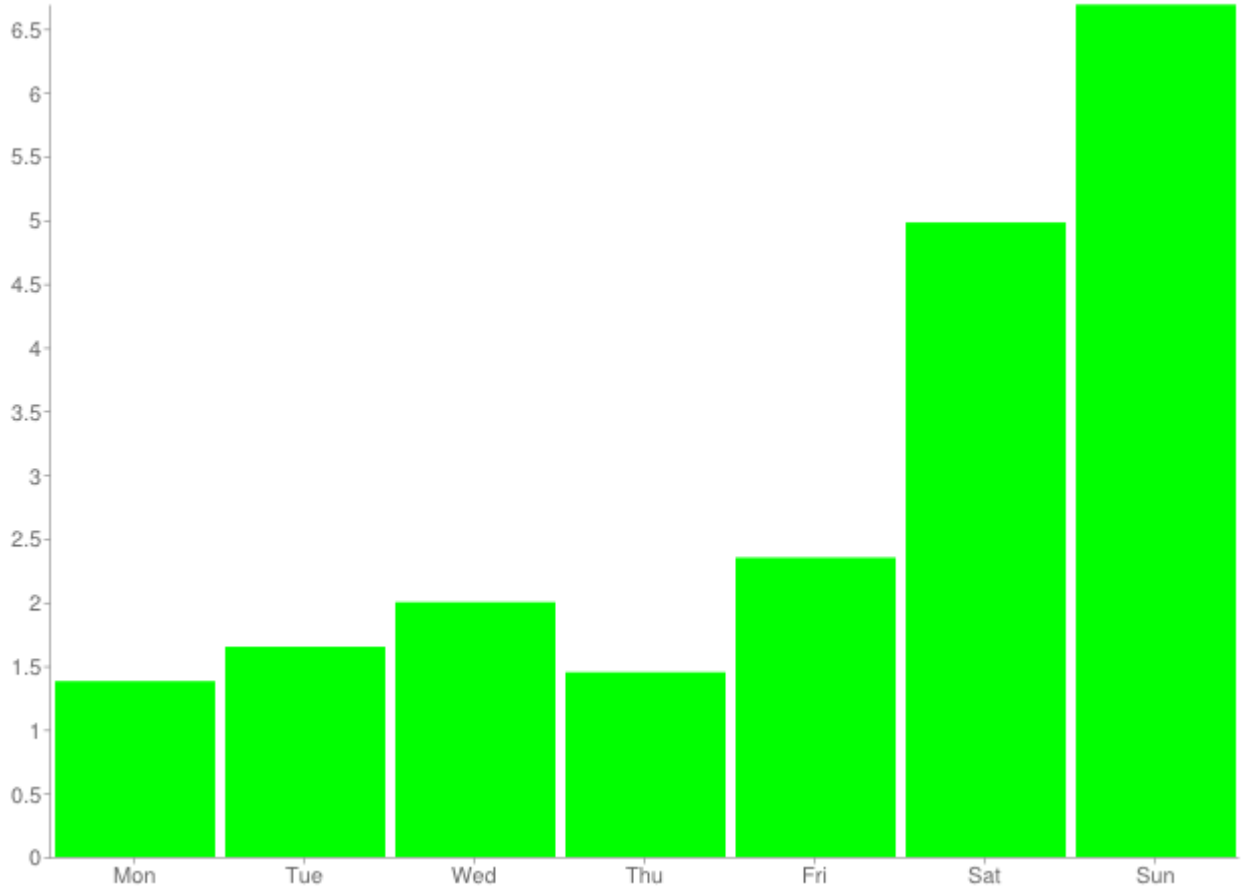
A = adjustment applied, D = divide by 2 applied, F = filtering applied

Figure 3

Days of the week

From 2012-07-03 to 2013-06-29

Daily averages



Report generated on 2014-03-13 15:57:49 (UTC -06:00) by Mata@clarkcountynv.gov TRAFx DataNet (http://www.trafx.net/)

Site Name	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Daily Averages	1	2	2	1	2	5	7
DCP 705 B	1.4	1.7	2.0	1.4	2.3	5.0	6.7

A = adjustment applied, D = divide by 2 applied, F = filtering applied

Figure 4

Monthly* totals report

Covering 12 months from 2012-07-01 to 2013-06-30

Report generated on 2014-03-13 16:11:40 (UTC -06:00) by Mata@clarkcountynv.gov TRAFx DataNet (http://www.trafx.net/)

Site Name		Average	Min	Max
DCP 705 B		89.2	36.0	170.0

A = adjustment applied, D = divide by 2 applied, F = filtering applied

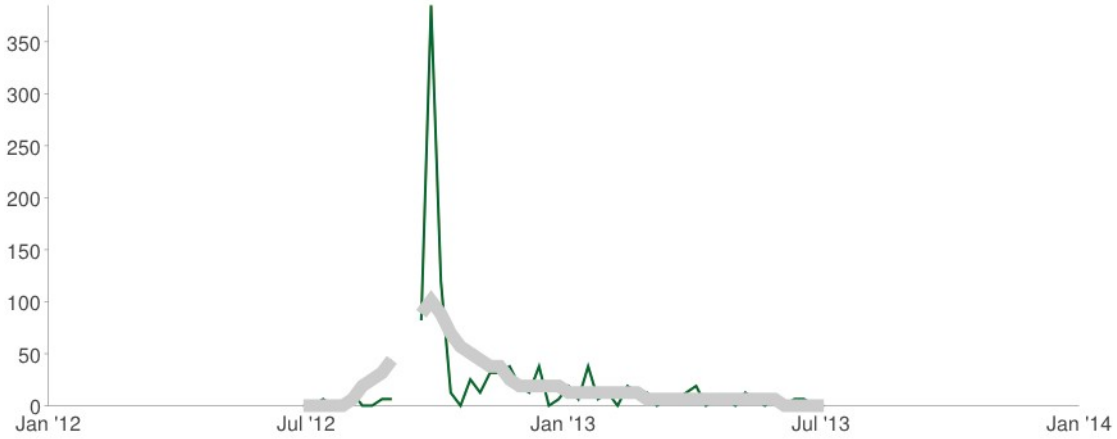
* Based on Average Daily Traffic (ADT)

Figure 5

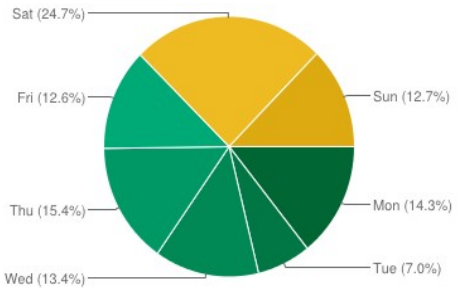
DCP 705 A

Site report: from 2012-01-01 to 2014-01-01
Made by: Mata@clarkcountynv.gov on 2014-03-14 08:58:36 (UTC -06:00)
Made with: TRAFx DataNet (http://www.trafx.net/)
Adjust. factor (1); Divide 2 (No); Filter (0)

Weekly totals*

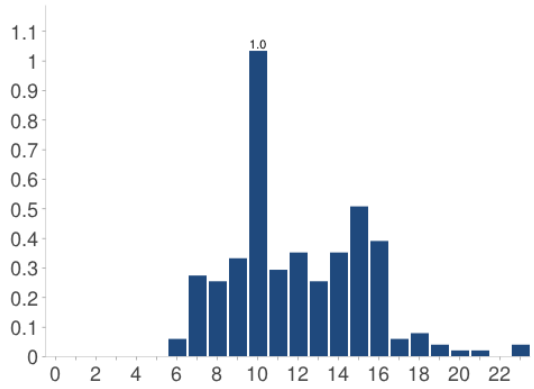


Daily*

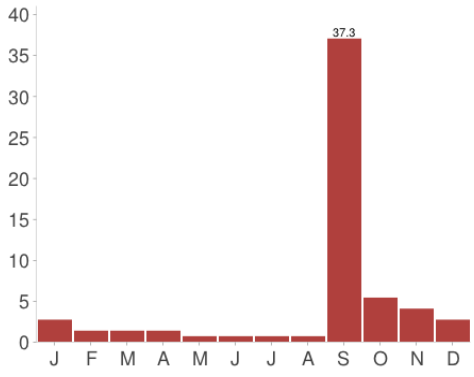


Avg. daily traffic: 3.38

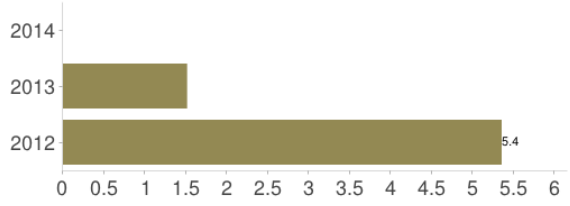
Hourly



Monthly*



Yearly*



* Weekly and Daily are calculated from Average Daily Traffic (ADT); Monthly and Yearly show ADT values.