ADEQ
Arizona Department of Environmental Quality

Arizona State Implementation Plan Revision: Determination of a Significant Emission Rate for Ammonia

Air Quality Division
February 20, 2019

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Appendix A Nogales Emissions Inventory and Speciation Data

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Appendix V Section 2.1 - Administrative Materials

(a) A formal signed, stamped and dated letter of submittal from the Governor or his designee, requesting EPA approval of the plan or revision thereof (hereafter "the plan"). If the electing to submit a paper submission with a copy in electronic version, the submittal letter must verify that the electronic copy provided is an exact duplicate of the paper submission.

See the cover letter for this SIP submission and attached delegation of authority from Misael Cabrera, Director of ADEQ, to Timothy Franquist, Director of the ADEQ Air Quality Division, authorizing Mr. Franquist to perform any act the ADEQ Director is authorized to perform under the state air quality statutes, including the submission of SIPs to EPA.

(b) Evidence that the State has adopted the plan in the State code or body of regulations; or issued the permit, order, consent agreement (hereafter "document") in final form. That evidence shall include the date of adoption or final issuance as well as the effective date of the plan, if different from the adoption/issuance date.

Not applicable. This SIP submission consists of a demonstration that the adoption of amendments to the state code of regulations to incorporate a significant emission rate for ammonia is not necessary.

(c) Evidence that the State has the necessary legal authority under State law to adopt and implement the plan.

ADEQ is authorized to adopt and administer the SIP under Arizona Revised Statutes sections 49-104, 49-106, 49-404, and 49-406, which are included in Appendix B.

(d) A copy of the actual regulation or document submitted for approval and incorporation by reference into the plan, including indication of the changes made (such as redline/strikethrough) to the existing plan, where applicable.

The demonstration that it is not necessary to adopt a significant emission rate for ammonia is set forth below.

(e) Evidence that the State followed all the procedural requirements of the State's laws and constitution in conducting and completing the adoption/issuance of the plan.

Proof that ADEQ gave notice of and held a hearing on the SIP Revision in accordance with A.R.S. § 49-444 is attached as Appendix B.

(f) Evidence that public notice was given of the proposed change consistent with procedures approved by EPA, including the date of publication of such notice.

See 2.1(e) above.

(g) Certification that public hearing(s) were held in accordance with the information provided in the public notice and the State's laws and constitution, if applicable and consistent with the public hearing requirements in 40 CFR 51.102.

The certification and other documents related to the public hearing are included in Appendix B.

(h) Compilation of public comments and the State's response thereto.

The compilation of public comments and the State's response thereto are included in Appendix B.

Appendix V Section 2.2 - Technical Materials

(a) Identification of all regulated pollutants affected by the plan.

This SIP Revision addresses ammonia as a precursor to $PM_{2.5}$.

(b) Identification of the locations of affected sources including the EPA attainment/nonattainment designation of the locations and the status of the attainment plant for the affected area(s).

There are no affected sources, because there are currently no major sources of ammonia in Arizona's two $PM_{2.5}$ nonattainment areas. This demonstration and the consequent decision not to adopt a significant level for ammonia will only have effect if a major source of ammonia subject to nonattainment NSR is constructed in one of those areas (before it is redesignated to attainment) and is subsequently subject to a physical or operational change that results in both an increase and a net increase in ammonia emissions.

(c) Quantification of the changes in plan allowable emissions from the affected sources; estimates of changes in current actual emissions from affected sources or, where appropriate, quantification of changes in actual emissions from affected sources through calculations of the differences between certain baseline levels and allowable emissions anticipated as a result of the revision.

Not applicable.

(d) The State's demonstration that the national ambient air quality standards, prevention of significant deterioration increments, reasonable further progress demonstration, and visibility, as applicable, are protected if the plan is approved and implemented. For all requests to redesignate an area to attainment for a national primary ambient air quality standard, under section 107 of the Act, a revision must be submitted to provide for the maintenance of the national primary ambient air quality standards for at least 10 years as required by section 175A of the Act.

See the demonstration below.

(e) Modeling information required to support the proposed revision, including input data, output data, models used, justification of model selections, ambient monitoring data used, meteorological data used, justification for use of offsite data (where used), modes of models used, assumptions, and other information relevant to the determination of adequacy of the modeling analysis.

See the demonstration below.

(f) Evidence, where necessary, that emission limitations are based on continuous emission reduction technology.

Not applicable.

(g) Evidence that the plan contains emission limitations, work practice standards and recordkeeping/reporting requirements, where necessary to ensure emission limitations.

Not applicable.

(h) Compliance/enforcement strategies, including how compliance will be determined in practice.

Not applicable.

(i) Special economic and technological justifications required by any applicable EPA policies, or an explanation of why such justifications are not necessary.

Not applicable.

1 Introduction

1.1 Background

On April 28, 2012, ADEQ submitted a significant SIP revision designed to update to the Arizona State Implementation Plan (SIP) for New Source Review (NSR) to satisfy current federal NSR requirements.

EPA published a limited approval and disapproval of the 2012 revision in the Federal Register on November 2, 2015. The limited approval/limited disapproval found that the new and amended rules submitted by ADEQ contained some deficiencies but met most of the applicable Clean Air Act (CAA) requirements for NSR programs and overall improved and strengthened the existing SIP.[1] The limited approval/limited disapproval deferred making a determination as to whether the 2012 submittal fully addressed section 189(e) of the CAA, as it relates to nonattainment NSR (NNSR) permitting requirements for major stationary sources of $PM_{2.5}$ precursors in $PM_{2.5}$ nonattainment areas.

On June 22, 2016, EPA published a limited disapproval of the NNSR provisions in ADEQ's 2012 SIP revision as they pertain to the Nogales and West Central Pinal $PM_{2.5}$ nonattainment areas.[2] EPA determined that the 2012 submittal did not satisfy section 189(e) for these areas, because it neither contained rules regulating Volatile Organic Compounds (VOCs) or ammonia as $PM_{2.5}$ precursors nor included a demonstration showing that the regulation of VOCs or ammonia was not necessary.

On April 28, 2017, ADEQ submitted a SIP revision to correct the deficiencies identified in the November 2015 limited approval/limited disapproval. The revision also corrected most of the deficiencies identified in the June 2016 limited disapproval with regard to $PM_{2.5}$ precursors. The revision did not, however, include a significant rate for ammonia or a demonstration that the regulation of ammonia as a precursor was not necessary, as required by 40 CFR 51.165(a)(1)(x)(F) and 51.165(a)(13).

In a letter dated December 6, 2017, ADEQ committed to meet the requirements of section 189(e) either by revising R18-2-101(131) to add a significant rate for ammonia or by making a demonstration consistent with 40 CFR 51.165(a)(1)(x)(F) and 51.165(a)(13) that the regulation of ammonia as a $PM_{2.5}$ precursor is not necessary. ADEQ stated that it would submit a SIP revision satisfying these conditions by the earlier of March 31, 2019 or one year from the date EPA takes final action on the April 2017 SIP revision and requested conditional approval of the April 2017 SIP revision on the basis of this commitment.

On May 4, 2018, EPA published a notice of conditional approval of the April 2017 SIP revision as it relates to ammonia as a $PM_{2.5}$ precursor.[3] The notice concluded that "ADEQ's December 6, 2017 commitment letter provides adequate assurance that the one deficiency concerning ammonia as a PM[2.5] precursor will be addressed in a timely manner, consistent with CAA section 110(k)(4)."

1.2 Purpose

ADEQ proposes to submit this SIP revision to EPA in order to correct the deficiency identified in the January 10, 2018 conditional approval in accordance with ADEQ's December 6, 2017 commitment letter.

[1] 80 FR 67319 (Nov. 2, 2015)
[2] 81 FR 40525 (June 22, 2016)
[3] 83 FR 1212 (January 10, 2018)

Section 189(e) of the CAA requires that control requirements for sources of PM_{10} in PM_{10} nonattainment areas also apply "to major stationary sources of PM_{10} precursors, except where the Administrator determines that such sources do not contribute significantly to PM_{10} levels which exceed the standard in the area." This provision also applies to sources of $PM_{2.5}$ precursors in designated $PM_{2.5}$ nonattainment areas. ADEQ believes that ammonia does not contribute significantly to fine particulate matter concentrations in $PM_{2.5}$ nonattainment areas (NAAs) in the State for two reasons:

First, in both NAAs the majority of the fine particulate matter comes from primary $PM_{2.5}$ including organic material, elemental carbon, and crustal material. Ammonia and the secondary particulate matter precipitated from ammonia reactions are a significantly smaller part of local particulate matter collected at onsite monitors. In addition, approved inventories from NAAs show that Arizona is experiencing a large reduction in SO_2 emissions, reducing the amount of SO_2 available for reaction with ammonia to form sulfates.

Secondly, in both rural and urban areas, the state of Arizona is a nitric acid (HNO_3) limited area. Consequently, increases in emissions of ammonia do not form $PM_{2.5}$ because there is no excess nitric acid to react with. This factor coupled with low SO_2 inventory emissions makes the regulation of SO_x and NO_x more effective in controlling ammonium sulfate and ammonium nitrate.

1.3 Arizona $PM_{2.5}$ Non-Attainment Areas

Arizona has two fine particulate matter ($PM_{2.5}$) NAAs for the 2006 $PM_{2.5}$ National Ambient Air Quality Standards (NAAQS): Nogales, located in Santa Cruz County around the border city of Nogales, and West Pinal, located in western Pinal County. Figure 1 displays the $PM_{2.5}$ nonattainment areas in the State. Both nonattainment areas have clean data findings for the 2006 $PM_{2.5}$ NAAQS.[4,5]

The Nogales NAA in southern Arizona is within Santa Cruz County on the international border with Mexico and includes the City of Nogales, the community of Rio Rico, and unincorporated portions of the County. Nogales is characterized by a semi-arid climate. The average daily maximum temperature is 79.7°F, based on a 62-year average of meteorological data. The highest monthly daily maximum average temperature of 94°F occurs in July, and the lowest monthly daily minimum average temperature of 64.3°F occurs in January. Annual precipitation for Nogales is about 16 inches; the monsoon season runs from July to August bringing in about 8 inches of precipitation.[6] The Nogales nonattainment area contains major ports of entry into the country from Mexico for commercial vehicles, passenger vehicles, and aircraft.

West Pinal County is located in Central Arizona, lying within a basin between the Phoenix and Tucson metropolitan areas. West Pinal County is characterized by a low desert arid climate with annual average temperature of 71°F, which is higher than the Arizona annual average temperature of 65.97°F, and is much higher than the annual national average temperature of 54.45°F. The mean maximum temperature reaches to 105°F in July and the mean minimum temperature drops to 38.5 °F in December.[7] West Pinal receives annual precipitation of around 10 inches, which mostly falls in the summer monsoon season.

[4] 78 FR 54394 (September 4, 2013)
[5] 78 FR 887 (January 7, 2013)
[6] "Nogales, Arizona." Western Regional Climate Center. Web. Date Access: June 28, 2011. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?az5924>
[7] USA.com – Pinal County Weather, http://www.usa.com/pinal-county-az-weather.htm#HistoricalPrecipitation. Date Accessed: October 22, 2013.

West Pinal is primarily an agricultural area, cotton and dairy farms, with moderate residential development.

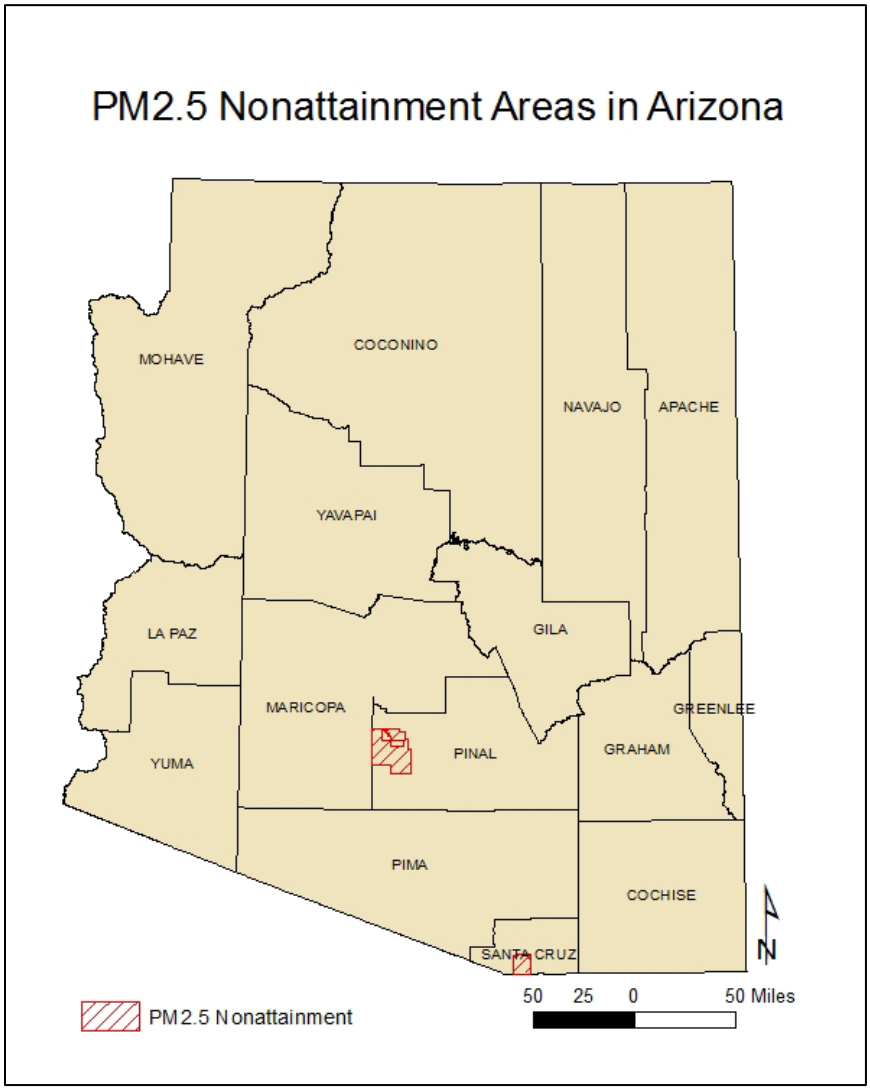

Figure 1 $PM_{2.5}$ Nonattainment Areas in Arizona

2 Formation of Secondary $PM_{2.5}$ from Ammonia

Ammonia is the most abundant alkaline gas in the atmosphere. When in the right atmospheric conditions, ammonia will form $PM_{2.5}$ with two other precursors, Sulfur Dioxide (SO_2) and Oxides of nitrogen (NO_x). $PM_{2.5}$ is comprised of five main components: organic matter, elemental carbon, crustal material, ammonium sulfate, and ammonium nitrate. The formation of ammonium sulfate and ammonium nitrate is detailed in 2.1 and 2.2. The reactions are complex and influenced by local atmospheric conditions including humidity, sunlight, and temperature.

2.1 Ammonium Sulfate from Ammonia and Sulfuric Acid

Ammonium sulfate is formed by the reaction of sulfuric acid (H_2SO_4) and ammonia (NH_3). First, $PM_{2.5}$ precursor SO_2 is oxidized and forms H_2SO_4. In the presence of ammonia, H_2SO_4 will react to form ammonium sulfate ($(NH_4)_2SO_4$) particles. A major source of SO_2 is the combustion of fossil fuels primarily from electric generating units. [8]

Equation 1

$$2NH_3 + H_2SO_4 \rightarrow (NH_4)\ _2SO_4$$

2.2 Ammonium Nitrate from Ammonia and Nitric Acid

NO_x reacts in the atmosphere to form nitric acid (HNO_3), which then forms ammonium nitrate particles in the presence of ammonia.

In high sunlight, VOC rich environments NO_2 is oxidized into nitric acid following Equation 2.

Equation 2

$$NO \overset{O_3}{\rightarrow} NO_2 \overset{OH}{\longrightarrow} HNO_3$$

Nitric Oxide and Nitrogen Dioxide react with ozone and dinitrogen pentoxide in low light, high moisture environments to form nitric acid as shown in Equation 3 below.

Equation 3

$$NO \overset{O_3}{\rightarrow} NO_2 \overset{O_3}{\rightarrow} NO_3 \rightarrow N_2O_5 \overset{H_2O}{\longrightarrow} 2HNO_3$$

NO_x once oxidized into nitric acid will react with ammonia to form ammonium nitrate precipitate as shown in Equation 4.

Equation 4

$$NH_3 + HNO_3 \leftrightarrow NH_4NO_3$$

[8] Sharma M., Kishore S., Tripathi S., 2007. Role of atmospheric ammonia in the formation of inorganic secondary particulate matter: A study at Kanpur, India.

In atmospheric reactions H_2SO_4 and HNO_3 both will compete to react with NH_3 to form secondary fine particulate matter. As the reaction of ammonia with H_2SO_4 is a faster reaction than with HNO_3, the ammonia left after the reaction with H_2SO_4 reacts with HNO_3 to form ammonium nitrate.[9] Any reactant left over from this process (see Equation 5) would then be "excess."

[9] Ibid

3 Determination of $PM_{2.5}$ Impacts in Non-Attainment Areas Due to Additional Ammonia Emissions

40 CFR 51.165(a)(1)(A) establishes the Significant Emission Rates (SERs) for stationary sources emitting particulate matter precursors in NAAs. The State of Arizona has assigned SERs for particulate matter precursors with the exception of ammonia. The SER is the threshold used to determine which modifications of major stationary sources will be subject to the major nonattainment NSR program. For secondary particulate matter precursors the State may demonstrate that the precursor is not a significant contributor to particulate pollution problem in a nonattainment area, and therefore a SER for ammonia is unnecessary.

EPA has issued draft guidance for states developing a precursor demonstration.[10] When demonstrating that a precursor is not a significant contributor to $PM_{2.5}$, states must show that the air quality change at all relevant locations does not "contribute significantly" to the $PM_{2.5}$ levels that exceed the standard, and may provide EPA with information related to factors that should be considered in determining whether the contribution of emissions of a particular precursor is "significant" or not. This information can include source characteristics, growth or loss of sources, analyses of speciated data and precursor emission inventories, chemical tracer studies, special intensive measurement studies to evaluate specific atmospheric chemistry in an area, and trends in ambient speciation data and precursor emissions.

ADEQ will show that ammonia is not a significant contributor to the State's $PM_{2.5}$ NAAs through analyses of speciated data and precursor emission inventories and an evaluation of excess atmospheric ammonia in the western region of the United States.

3.1 Monitor Data and Emission Inventories

This section will present monitor data and emission inventories from the Nogales and West Pinal NAAs and show that ammonia is not a contributor to high $PM_{2.5}$ concentrations.

3.1.1 Nogales Emissions Inventory and Speciated Data

Using the EPA approved emissions inventory submitted for 2010 and creating the 2014 inventory with similar methodologies ADEQ can show a reduction of SO_x by 31 tons per year and a reduction of NO_x by 319 tons per year.[11] These reductions can generally be attributed to federal ultra-low sulfur diesel standards implemented December 1, 2010.[12] The growth in NH_3 emissions can be attributed to population increase in the Nogales NAA. The emissions inventories can be found in .

Table 3-1 2010 and 2014 Nogales Emission Inventories

Pollutant	2010 (TPY)	2014 (TPY)
$PM_{2.5}$	433.9	208
NOx	946.8	627

[10] EPA, 2016. Draft PM2.5 Precursor Demonstration Guidance
[11] 80 FR 6908 (February 9, 2015)
[12] 70 FR 70498 (November 22, 2005)

Table 3-1 2010 and 2014 Nogales Emission Inventories		
Pollutant	**2010 (TPY)**	**2014 (TPY)**
SOx	36.2	5
VOC	1445	747
NH3	36.1	40

On October 24, 2015 the Interagency Monitoring of Protected Visual Environments (IMPROVE) network monitor was relocated to the Nogales Post office from Douglas. The purpose of the IMPROVE network is to characterize broad regional trends in visibility conditions using monitoring data collected in or near Class 1 areas; or in the case of Nogales conducting a border pollutant study. The IMPROVE monitors run a 1 in 3 day sample schedule.

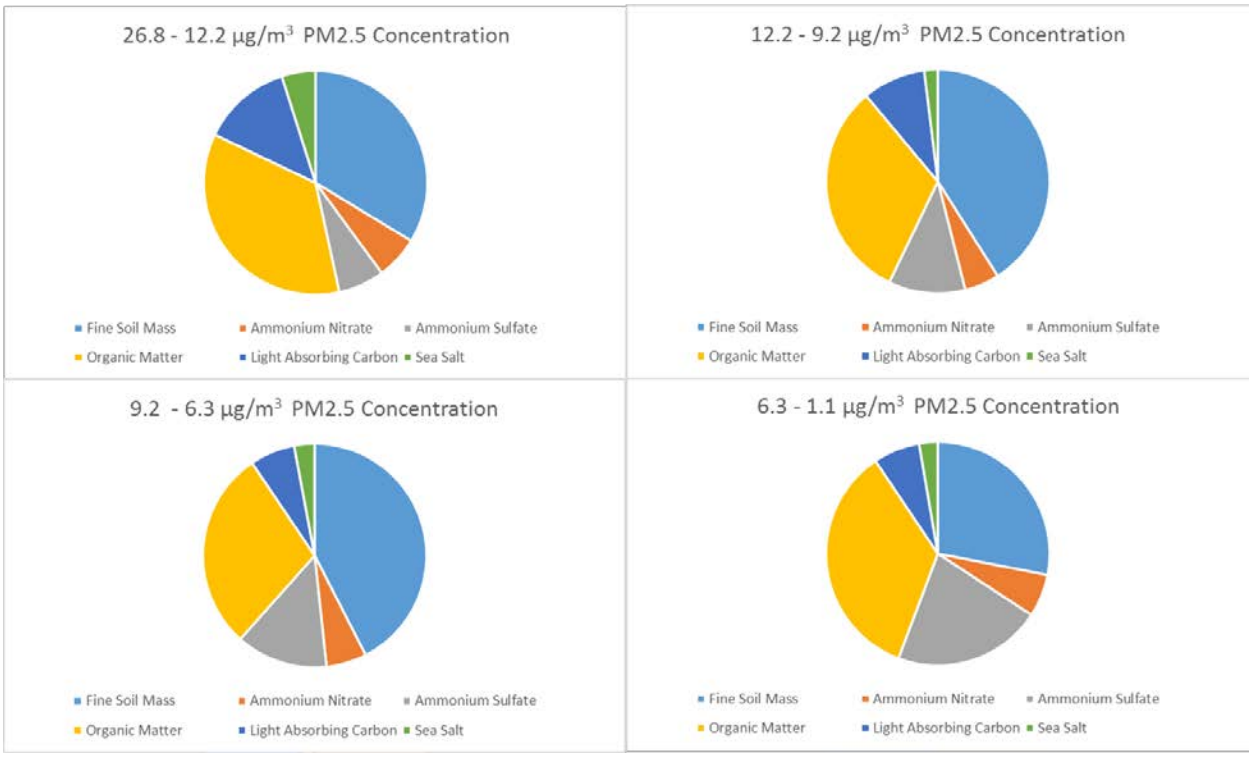

Figure 2 Nogales 2015-2016 24 Hour $PM_{2.5}$ Analyte Percentage per Quartile

For purposes of determining the impact of nitrate and sulfates on the fine particulate matter problem ADEQ pulled data from November 2015 through December 2016 from the IMPROVE network monitors. The results are displayed in Figure 2, with the highest quartile of daily $PM_{2.5}$ concentrations on the top left, the third quartile on the top right, the second quartile on the bottom left, and the bottom quartile on the bottom right. Although ammonia sulfates constitute a high percentage of the $PM_{2.5}$ concentration in the lowest quartile, ammonium sulfate and ammonia nitrates do not contribute to high $PM_{2.5}$ levels. At the highest quartile the chart shows that elevated concentrations are due to increases fine soil mass and

light absorbing carbon. These two $PM_{2.5}$ analytes are commonly found in wood smoke and airborne dust, which are the sources of Nogales' particulate matter nonattainment problems.

3.1.2 West Pinal County $PM_{2.5}$ Nonattainment Area Speciation Analyses

There have been two studies to determine the speciation of $PM_{2.5}$ concentrations in the West Pinal Nonattainment Area: (1) a 2003 study by the Pinal County Air Quality Department, which found that $PM_{2.5}$ concentrations were mainly due to feedlots and geologic dust; and (2) a 2010 study by ADEQ, which established that the exceedances in West Pinal could largely be attributed to geologic dust, manure particles, and occasionally smoke and soot.

3.1.2.1 2003 Pinal County Study

In 2003, the Pinal County Air Quality Department undertook a source apportionment study to identify which emission sources were contributing the elevated particulate matter concentrations in Pinal County.[13] Samples were collected from three locations within the West Pinal $PM_{2.5}$ NAA at Cowtown, Pinal County Housing, and Stanfield monitor sites. The ambient and source-specific samples were chemically speciated, and source-receptor chemical profiles were modeled with Chemical Mass balance (CMB).

Table 3-2 Chemical Source Profiles

Source ID	Source Description	Details
Soil	Geologic Soil	Ag, unpaved roads, desert soils
Feedlot	Feedlot Soil	Collected from Cowtown feedlot
MvEmi	Motor Vehicle Sources	Phoenix motor vehicle composite
VfBrn	Vegetative Burning	BRAVO[14] open burning
ColPP	Coal Fired Power Plant	BRAVO stack emissions from TX EGU
AmSulf	Ammonium Sulfate	Secondary $PM_{2.5}$
AmNitr	Ammonium Nitrate	Secondary $PM_{2.5}$
Other	Unclassified	Sources not modeled

[13] Clements, A., Fraser M., Upadhyay, N., Herckes, P., Sundblom, M., Lantz, J., Solomon, P., 2013. Chemical Characterization of coarse particulate matter in the Desert Southwest – Pinal County Arizona, USA.
[14] BRAVO – Big Bend Regional Aerosol and Visibility Observational Study

Figure 3, Figure 4, and Figure 5 show the average source contributions for Cowtown, Pinal County Housing, and Stanfield monitors.

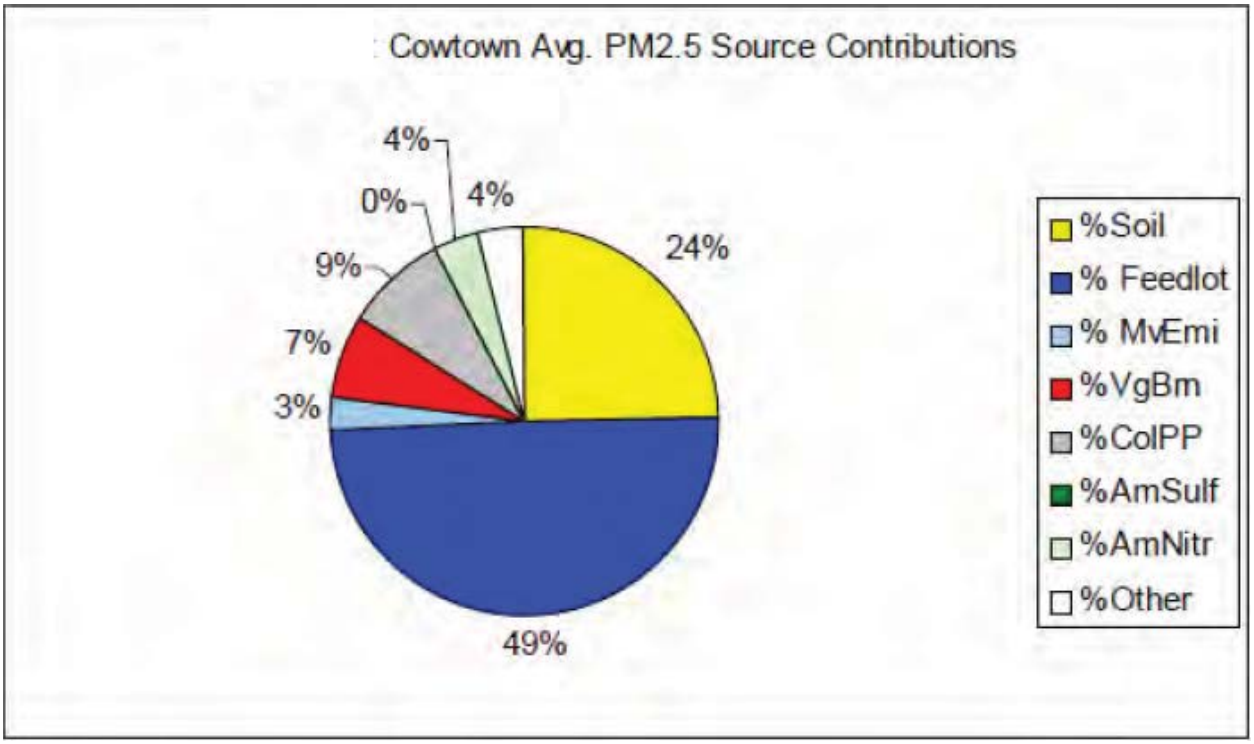

Figure 3 Cowtown Average $PM_{2.5}$ Source Contributions

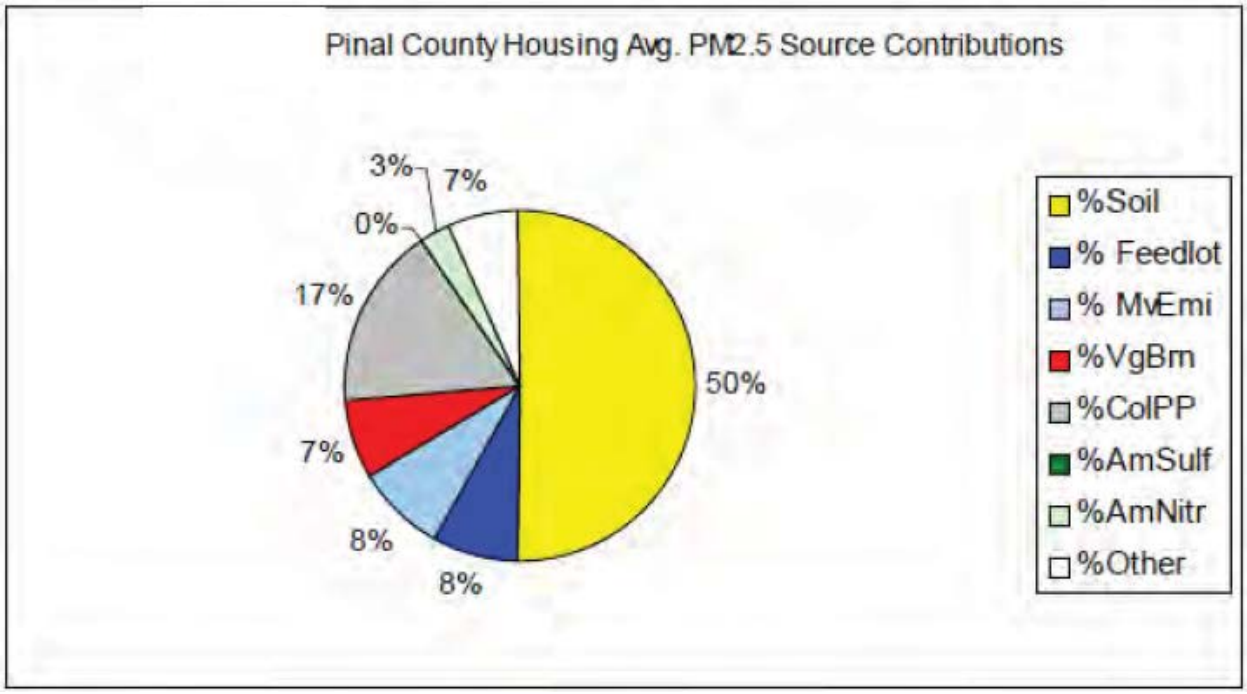

Figure 4 Pinal County Housing Average $PM_{2.5}$ Source Contributions

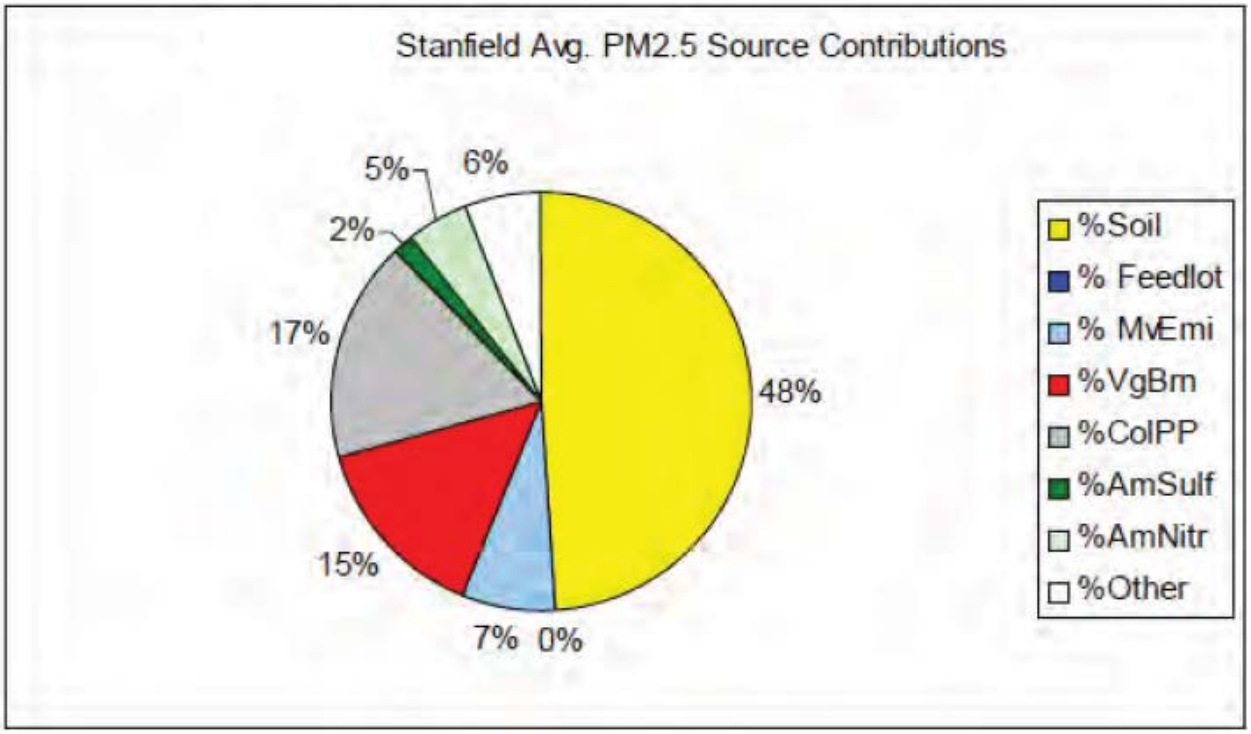

Figure 5 Stanfield Average $PM_{2.5}$ Source Contributions

The major findings of this study are that the Cowtown monitor has a prominent chemical signature from nearby feedlots, the other major source contributors to the $PM_{2.5}$ exceedances at the Cowtown, Pinal County Housing, and Stanfield monitor sites are geologic soil. Stagnation and non-stagnation created elevated $PM_{2.5}$ concentrations at the Cowtown monitor specifically. The source mix of elevated $PM_{2.5}$ is from the feedlot source near the monitors with geologic soil following second. Secondary particulate matter (ammonium sulfate and ammonium nitrate) accounted for 3-7% of source contribution at the monitors from the study. The majority of this secondary particulate matter can be attributed to agricultural activity.[15]

3.1.2.2 2010 ADEQ Study

A second study assessed samples collected between February 2009 and February 2010 at Cowtown, and Pinal County Housing. On average crustal matter and organic material represented over 50% of the concentration sample taken at Cowtown and Pinal County Housing for high $PM_{2.5}$ concentration days.

Table 3-3 **Fine Particulate Matter Source Concentration for West Pinal $PM_{2.5}$ NAA 2009-2010**

Fine Particle Fraction	Cowtown Concentration (µg/m³)	PCH Concentration (µg/m³)	Cowtown Contribution (%)	PCH Contribution (%)
Total Concentration	18.8	20.35	100	100
Crustal	4.52	11.79	24.04%	57.94%
Organic Material	5.86	2.11	31.17%	10.37%
Ammonium Nitrate	0.6	0.19	3.19%	0.93%
Ammonium Sulfate	0.99	0.5	5.27%	2.46%
Ammonium	0.37	0.19	1.97%	0.93%
Other Measured Species	1.34	1.39	7.13%	6.83%
Unidentified	5.13	4.18	27.29%	20.54%

Based on the results of the studies in Table 3-3 **Fine Particulate Matter Source Concentration for West Pinal PM2.5 NAA 2009-2010**, the ammonia species account for less than 10% of $PM_{2.5}$ concentrations, much less than other sources.

3.2 Limiting Precursor – HNO_3 Limited Area

The amount of ammonium nitrate and ammonium sulfate produced depends on the prevalence of precursors: VOCs, NO_x, SO_2, and ammonia. To reduce ammonium nitrate concentrations, the precursor in

[15] ADEQ, 2010. Analysis of $PM_{2.5}$ Exceedances in Pinal County Arizona: Demonstration that $PM_{2.5}$ Concentrations are Driven by Local Sources of PM_{10} Near the Cowtown Monitor.

the shortest supply must be further reduced. Since in atmospheric reactions the reaction of ammonia with H_2SO_4 is faster than the reaction of ammonia the example uses the remaining NH_3 and NO_x.

To illustrate the concept of limiting precursors, Figure 6 shows ammonia molecules reacting with NO_x molecules to create two molecules of ammonium nitrate. In this illustration, there are more ammonia molecules in the atmosphere than NO_x, which means than not all the ammonia is converted into ammonium nitrate.

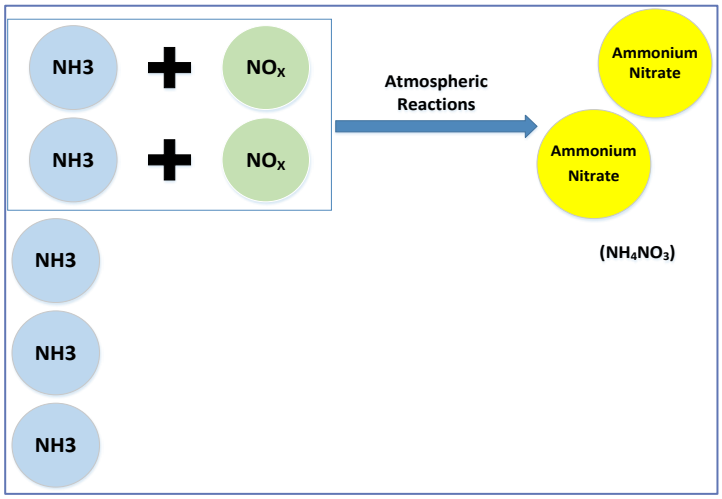

Figure 6 Normal NH_3 Excess Atmospheric Reaction

Figure 7 shows a reduction in NO_x, showing a singular molecule reacting with one ammonia molecule to form a single ammonium nitrate. Thus the reduction in NO_x results in a reduction in ammonium nitrate.

Figure 8 shows that the opposite is not true in a NH_3 excess environment, a reduction in NH_3 does not result in a reduction of ammonium nitrate.[16]

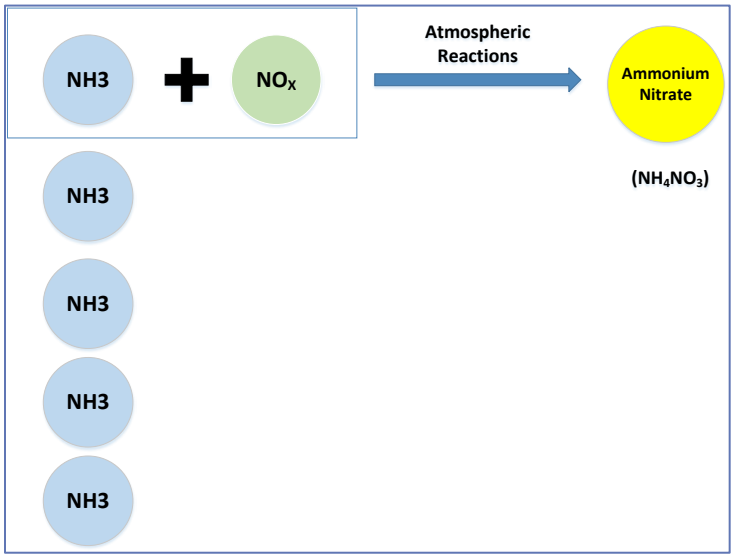

Figure 7 NO_x Reduced NH_3 Excess Atmospheric Reaction

[16] Figures are from 2015 San Joaquin Valley $PM_{2.5}$ Attainment Plan. Accessed 1/31/2018 < https://www.arb.ca.gov/planning/sip/planarea/2015sjv/WOE_SJV_2015_PM25_Plan.pdf>

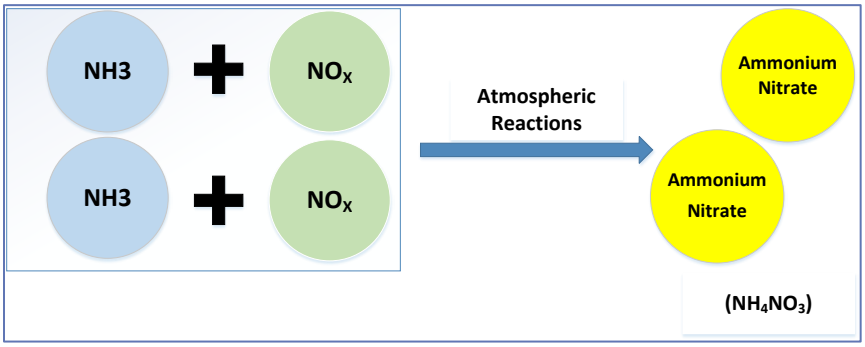

Figure 8 NH_3 Reduced NH_3 Excess Atmospheric Reaction

For the purposes of this NNSR precursor demonstration ADEQ will demonstrate that Arizona, in both rural and urban areas, has excess ammonia and that increasing ammonia emissions from a stationary source does not impact secondary fine particulate formation.

The methodology that ADEQ uses to show that Arizona's $PM_{2.5}$ NAAs are nitric acid limited in the case of ammonium nitrate formation is based on a method used by Kirk Baker and Peter Scheff in a 2006 photochemical model performance study for $PM_{2.5}$ precursors.[17] ADEQ calculated excess NH_3 using Equation 5.

Equation 5

$$Excess\ NH_3 = NH_3 + NH_4^+ - 2 \times SO_4^{2-} - 2 \times SO_2 - NO_3^- - HNO_3$$

Equation 6

$$Excess\ NH_3 < 0$$

When Equation 6 is true then the $PM_{2.5}$ ammonium nitrate formation would be NH_3 limited.

Equation 7

$$Excess\ NH_3 > 0$$

When Equation 7 is true then the $PM_{2.5}$ ammonium nitrate formation would be HNO_3 limited.

ADEQ obtained weekly gaseous HNO_3 and SO_2 concentrations and particulate NH_4^+, SO_4^{2-}, and NO_3^- concentrations from the Clean Air Status and Trends Network (CASTNET).[18] In order to determine the amount of ammonia gas concentrations ADEQ used the biweekly NH_3 concentrations from the National Atmospheric Deposition Program (NADP AMoN).[19] ADEQ chose all nine co-located sites where both CASTNET and AMoN monitors were located in the western U.S., in states including Washington, Colorado, Wyoming, Nebraska, Arizona, and California. The locations of the monitors are indicated on Figure 9. The

[17] Baker, K., Scheff, P., 2006. Photochemical model performance for PM2.5 sulfate, nitrate, ammonium, and precursor species SO2, HNO3, and NH3 at background monitor locations in the central and eastern United States.
[18] https://www.epa.gov/castnet
[19] Nadp.isws.illinois.edu/AMoN/

majority of AMoN site NH_3 data were only available through 2014, so calculations were limited to the years 2012-2014. Once all the weekly and biweekly concentrations were averaged to an annual concentration ADEQ calculated the annual "Excess NH_3" for each of the co-located monitors. The results for the "Excess NH_3" are shown in Table 3-4. These calculations indicate that all of the co-located monitors in the western region are HNO_3 limited.

Table 3-4 Co-Located CASTNET and AMoN Monitors Excess NH_3 Results

Site ID	Site Name	State	Latitude (°N)	Longitude (°W)	Period of record	AMoN site	CASTNET site	Excess NH_3 (moles)
WA99	Mount Rainier National Park	WA	46.76	−122.124	2012-2013	WA99	MOR409	0.0086 (2012) 0.0113 (2013)
CO10	Gothic	CO	38.96	-106.99	2012-2014	CO10	GTH161	0.0187 (2012) 0.0230 (2013) 0.0192 (2014)
CO88	Rocky Mountain National Park	CO	40.28	-105.55	2012-2014	CO88	ROM406	0.0174 (2012) 0.0234 (2013) 0.0189 (2014)
WY95	Brooklyn Lake	WY	41.36	-106.24	2012-2014	WY95	CNT169	0.0215 (2012) 0.0199 (2013) 0.0179 (2014)
NE98	Santee	NE	42.83	-97.85	2012-2014	NE98	SAN189	0.1839 (2012) 0.1820 (2013) 0.1823 (2014)
AZ98	Chiricahua National Monument	AZ	32.01	-109.39	2012-2014	AZ98	CHA467	0.0318 (2012) 0.0371 (2013) 0.0432 (2014)
CA44	Yosemite National Park	CA	37.71	-119.71	2012-2014	CA44	YOS404	0.0461 (2012) 0.0468 (2013) 0.0582 (2014)
CA67	Joshua Tree National Park	CA	34.07	-116.39	2012-2014	CA67	JOT403	0.0369 (2012) 0.0485 (2013) 0.0479 (2014)

Table 3-4 Co-Located CASTNET and AMoN Monitors Excess NH_3 Results								
Site ID	Site Name	State	Latitude (°N)	Longitude (°W)	Period of record	AMoN site	CASTNET site	Excess NH_3 (moles)
CA83	Sequoia National Park	CA	36.49	-118.82	2012-2014	CA83	SEK430	0.1917 (2012) 0.2086 (2013) 0.2216 (2014)

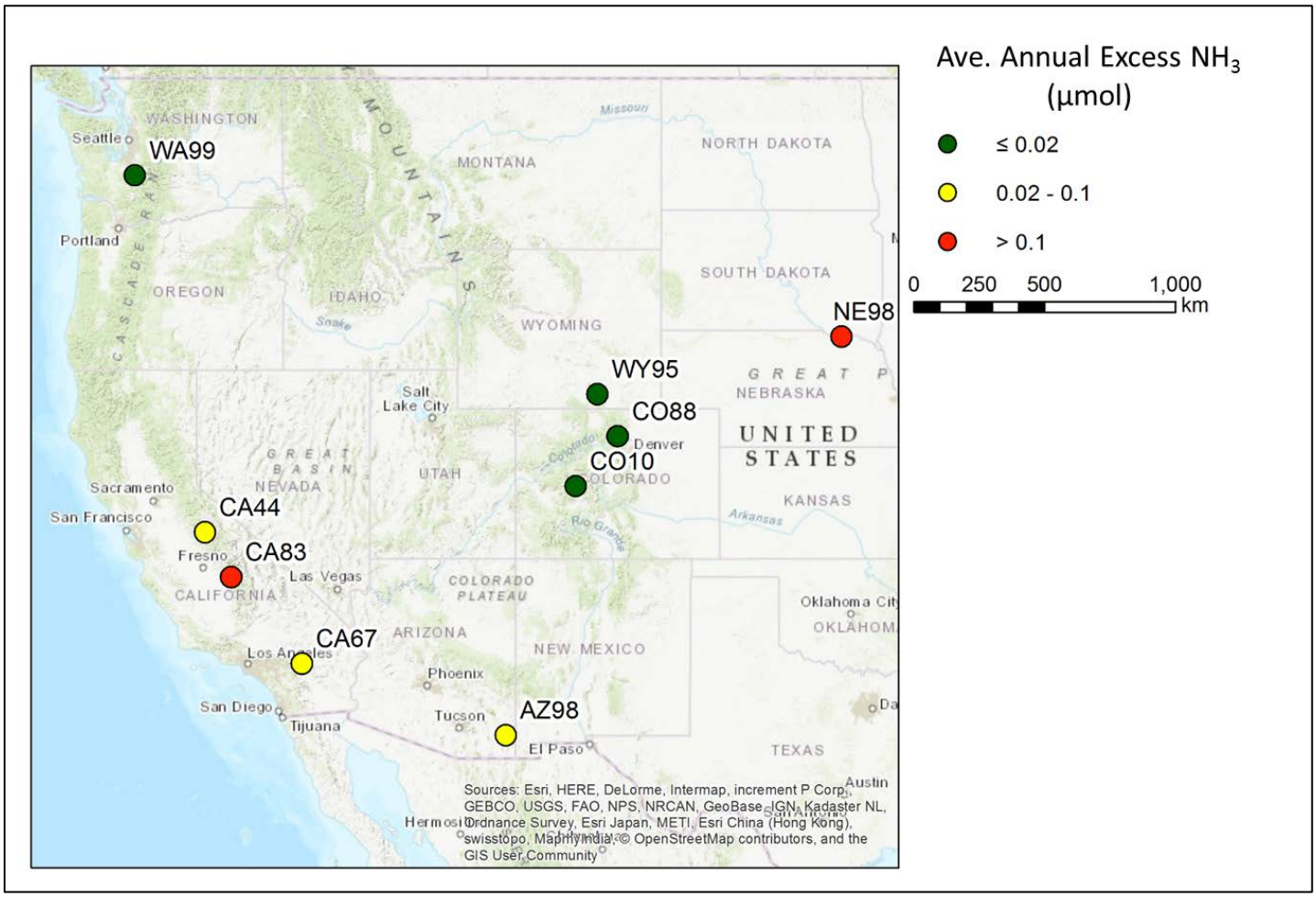

Figure 9 Average Annual Excess NH_3

In addition to the rural calculations, urban areas are shown to also have excess ammonia. In the technical paper "Ammonium Nitrate, Nitric Acids, and Ammonia Equilibrium in Wintertime Phoenix, Arizona" the authors, through modeling and air quality measures, calculate that Phoenix is also an "excess NH_3" region.[20]

[20] Watson, J., Chow J., Lurmann F., Musarra S., 1994. "Ammonium Nitrate, Nitric Acid, and Ammonia Equilibrium in Wintertime Phoenix, Arizona." Air & Waste Management Association.

The amount of ammonium nitrate and ammonium sulfate created is dependent on the presence and abundance of precursors. By recreating the "excess NH_3" equation for the co-located western monitors ADEQ was able to show that in the western region, including Arizona, ammonia is not the limiting precursor for ammonium sulfate and ammonium nitrate. Previous research shows that urban areas too are HNO_3 limited. Therefore, additional ammonia emissions from any source would not meaningfully impact secondary particulate matter formation in the Nogales and West Pinal NAAs.

4 Conclusions

ADEQ has listed the main points and described the weight of evidence in Table 4-1 below.

Table 4-1 Weight of Evidence

Evidence	Description
Nogales Post Office IMRPOVE 2016 monitor data	Shows that Nitrates and Sulfates less than 12% by concentration at the monitor for 2016.
Nogales 2010 and 2014 Emissions Inventory	Shows reductions in limiting pollutants SO_2 and NO_x, which would mean a reduction overall in Nitrates and Sulfates.
ADEQ, 2010. "Analysis of $PM_{2.5}$ Exceedances in Pinal County Arizona; Demonstration that $PM_{2.5}$ Concentration are Driven by Local Source of PM_{20} Near the Cowtown Monitor."	Study from 2003-2005 that shows the $PM_{2.5}$ violations at the monitor were primarily $PM_{2.5}$ driven and that the contribution from secondary fine particulate matter is less than 7% of analysis.
Clements A., Fraser M., Upadhyay N., Herckes P., Sundblom M., Lantz J., Solomon P., 2013. "Chemical Characterization of coarse particulate matter in the Desert Southwest – Pinal County Arizona, USA."	Study from 2009-2010 that shows primary $PM_{2.5}$ contributes the majority of the concentration at the monitor
Excess Ammonia calculations for western U.S. Region	Co-located CASTNET and AMoN monitor data for ammonia and $PM_{2.5}$ precursor concentrations. ADEQ calculated the annual "Excess NH_3" for each of the co-located monitors. These calculations indicate that all of the co-located monitors in the western region are HNO_3 limited with excess ammonia.
Watson, J., Chow J., Lurmann F., Musarra S., 1994. "Ammonium Nitrate, Nitric Acid, and Ammonia Equilibrium in Wintertime Phoenix, Arizona." Air & Waste Management Association.	Research paper that shows Phoenix as excess ammonia area.

5 Proposed Significant Emission Rate

Based on the weight of evidence, ADEQ has demonstrated that Ammonia is not a significant precursor in the formation of secondary $PM_{2.5}$ and therefore does not contribute to the $PM_{2.5}$ nonattainment in the State. Therefore, ADEQ does not have to meet the provisions of 189(e) for Ammonia as a $PM_{2.5}$ precursor.

Consequently, ADEQ proposes no significant emission rate for ammonia in the State of Arizona.

ADEQ
Arizona Department of Environmental Quality

Appendix A
Nogales Emissions Inventory and Speciation Data

Air Quality Division
February 23, 2018 Draft

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A1 Nogales Emissions Inventories

A1.1 2010 and 2014 Emissions Inventories

ADEQ compared the 2010 emissions inventory to a 2014 inventory prepared for a future Nogales State Implementation Plan (SIP). The methodology for the 2010 inventory is located in the Primary $PM_{2.5}$ and Secondary Precursor Emissions Inventories Technical Support Document in Exhibit AI1. The 2014 inventory was developed using similar methods to the approved 2010 inventory, the allocation factors and values are listed in section A1.2.

A1.2 2014 Nogales Emissions Inventory

The 2014 Inventory was developed using similar methodology to the 2008-2010 inventories. The inventory and subtotals are detailed in **Table A-1**. ADEQ used EPA's 2014 V.1 NEI the Santa Cruz County, allocating emissions through the factors listed in **Table A-2**.

Table A-1: 2014 Nogales NA Emissions Inventory

Source	$PM_{2.5}$	NO_x	SO_x	VOC	NH_3
Stationary Source Fuel Combustion - Sub Total	28.2	34.9	1.6	35.4	3.4
Mobile Sources - Sub Total	109.8	31.0	0.3	1.6	0.01
Industrial Processes-Mining and Quarrying	34.6	-	-	-	-
Solvent Utilization	-	-	-	306.9	-
Storage and Transport-Petroleum and Petroleum Product - Sub Total	-	-	-	66.1	-
Waste Disposal, Treatment, and Recovery - Sub Total	15.0	2.8	0.5	5.1	0.1
Miscellaneous Area Sources-Agriculture Production	2.6	-	-	-	36.5
Industrial Processes-Construction	3.0	-	-	-	-
Fires - Wild & Prescribed	1.18	0.35	0.15	2.91	0.20
Grand Total (TPY)	**194**	**69**	**3**	**418**	**40**

Table A-2: Allocation Factors

Population Factor	0.64
Land Factor	0.06

Source Category	pollutant	description	emissions	uom	MA Emiss
Stationary Source Fuel Combustion-Industrial-Bituminous/Subbituminous Coal-Total: All Boiler Types	NH3	Ammonia	0.01	TON	0.00
	NOX	Nitrogen Oxides	2.55	TON	1.64
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.57	TON	0.36
	SO2	Sulfur Dioxide	0.07	TON	0.04
	VOC	Volatile Organic Compounds	0.01	TON	0.01
Stationary Source Fuel Combustion-Industrial-Distillate Oil-All Boiler Types	NH3	Ammonia	0.01	TON	0.01
	NOX	Nitrogen Oxides	0.31	TON	0.20
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.02	TON	0.02
	SO2	Sulfur Dioxide	0.67	TON	0.43
	VOC	Volatile Organic Compounds	0.00	TON	0.00
Stationary Source Fuel Combustion-Industrial-Distillate Oil-All IC Engine Types	NH3	Ammonia	0.01	TON	0.01
	NOX	Nitrogen Oxides	9.44	TON	6.08
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.64	TON	0.41
	SO2	Sulfur Dioxide	0.62	TON	0.40
	VOC	Volatile Organic Compounds	0.66	TON	0.42
Stationary Source Fuel Combustion-Industrial-Natural Gas-Total: Boilers and IC Engines	NH3	Ammonia	0.07	TON	0.05
	NOX	Nitrogen Oxides	2.28	TON	1.47
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.01	TON	0.01
	SO2	Sulfur Dioxide	0.01	TON	0.01
	VOC	Volatile Organic Compounds	0.13	TON	0.08
Stationary Source Fuel Combustion-Industrial-Liquified Petroleum Gas (LPG)-Total: All Boiler Types	NH3	Ammonia	0.00	TON	0.00
	NOX	Nitrogen Oxides	0.20	TON	0.13
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.00	TON	0.00
	SO2	Sulfur Dioxide	0.00	TON	0.00
	VOC	Volatile Organic Compounds	0.01	TON	0.00
Stationary Source Fuel Combustion-Industrial-Wood-Total: All Boiler Types	NH3	Ammonia	0.00	TON	0.00
	NOX	Nitrogen Oxides	0.04	TON	0.02
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.07	TON	0.05
	SO2	Sulfur Dioxide	0.00	TON	0.00
	VOC	Volatile Organic Compounds	0.00	TON	0.00
Stationary Source Fuel Combustion-Commercial/Institutional-Distillate Oil-Boilers	NH3	Ammonia	0.00	TON	0.00
	NOX	Nitrogen Oxides	0.01	TON	0.00
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.00	TON	0.00
	SO2	Sulfur Dioxide	0.02	TON	0.01
	VOC	Volatile Organic Compounds	0.00	TON	0.00
Stationary Source Fuel Combustion-Commercial/Institutional-Distillate Oil-IC Engines	NH3	Ammonia	0.00	TON	0.00
	NOX	Nitrogen Oxides	0.50	TON	0.32
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.04	TON	0.02
	SO2	Sulfur Dioxide	0.03	TON	0.02
	VOC	Volatile Organic Compounds	0.03	TON	0.02
Stationary Source Fuel Combustion-Commercial/Institutional-Natural Gas-Total: Boilers and IC Engines	NH3	Ammonia	0.06	TON	0.04
	NOX	Nitrogen Oxides	12.74	TON	8.21
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.05	TON	0.04
	SO2	Sulfur Dioxide	0.08	TON	0.05
	VOC	Volatile Organic Compounds	0.70	TON	0.45
Stationary Source Fuel Combustion-Commercial/Institutional-Liquified Petroleum Gas (LPG)-Total: All Combustor Types	NH3	Ammonia	0.00	TON	0.00
	NOX	Nitrogen Oxides	0.82	TON	0.53
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.00	TON	0.00
	SO2	Sulfur Dioxide	0.00	TON	0.00
	VOC	Volatile Organic Compounds	0.03	TON	0.02
Stationary Source Fuel Combustion-Commercial/Institutional-Wood-Total: All Boiler Types	NH3	Ammonia	0.01	TON	0.00
	NOX	Nitrogen Oxides	0.33	TON	0.21
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.68	TON	0.44
	SO2	Sulfur Dioxide	0.04	TON	0.02
	VOC	Volatile Organic Compounds	0.03	TON	0.02
Stationary Source Fuel Combustion-Residential-Distillate Oil-Total: All Combustor Types	NH3	Ammonia	0.00	TON	0.00
	NOX	Nitrogen Oxides	0.03	TON	0.02
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.00	TON	0.00
	SO2	Sulfur Dioxide	0.07	TON	0.05
	VOC	Volatile Organic Compounds	0.00	TON	0.00
Stationary Source Fuel Combustion-Residential-Natural Gas-Total: All Combustor Types	NH3	Ammonia	2.69	TON	1.74
	NOX	Nitrogen Oxides	12.66	TON	8.16
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.06	TON	0.04
	SO2	Sulfur Dioxide	0.08	TON	0.05
	VOC	Volatile Organic Compounds	0.74	TON	0.48
Stationary Source Fuel Combustion-Residential-Liquified Petroleum Gas (LPG)-Total: All Combustor Types	NH3	Ammonia	0.03	TON	0.02
	NOX	Nitrogen Oxides	7.56	TON	4.87
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.02	TON	0.01
	SO2	Sulfur Dioxide	0.03	TON	0.02
	VOC	Volatile Organic Compounds	0.29	TON	0.19
Stationary Source Fuel Combustion-Residential-Wood-Fireplace: general	NH3	Ammonia	0.68	TON	0.44
	NOX	Nitrogen Oxides	0.98	TON	0.63
	PM25-PRI	PM2.5 Primary (Filt + Cond)	8.87	TON	5.72
	SO2	Sulfur Dioxide	0.15	TON	0.10
	VOC	Volatile Organic Compounds	7.10	TON	4.58
Stationary Source Fuel Combustion-Residential-Wood-Woodstove: fireplace inserts; non-EPA certified	NH3	Ammonia	0.57	TON	0.37
	NOX	Nitrogen Oxides	0.94	TON	0.61
	PM25-PRI	PM2.5 Primary (Filt + Cond)	10.29	TON	6.63
	SO2	Sulfur Dioxide	0.13	TON	0.09
	VOC	Volatile Organic Compounds	17.83	TON	11.49
Stationary Source Fuel Combustion-Residential-Wood-Woodstove: fireplace inserts; EPA certified; non-catalytic	NH3	Ammonia	0.10	TON	0.06
	NOX	Nitrogen Oxides	0.24	TON	0.16
	PM25-PRI	PM2.5 Primary (Filt + Cond)	2.09	TON	1.35
	SO2	Sulfur Dioxide	0.04	TON	0.03
	VOC	Volatile Organic Compounds	1.28	TON	0.82
Stationary Source Fuel Combustion-Residential-Wood-Woodstove: fireplace inserts; EPA certified; catalytic	NH3	Ammonia	0.03	TON	0.02
	NOX	Nitrogen Oxides	0.07	TON	0.05
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.73	TON	0.47
	SO2	Sulfur Dioxide	0.01	TON	0.01

	VOC	Volatile Organic Compounds	0.53 TON	0.34
Stationary Source Fuel Combustion-Residential-Wood-Woodstove: freestanding, non-EPA certified	NH3	Ammonia	0.68 TON	0.44
	NOX	Nitrogen Oxides	1.12 TON	0.72
	PM25-PRI	PM2.5 Primary (Filt + Cond)	12.25 TON	7.90
	SO2	Sulfur Dioxide	0.16 TON	0.10
	VOC	Volatile Organic Compounds	21.22 TON	13.68
Stationary Source Fuel Combustion-Residential-Wood-Woodstove: freestanding, EPA certified, non-catalytic	NH3	Ammonia	0.11 TON	0.07
	NOX	Nitrogen Oxides	0.29 TON	0.19
	PM25-PRI	PM2.5 Primary (Filt + Cond)	2.49 TON	1.61
	SO2	Sulfur Dioxide	0.05 TON	0.03
	VOC	Volatile Organic Compounds	1.53 TON	0.98
Stationary Source Fuel Combustion-Residential-Wood-Woodstove: freestanding, EPA certified, catalytic	NH3	Ammonia	0.04 TON	0.02
	NOX	Nitrogen Oxides	0.09 TON	0.06
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.87 TON	0.56
	SO2	Sulfur Dioxide	0.02 TON	0.01
	VOC	Volatile Organic Compounds	0.64 TON	0.41
Stationary Source Fuel Combustion-Residential-Wood-Woodstove: pellet-fired, general (freestanding or FP insert)	NH3	Ammonia	0.05 TON	0.03
	NOX	Nitrogen Oxides	0.65 TON	0.42
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.53 TON	0.34
	SO2	Sulfur Dioxide	0.06 TON	0.04
	VOC	Volatile Organic Compounds	0.01 TON	0.00
Stationary Source Fuel Combustion-Residential-Wood-Furnace: Indoor, cordwood-fired, non-EPA certified	NH3	Ammonia	0.18 TON	0.12
	NOX	Nitrogen Oxides	0.18 TON	0.12
	PM25-PRI	PM2.5 Primary (Filt + Cond)	2.75 TON	1.77
	SO2	Sulfur Dioxide	0.20 TON	0.13
	VOC	Volatile Organic Compounds	1.18 TON	0.76
Stationary Source Fuel Combustion-Residential-Wood-Hydronic heater: outdoor	NH3	Ammonia	0.00 TON	0.00
	NOX	Nitrogen Oxides	0.00 TON	0.00
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.10 TON	0.07
	SO2	Sulfur Dioxide	0.00 TON	0.00
	VOC	Volatile Organic Compounds	0.11 TON	0.07
Stationary Source Fuel Combustion-Residential-Wood-Outdoor wood burning device, NEC (fire-pits, chimeas, etc)	NH3	Ammonia	0.00 TON	0.00
	NOX	Nitrogen Oxides	0.00 TON	0.00
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.03 TON	0.02
	SO2	Sulfur Dioxide	0.00 TON	0.00
	VOC	Volatile Organic Compounds	0.02 TON	0.02
Stationary Source Fuel Combustion-Residential-Firelog-Total: All Combustor Types	NOX	Nitrogen Oxides	0.15 TON	0.10
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.57 TON	0.37
	VOC	Volatile Organic Compounds	0.79 TON	0.51
Mobile Sources-Railroad Equipment-Diesel-Line Haul Locomotives: Class I Operations	NH3	Ammonia	0.02 TON	0.01
	NOX	Nitrogen Oxides	47.61 TON	30.68
	PM25-PRI	PM2.5 Primary (Filt + Cond)	1.51 TON	0.97
	SO2	Sulfur Dioxide	0.50 TON	0.32
	VOC	Volatile Organic Compounds	2.44 TON	1.58
Mobile Sources-Railroad Equipment-Diesel-Line Haul Locomotives: Class II / III Operations	NH3	Ammonia	0.00 TON	0.00
	NOX	Nitrogen Oxides	0.54 TON	0.35
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.01 TON	0.01
	SO2	Sulfur Dioxide	0.00 TON	0.00
	VOC	Volatile Organic Compounds	0.02 TON	0.01
Mobile Sources-Paved Roads-All Paved Roads-Total: Fugitives	PM25-PRI	PM2.5 Primary (Filt + Cond)	20.89 TON	13.46
Mobile Sources-Unpaved Roads-All Unpaved Roads-Total: Fugitives	PM25-PRI	PM2.5 Primary (Filt + Cond)	147.94 TON	95.35
Industrial Processes-Food and Kindred Products: SIC 20-Commercial Cooking - Charbroiling-Conveyorized Charbroiling	PM25-PRI	PM2.5 Primary (Filt + Cond)	1.35 TON	0.87
	VOC	Volatile Organic Compounds	0.34 TON	0.22
Industrial Processes-Food and Kindred Products: SIC 20-Commercial Cooking - Frying-Deep Fat Fying	PM25-PRI	PM2.5 Primary (Filt + Cond)	10.98 TON	7.08
	VOC	Volatile Organic Compounds	1.36 TON	0.88
	VOC	Volatile Organic Compounds	0.18 TON	0.12
Industrial Processes-Food and Kindred Products: SIC 20-Commercial Cooking - Frying-Flat Griddle Frying	PM25-PRI	PM2.5 Primary (Filt + Cond)	2.28 TON	1.47
	VOC	Volatile Organic Compounds	0.18 TON	0.12
Industrial Processes-Food and Kindred Products: SIC 20-Commercial Cooking - Frying-Clamshell Griddle Frying	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.13 TON	0.09
	VOC	Volatile Organic Compounds	0.01 TON	0.00
Industrial Processes-Mining and Quarrying: SIC 14-All Processes-Total	PM25-PRI	PM2.5 Primary (Filt + Cond)	53.68 TON	34.60
Solvent Utilization-Surface Coating-Architectural Coatings-Total: All Solvent Types	VOC	Volatile Organic Compounds	44.29 TON	28.55
Solvent Utilization-Surface Coating-Auto Refinishing: SIC 7532-Total: All Solvent Types	VOC	Volatile Organic Compounds	7.20 TON	4.64
Solvent Utilization-Surface Coating-Traffic Markings-Total: All Solvent Types	VOC	Volatile Organic Compounds	5.18 TON	3.34
Solvent Utilization-Surface Coating-Factory Finished Wood: SIC 2426 thru 242-Total: All Solvent Types	VOC	Volatile Organic Compounds	0.16 TON	0.10
Solvent Utilization-Surface Coating-Aircraft: SIC 372-Total: All Solvent Types	VOC	Volatile Organic Compounds	0.04 TON	0.02
Solvent Utilization-Surface Coating-Miscellaneous Manufacturing-Total: All Solvent Types	VOC	Volatile Organic Compounds	2.61 TON	1.68
Solvent Utilization-Surface Coating-Industrial Maintenance Coatings-Total: All Solvent Types	VOC	Volatile Organic Compounds	3.53 TON	2.28
Solvent Utilization-Surface Coating-Other Special Purpose Coatings-Total: All Solvent Types	VOC	Volatile Organic Compounds	0.14 TON	0.09
Solvent Utilization-Degreasing-All Processes/All Industries-Total: All Solvent Types	VOC	Volatile Organic Compounds	30.57 TON	19.70
Solvent Utilization-Graphic Arts-All Processes-Total: All Solvent Types	VOC	Volatile Organic Compounds	87.17 TON	56.18
Solvent Utilization-Miscellaneous Non-industrial: Consumer and Commercial-All Personal Care Products-Total: All Solvent Types	VOC	Volatile Organic Compounds	47.12 TON	30.37
Solvent Utilization-Miscellaneous Non-industrial: Consumer and Commercial-All Household Products-Total: All Solvent Types	VOC	Volatile Organic Compounds	51.83 TON	33.41
Solvent Utilization-Miscellaneous Non-industrial: Consumer and Commercial-All Automotive Aftermarket Products-Total: All Solvent	VOC	Volatile Organic Compounds	32.04 TON	20.65
Solvent Utilization-Miscellaneous Non-industrial: Consumer and Commercial-All Coatings and Related Products-Total: All Solvent	VOC	Volatile Organic Compounds	22.38 TON	14.43
Solvent Utilization-Miscellaneous Non-industrial: Consumer and Commercial-All Adhesives and Sealants-Total: All Solvent Types	VOC	Volatile Organic Compounds	13.43 TON	8.66
Solvent Utilization-Miscellaneous Non-industrial: Consumer and Commercial-All FIFRA Related Products-Total: All Solvent Types	VOC	Volatile Organic Compounds	41.94 TON	27.03
Solvent Utilization-Miscellaneous Non-industrial: Consumer and Commercial-Miscellaneous Products (Not Otherwise Covered)-Total:	VOC	Volatile Organic Compounds	1.65 TON	1.06
Solvent Utilization-Miscellaneous Non-industrial: Commercial-Cutback Asphalt-Total: All Solvent Types	VOC	Volatile Organic Compounds	27.56 TON	17.77
Solvent Utilization-Miscellaneous Non-industrial: Commercial-Emulsified Asphalt-Total: All Solvent Types	VOC	Volatile Organic Compounds	52.20 TON	33.64
Solvent Utilization-Miscellaneous Non-industrial: Commercial-Pesticide Application: Agricultural-All Processes	VOC	Volatile Organic Compounds	5.19 TON	3.34
Storage and Transport-Petroleum and Petroleum Product Storage-Residential Portable Gas Cans-Permeation	VOC	Volatile Organic Compounds	0.89 TON	0.57
Storage and Transport-Petroleum and Petroleum Product Storage-Residential Portable Gas Cans-Evaporation (includes Diurnal losses)	VOC	Volatile Organic Compounds	0.99 TON	0.64
Storage and Transport-Petroleum and Petroleum Product Storage-Residential Portable Gas Cans-Spillage During Transport	VOC	Volatile Organic Compounds	1.72 TON	1.11
Storage and Transport-Petroleum and Petroleum Product Storage-Residential Portable Gas Cans-Refilling at the Pump - Vapor	VOC	Volatile Organic Compounds	0.31 TON	0.20
Storage and Transport-Petroleum and Petroleum Product Storage-Residential Portable Gas Cans-Refilling at the Pump - Spillage	VOC	Volatile Organic Compounds	0.05 TON	0.03
Storage and Transport-Petroleum and Petroleum Product Storage-Commercial Portable Gas Cans-Permeation	VOC	Volatile Organic Compounds	0.04 TON	0.02
Storage and Transport-Petroleum and Petroleum Product Storage-Commercial Portable Gas Cans-Evaporation (includes Diurnal losses)	VOC	Volatile Organic Compounds	0.03 TON	0.02
Storage and Transport-Petroleum and Petroleum Product Storage-Commercial Portable Gas Cans-Spillage During Transport	VOC	Volatile Organic Compounds	2.35 TON	1.52

Storage and Transport-Petroleum and Petroleum Product Storage-Commercial Portable Gas Cans-Refilling at the Pump - Vapor	VOC	Volatile Organic Compounds	0.90	TON	0.58
Storage and Transport-Petroleum and Petroleum Product Storage-Commercial Portable Gas Cans-Refilling at the Pump - Spillage	VOC	Volatile Organic Compounds	0.10	TON	0.06
Storage and Transport-Petroleum and Petroleum Product Storage-Bulk Terminals: All Evaporative Losses-Gasoline	VOC	Volatile Organic Compounds	4.86	TON	3.13
Storage and Transport-Petroleum and Petroleum Product Storage-Bulk Plants: All Evaporative Losses-Gasoline	VOC	Volatile Organic Compounds	4.13	TON	2.66
Storage and Transport-Petroleum and Petroleum Product Storage-Gasoline Service Stations-Stage 1: Submerged Filling	VOC	Volatile Organic Compounds	62.31	TON	40.16
Emptying	VOC	Volatile Organic Compounds	10.36	TON	6.68
Storage and Transport-Petroleum and Petroleum Product Storage-Airports : Aviation Gasoline-Stage 1: Total	VOC	Volatile Organic Compounds	11.43	TON	7.37
Storage and Transport-Petroleum and Petroleum Product Storage-Airports : Aviation Gasoline-Stage 2: Total	VOC	Volatile Organic Compounds	0.39	TON	0.25
Storage and Transport-Petroleum and Petroleum Product Transport-Truck-Gasoline	VOC	Volatile Organic Compounds	0.68	TON	0.44
Storage and Transport-Petroleum and Petroleum Product Transport-Pipeline-Gasoline	VOC	Volatile Organic Compounds	1.06	TON	0.68
Waste Disposal, Treatment, and Recovery-Open Burning-All Categories-Yard Waste - Leaf Species Unspecified	NOX	Nitrogen Oxides	0.09	TON	0.06
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.24	TON	0.15
	SO2	Sulfur Dioxide	0.01	TON	0.01
	VOC	Volatile Organic Compounds	0.40	TON	0.26
Waste Disposal, Treatment, and Recovery-Open Burning-All Categories-Yard Waste - Brush Species Unspecified	NOX	Nitrogen Oxides	0.07	TON	0.05
	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.22	TON	0.14
	SO2	Sulfur Dioxide	0.02	TON	0.02
	VOC	Volatile Organic Compounds	0.27	TON	0.17
Waste Disposal, Treatment, and Recovery-Open Burning-All Categories-Land Clearing Debris (use 28-10-005-000 for Logging Debris Burning)	NOX	Nitrogen Oxides	0.58	TON	0.37
	PM25-PRI	PM2.5 Primary (Filt + Cond)	1.52	TON	0.98
	SO2	Sulfur Dioxide	0.19	TON	0.12
	VOC	Volatile Organic Compounds	1.35	TON	0.87
Waste Disposal, Treatment, and Recovery-Open Burning-Residential-Household Waste (use 26-10-000-xxx for Yard Wastes)	NOX	Nitrogen Oxides	3.68	TON	2.37
	PM25-PRI	PM2.5 Primary (Filt + Cond)	21.33	TON	13.74
	SO2	Sulfur Dioxide	0.61	TON	0.39
	VOC	Volatile Organic Compounds	5.25	TON	3.38
Waste Disposal, Treatment, and Recovery-Wastewater Treatment-Public Owned-Total Processed	NH3	Ammonia	0.12	TON	0.08
	VOC	Volatile Organic Compounds	0.63	TON	0.41
Miscellaneous Area Sources-Agriculture Production - Crops-Agriculture - Crops-Tilling	PM25-PRI	PM2.5 Primary (Filt + Cond)	41.98	TON	2.58
Miscellaneous Area Sources-Agriculture Production - Crops-Fertilizer Application-Miscellaneous Fertilizers	NH3	Ammonia	0.11	TON	0.01
Miscellaneous Area Sources-Agriculture Production - Livestock-Beef cattle production composite-Not Elsewhere Classified	NH3	Ammonia	284.13	TON	17.47
Miscellaneous Area Sources-Agriculture Production - Livestock-Poultry production - layers with dry manure management systems-	NH3	Ammonia	0.39	TON	0.02
Miscellaneous Area Sources-Agriculture Production - Livestock-Poultry production - broilers-Confinement	NH3	Ammonia	0.07	TON	0.00
Miscellaneous Area Sources-Agriculture Production - Livestock-Dairy cattle composite-Not Elsewhere Classified	NH3	Ammonia	0.95	TON	0.06
Miscellaneous Area Sources-Agriculture Production - Livestock-Swine production composite-Not Elsewhere Classified (see also 28-05-	NH3	Ammonia	292.49	TON	17.99
Miscellaneous Area Sources-Agriculture Production - Livestock-Poultry Waste Emissions-Ducks	NH3	Ammonia	0.01	TON	0.00
Miscellaneous Area Sources-Agriculture Production - Livestock-Poultry Waste Emissions-Geese	NH3	Ammonia	0.01	TON	0.00
Miscellaneous Area Sources-Agriculture Production - Livestock-Horses and Ponies Waste Emissions-Not Elsewhere Classified	NH3	Ammonia	13.46	TON	0.83
Miscellaneous Area Sources-Agriculture Production - Livestock-Sheep and Lambs Waste Emissions-Total	NH3	Ammonia	0.67	TON	0.04
Miscellaneous Area Sources-Agriculture Production - Livestock-Goats Waste Emissions-Not Elsewhere Classified	NH3	Ammonia	0.78	TON	0.05
Miscellaneous Area Sources-Other Combustion-Charcoal Grilling - Residential (see 23-02-002-xxx for Commercial)-Total	NOX	Nitrogen Oxides	0.74	TON	0.48
	PM25-PRI	PM2.5 Primary (Filt + Cond)	1.93	TON	1.25
	VOC	Volatile Organic Compounds	0.65	TON	0.42
Industrial Processes-Construction: SIC 15 - 17-Residential-Total	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.56	TON	0.36
Industrial Processes-Construction: SIC 15 - 17-Industrial/Commercial/Institutional-Total	PM25-PRI	PM2.5 Primary (Filt + Cond)	2.27	TON	1.46
Industrial Processes-Construction: SIC 15 - 17-Road Construction-Total	PM25-PRI	PM2.5 Primary (Filt + Cond)	1.80	TON	1.16
FlamingFires - Prescribed Fires	NH3	Ammonia	0.48	TON	0.03
FlamingFires - Wildfires	NH3	Ammonia	2.26	TON	0.14
SmolderingFires - Prescribed Fires	NH3	Ammonia	0.08	TON	0.00
SmolderingFires - Wildfires	NH3	Ammonia	0.47	TON	0.03
FlamingFires - Prescribed Fires	NOX	Nitrogen Oxides	0.97	TON	0.06
SmolderingFires - Prescribed Fires	NOX	Nitrogen Oxides	0.02	TON	0.00
FlamingFires - Wildfires	NOX	Nitrogen Oxides	4.53	TON	0.28
SmolderingFires - Wildfires	NOX	Nitrogen Oxides	0.12	TON	0.01
FlamingFires - Wildfires	PM25-PRI	PM2.5 Primary (Filt + Cond)	13.64	TON	0.84
SmolderingFires - Prescribed Fires	PM25-PRI	PM2.5 Primary (Filt + Cond)	0.39	TON	0.02
SmolderingFires - Wildfires	PM25-PRI	PM2.5 Primary (Filt + Cond)	2.28	TON	0.14
FlamingFires - Prescribed Fires	PM25-PRI	PM2.5 Primary (Filt + Cond)	2.92	TON	0.18
FlamingFires - Wildfires	SO2	Sulfur Dioxide	1.84	TON	0.11
SmolderingFires - Prescribed Fires	SO2	Sulfur Dioxide	0.02	TON	0.00
SmolderingFires - Wildfires	SO2	Sulfur Dioxide	0.13	TON	0.01
FlamingFires - Prescribed Fires	SO2	Sulfur Dioxide	0.39	TON	0.02
SmolderingFires - Wildfires	VOC	Volatile Organic Compounds	6.71	TON	0.41
FlamingFires - Wildfires	VOC	Volatile Organic Compounds	32.49	TON	2.00
SmolderingFires - Prescribed Fires	VOC	Volatile Organic Compounds	1.15	TON	0.07
FlamingFires - Prescribed Fires	VOC	Volatile Organic Compounds	6.95	TON	0.43

Population Factor	=	**0.64**
Land Factor	=	**0.06**

A2 IMPROVE Monitor Chemical Speciation Data

ADEQ used Interagency Monitoring of Protected Visual Environments (IMPROVE) monitor data from the Nogales Post office monitor. The data is listed below.

date	Sea_Salt	FMass	Soil	LAC	Small_OMC	Small_Amm_SO4	Small_Amm_NO3
10/27/2015	0.001566	0.061	0	0	0.781164147	0	0.095132137
10/30/2015	0.000018	0.1528	0	0.0001	0	0	0
11/2/2015	0.002916	0.1215	0	0	0.1074168	0	0
11/5/2015	0.58752	4.8389	1.4664383	0.2689	1.449603769	0.474040353	0.595672046
11/8/2015	0.40644	14.0806	3.6639642	1.2592	4.982341564	0.565176815	0.422195172
11/11/2015	0.19764	8.4841	5.0912715	0.4994	2.168176924	0.314098307	0.396113642
11/14/2015	0.30816	13.9651	4.2868105	2.1842	4.73218689	0.729166672	0.421948301
11/17/2015	0.28818	9.6446	4.2219746	1.0746	3.387595601	0.31845003	0.530782213
11/26/2015	0.12978	5.0489	1.6317415	0.3994	2.18373374	0.520193007	0.301306567
11/29/2015	0.6057	17.0702	1.8819509	2.7579	4.827885674	0.683870596	1.126260045
12/2/2015	0.83124	20.0462	4.9313391	1.3625	4.631579917	0.765041683	1.352998112
12/5/2015	0.8001	22.2668	4.9877734	2.7722	4.119351882	0.713330676	0.709222759
12/8/2015	0.68454	23.4126	6.4636924	2.1558	3.405546962	0.76663599	0.948381638
12/11/2015	0.20394	7.5576	3.1111241	0.7028	2.840624812	0.501666427	0.307432154
12/14/2015	0.59472	8.7256	1.3425389	1.0739	4.203140911	0.323717299	0.502564856
12/17/2015	1.2492	20.7134	1.3652425	2.1833	3.477396182	0.628428526	1.751221114
12/20/2015	0.41184	8.5259	0.9850188	1.3627	3.984212336	0.572477374	0.614901495
12/23/2015	0.1728	3.5235	0.6145706	0.3271	1.84861395	0.472077846	0.352935798
1/4/2016	0.41733	7.65837	0.6730403	0.99303	3.954507017	0.483846511	0.67802421
1/7/2016	0.44577	3.05168	0.2031256	0.23745	1.622558109	0.200769326	0.280763004
1/10/2016	0.794844	14.57434	0.3275493	1.65671	4.987079217	0.468073011	1.329692593
1/13/2016	1.142658	21.64381	3.4288728	2.65665	4.412372924	0.507181493	0.894426544
1/16/2016	0.602802	8.50006	0.852497	1.05574	3.63000991	0.404783122	1.808067629
1/19/2016	0.408276	9.34725	2.4438579	1.35333	3.843486468	0.311382448	0.484660193
1/22/2016	0.625824	17.1745	5.2018292	1.88145	4.917402509	0.357763041	0.517112159
1/25/2016	0.18576	6.90374	1.5315219	1.13091	2.846558936	0.254408762	0.730193455
1/28/2016	0.9495	15.88282	5.0663837	1.60544	4.706717598	0.466030649	0.733244658
1/31/2016	0.101862	4.99377	2.0180875	0.38843	1.720527	0.378448051	0.284171251
2/3/2016	0.360162	9.22783	1.7492046	0.99618	4.21890695	0.267701293	0.920196139
2/6/2016	0.91611	15.56833	2.767526	1.65917	4.901225677	0.309504849	0.44772258
2/9/2016	0.259668	11.19308	3.7407693	1.58537	3.728372249	0.416599481	0.347250634
2/12/2016	0.399942	16.55349	7.5299448	1.40098	4.297480869	0.415691071	0.373011262
2/15/2016	0.16992	7.36245	2.8228236	0.73595	2.701105376	0.492858783	0.310568408
2/18/2016	0.11061	10.26033	4.7661742	1.03221	2.73469272	0.675358174	0.20224834
2/21/2016	0.074574	6.51612	2.4915434	0.5155	2.315608473	0.679922181	0.264594679
2/24/2016	0.101034	10.87911	6.109137	0.94051	2.600057663	0.427138356	0.227702122
2/27/2016	0.11475	13.57226	6.6167236	0.82215	3.945325942	0.56482717	0.350274031
3/1/2016	0.085698	9.31836	4.8103424	0.97814	2.533280773	0.489803456	0.2566949
3/4/2016	0.130482	14.01893	6.5770756	1.14283	3.499741231	0.593297444	0.327318954
3/7/2016	0.28539	4.68717	2.4214463	0.1663	1.002824022	0.414466549	0.323664351
3/10/2016	0.168948	12.27012	5.470019	1.42384	3.543801963	0.474040353	0.54457752
3/13/2016	0.426132	10.73133	3.5719526	1.60708	3.883288734	0.410436322	0.451205331
3/16/2016	0.055494	10.41568	5.7550026	0.6986	2.02240481	0.639683922	0.364084537
3/19/2016	0.07722	9.64238	5.0387966	0.49076	2.116508079	0.671866425	0.372887166
3/31/2016	0.491778	6.23115	2.4209245	0.4525	1.705202536	0.466305609	0.525865839

4/3/2016	0.095256	6.44179	2.7410839	0.49936	2.224007752	0.514764068	0.179121185
4/6/2016	0.054486	6.99137	3.3329688	0.50113	1.987046171	0.655578598	0.225786298
4/9/2016	0.16407	4.51785	1.3178402	0.46722	2.257836659	0.467915922	0.498269512
4/12/2016	0.057546	3.64031	0.9712306	0.36709	1.386270796	0.578685879	0.463574921
4/15/2016	0.273618	9.24493	5.2392007	0.14593	1.221523222	1.044136655	0.514400081
4/18/2016	0.021672	4.57538	1.9262324	0.43603	1.586260536	0.679462055	0.178589164
4/21/2016	0.082818	8.92466	4.3426093	0.64088	2.531282788	0.788962627	0.183971359
4/24/2016	0.19269	6.23937	2.6145421	0.12459	1.510722998	0.997180412	0.563699592
4/27/2016	0.387342	8.20714	4.2712454	0.4409	1.40271764	0.650270773	0.393080417
4/30/2016	0.623106	6.38842	2.5629674	0.12969	0.987713592	0.862908386	0.600295791
5/3/2016	0.189612	8.35528	3.3586718	0.43446	1.926353077	1.152467026	0.598952492
5/6/2016	0.534978	6.92616	2.593174	0.11425	0.965204703	1.465729767	0.608871122
5/9/2016	0.087444	4.57257	1.773133	0.28864	1.3648154	0.644882711	0.315426904
5/12/2016	0.113526	9.50994	4.0205911	0.77512	2.642258125	0.900532112	0.261995638
5/15/2016	0.146016	3.85342	1.8403251	0.07686	0.801625182	0.643227137	0.15230633
5/18/2016	0.147654	6.64401	2.3349226	0.28405	2.166442733	0.89384355	0.45014711
5/21/2016	0.113904	4.54254	1.445759	0.08927	1.154949583	1.00695509	0.399022123
5/24/2016	0.353412	3.66708	1.4840572	0.09247	0.990035169	0.525540614	0.185224662
5/27/2016	0.07047	7.79265	4.1398211	0.28873	1.874169966	0.678810166	0.332268476
5/30/2016	0.143874	5.43899	2.2138889	0.28015	1.180745855	1.050994897	0.241504842
6/2/2016	0.145908	13.53467	6.7430588	0.38598	2.868474756	1.003857995	0.447328687
6/5/2016	0.072774	15.43297	5.492836	0.66617	4.560212788	0.878690088	0.40471266
6/8/2016	0.843282	10.92161	3.4063909	0.244	2.089351851	1.887898953	0.938528408
6/11/2016	0.140724	9.36644	1.7397505	0.28944	2.617000164	2.327166018	0.786191808
6/14/2016	0.123192	4.56577	1.772135	0.2793	1.367055857	0.830425827	0.154567023
6/17/2016	0.23706	9.34931	4.5167862	0.71695	2.147046068	0.693293484	0.241819451
6/20/2016	0.248778	8.6003	2.1389703	0.25448	2.493256598	1.862920624	0.469114867
6/23/2016	0.118926	7.58362	2.7002871	0.5016	2.058051827	1.313364755	0.271421611
6/26/2016	0.027198	3.40244	0.8823185	0.19169	1.567300775	0.788886915	0.124767488
6/29/2016	0.040356	4.29989	1.249323	0.17553	1.415378704	1.108485674	0.183528233
7/2/2016	0.139914	7.57598	1.4373857	0.27273	1.559092963	2.651454614	1.111143775
7/5/2016	0.08064	5.50291	1.6362324	0.28476	0.997913843	1.921360986	0.319621419
7/8/2016	0.086328	7.23577	1.9805547	0.33845	1.029318986	2.450273815	0.392498419
7/11/2016	0.079992	4.31692	1.1875456	0.12953	0.903412389	1.51129124	0.180641085
7/14/2016	0.09558	6.24335	2.0550372	0.18493	1.4663748	1.744824187	0.53314794
7/17/2016	0.030402	4.36645	0.7720865	0.09452	1.134275375	1.536914121	0.259797824
7/20/2016	0.076374	5.52469	1.3138433	0.33801	1.869699477	1.074641226	0.225597215
7/23/2016	0.037494	3.7128	1.3774524	0.12302	1.014162244	0.82609276	0.171987125
7/26/2016	0.044856	5.97333	1.5406197	0.31203	1.248248725	1.617797742	0.34900507
7/29/2016	0.049554	5.47651	0.8960427	0.20929	1.803870829	1.556933676	0.495343589
8/1/2016	0.053244	3.06024	0.3442101	0.31546	1.606576676	0.548417198	0.311080604
8/4/2016	0.082188	4.70561	0.7897674	0.38589	1.630098763	1.376775678	0.433309783
8/7/2016	0.04626	5.50936	1.0535117	0.14567	1.405037962	1.873726382	0.124130566
8/10/2016	0.0459	4.50559	1.1398597	0.21343	1.04803228	1.246044718	0.225029945
8/13/2016	0.058266	4.46276	0.9350257	0.21111	1.219426161	1.373579553	0.401855461
8/16/2016	0.061848	7.16569	2.5128387	0.63255	2.171711404	0.795244361	0.139278033

8/19/2016	0.049518	4.58514	1.1852812	0.25407	1.523042275	1.121866173	0.186730942
8/22/2016	0.064044	4.93547	1.1071248	0.70824	1.819882619	0.903781008	0.418343234
8/25/2016	0.063252	5.59072	1.8082861	0.30118	1.289733124	1.160712813	0.311442873
8/28/2016	0.062046	6.95992	2.7737956	0.41924	2.055938949	0.847134118	0.27611227
8/31/2016	0.001188	2.94941	0.838674	0.09214	0.866114876	0.99843519	0.054430952
9/3/2016	0.082224	5.93382	1.9003935	0.37068	1.408272951	1.636363901	0.303407219
9/6/2016	0.061452	2.90339	0.8571457	0.09942	0.899158837	0.741852436	0.155671777
9/9/2016	0.063018	6.42119	1.9517362	0.48318	2.331832679	1.044980503	0.419084117
9/12/2016	0.031518	3.61683	0.6962254	0.26598	1.345605134	0.999357695	0.192247736
9/15/2016	0.071082	5.40004	2.2150536	0.48699	1.998311678	0.718523531	0.202816961
9/18/2016	0.096768	8.02399	3.649891	0.76931	2.868580528	0.555537091	0.155151162
9/21/2016	0.037872	5.23871	1.3726971	0.32349	1.465814892	1.527810764	0.159416844
9/24/2016	0.077778	7.37093	3.8246915	0.23464	1.248513786	0.731796803	0.521886844
9/27/2016	0.058266	2.56614	0.4142123	0.24822	1.553311773	0.465991368	0.091911883
9/30/2016	0.028494	4.80692	0.7131684	0.56689	1.858580617	0.691608846	0.113628092
10/3/2016	0.166968	3.18614	0.5458307	0.27344	1.291128502	0.807378269	0.248260374
10/6/2016	0.215208	7.60029	3.2501813	0.62834	2.3124026	0.607575529	0.271935942
10/9/2016	0.109134	9.59626	2.8392589	0.98296	3.150828702	1.143053141	0.242385723
10/12/2016	0.120384	11.68721	5.4618446	0.81035	3.143794359	1.031468132	0.111817058
10/15/2016	0.176436	9.40462	3.9949171	0.87756	2.642295207	0.967080827	0.180641085
10/18/2016	0.100602	9.34466	4.3785344	1.10525	2.694338689	0.703853248	0.179285852
10/21/2016	0.081072	14.29294	7.3248901	0.72243	3.143311766	1.116960242	0.234845258
10/24/2016	0.054306	10.00589	2.7815238	0.89868	3.086983199	1.768976169	0.434579517
10/27/2016	0.086688	10.89011	5.5771841	0.59386	2.283596325	1.034407564	0.171429356
10/30/2016	0.070938	10.48797	4.3901987	0.74834	3.049098117	1.269989551	0.174167184
11/2/2016	0.171828	10.12805	4.9775588	0.83746	2.338350617	0.430885218	0.293675253
11/5/2016	0.126198	7.65484	2.5093652	0.78731	2.788646234	1.033929981	0.408829917
11/8/2016	0.053838	6.64062	2.0325747	0.67219	2.315041318	1.114669747	0.198797981
11/11/2016	0.101808	9.84422	4.2549567	0.80087	2.412228994	0.843975663	0.221840001
11/14/2016	0.165924	12.73894	5.9241158	0.98385	3.61087328	0.598020675	0.253817193
11/17/2016	0.073476	8.2552	4.0849223	0.50242	1.886312398	0.727260273	0.297266495
11/20/2016	0.335682	14.91654	5.7777805	1.49816	4.296650732	0.592871454	0.277516507
12/2/2016	0.183078	4.8862	1.6275029	0.62855	2.000640319	0.370989304	0.380057168
12/5/2016	0.424206	13.73737	1.6358013	2.12014	4.999528385	0.785857871	0.812287599
12/8/2016	0.652536	12.20923	2.9963253	1.14613	4.366161214	0.734959511	1.392015403
12/11/2016	1.230066	24.24009	5.8202134	3.14218	3.904345479	0.485414509	0.613173776
12/17/2016	0.279846	6.32026	3.9821562	0.06254	1.359533783	0.268423615	0.294100768
12/20/2016	0.245916	8.30487	2.5127454	1.28853	3.646345894	0.626306879	0.390207218
12/23/2016	1.151964	12.8861	0.644124	1.79223	4.989668579	0.463280589	0.791270694

A3 West Pinal Chemical Speciation Studies

A3.1 Chemical Characterization of coarse Particulate Matter in West Pinal

ADEQ used two separate chemical speciation studies for the weight of evidence study in West Pinal. The first study *Chemical characterization of coarse particulate matter in the Desert South West – Pinal County Arizona, USA* collected samples between February 2009 and February 2010. The study chemically characterized the course and fine fractions of ambient particulate matter, examined the temporal and spatial variability of particles to determine the contribution of local versus regional sources, collected and chemical characterized various crustal sources within the area to identify differences which may isolate them as independent sources, and used receptor based modeling to identify particle sources and the relative impact on ambient particulate matter concentrations. Sampling was conducted in Pinal County, Arizona in and around the vicinity of the town of Casa Grande, Figure 1 shows the average, maximum, and minimum coarse and fine particle mass concentration and chemical composition at all three of the ambient monitoring sites. Data from the maximum concentrations were pulled to determine the contributing species for exceedances.[1] More details about the study can be obtained from the published paper.

Figure 1

Table 2. *Average and minimum/maximum coarse and fine particle mass concentration and the chemical compositional breakdown at each of the ambient sampling locations. Negative values imply an over–characterization of aerosol mass.* Concentrations are expressed in μg/m^3

Coarse Particle Fraction	Casa Grande			Cowtown			Pinal County Housing		
	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
Ambient Mass	30.60	78.00	5.75	66.60	177.60	6.30	45.50	162.80	5.55
Crustal	16.37	30.52	2.22	31.11	94.39	1.32	23.52	110.58	1.33
Organic Matter	3.77	8.06	1.05	17.11	56.96	0.77	4.14	14.50	0.76
Nitrate	0.72	0.46	0.21	0.82	2.80	0.22	0.83	4.80	0.22
Sulfate	0.29	0.35	0.22	0.74	2.54	0.13	0.39	2.25	0.05
Ammonium	0.06	0.07	bdl	0.12	0.47	0.01	0.06	0.29	0.00
Other Measured Species	1.99	2.90	1.91	5.38	19.50	0.32	2.96	10.09	0.28
Unidentified	7.41	35.64	0.14	11.33	0.95	3.52	13.60	20.30	2.91
Fine Particle Fraction	**Average**	**Maximum**	**Minimum**	**Average**	**Maximum**	**Minimum**	**Average**	**Maximum**	**Minimum**
Ambient Mass	7.68	14.85	3.25	11.34	18.80	3.20	9.25	20.35	2.50
Crustal	1.86	3.44	0.44	2.74	4.52	0.19	4.32	11.79	0.31
Organic Matter	3.83	6.91	1.61	4.32	5.86	1.47	2.46	2.11	1.17
Nitrate	0.68	2.21	0.00	1.50	0.60	0.14	0.57	0.19	0.00
Sulfate	1.00	1.69	0.16	1.03	0.99	0.26	0.93	0.50	0.19
Ammonium	0.37	0.62	0.07	0.53	0.37	0.07	0.35	0.19	0.02
Other Measured Species	0.57	0.74	0.11	0.71	1.34	0.08	0.68	1.39	0.09
Unidentified	–0.62	–0.76	0.85	0.51	5.13	0.98	–0.06	4.18	0.73

[1] Clements A., Fraser M., Upadhyay N., Herckes P., Sundblom M., Lantz J., Solomon P., 2013. "Chemical Characterization of coarse particulate matter in the Desert Southwest – Pinal County Arizona, USA."

A4 Excess Ammonia Calculations

Using the calculations detailed in the main document ADEQ used AMON and CASTNET monitoring network data in three co-located monitors within the western United States region. The parameters pulled from the AMON and CASTNET monitoring networks are attached below.

AMON NH3

NADPID	SITEID	STARTDATE	ENDDATE	AIRVOL	CONC	QR	CHNGDATE
N11000176	AZ98	3/22/2011 15:35	3/29/2011 15:00	2.36	0.47	A	6/28/2011 15:52
N11000214	AZ98	3/29/2011 15:45	4/12/2011 15:12	4.73	0.39	A	6/28/2011 15:52
N11000258	AZ98	4/12/2011 15:12	4/26/2011 15:50	4.75	0.38	A	6/28/2011 15:52
N11000305	AZ98	4/26/2011 15:50	5/10/2011 15:45	4.74	0.62	B	6/28/2011 15:52
N11000338	AZ98	5/10/2011 15:50	5/24/2011 15:35	4.73	0.47	B	6/23/2011 20:33
N11000374	AZ98	5/24/2011 15:35	6/7/2011 15:10	4.73	0.52	B	6/28/2011 15:52
N11000447	AZ98	6/7/2011 15:10	6/21/2011 15:35	4.74	13.57	B	7/27/2011 21:48
N11000498	AZ98	6/21/2011 16:05	7/5/2011 15:15	4.73	2.85	B	7/27/2011 21:48
N11000551	AZ98	7/5/2011 15:15	7/6/2011 15:00			C	8/19/2011 20:32
N11000540	AZ98	7/6/2011 15:00	7/19/2011 15:40	4.41	2.41	B	8/22/2011 23:06
N11000595	AZ98	7/19/2011 15:45	8/2/2011 15:40	4.74	4.4	A	8/9/2011 14:59
N11000641	AZ98	8/2/2011 15:40	8/16/2011 16:15	4.75	2.51	B	10/1/2011 15:53
N11000694	AZ98	8/16/2011 16:15	8/30/2011 15:20	4.72	0.19	A	9/6/2011 14:58
N11000751	AZ98	8/30/2011 15:20	9/13/2011 16:14	4.75	2.31	B	9/22/2011 14:04
N11000789	AZ98	9/13/2011 16:14	9/27/2011 15:25	4.73	1.34	B	12/1/2011 16:06
N11000837	AZ98	9/27/2011 15:40	10/11/2011 15:10	4.73	0.08	B	12/1/2011 16:07
N11000896	AZ98	10/11/2011 15:10	10/25/2011 15:05	4.74	0.58	A	11/1/2011 14:53
N11000940	AZ98	10/25/2011 15:05	11/8/2011 15:40	4.75	0.57	A	11/14/2011 16:04
N11000993	AZ98	11/8/2011 15:50	11/22/2011 16:55	4.75	0.37	B	11/30/2011 17:06
N11001051	AZ98	11/22/2011 16:55	12/6/2011 15:55	4.72	0.54	A	12/20/2011 20:06
N11001098	AZ98	12/6/2011 15:55	12/20/2011 15:20	4.73	0.37	B	2/1/2012 22:42
N12000039	AZ98	12/20/2011 15:30	1/3/2012 15:23	4.74	0.34	A	1/10/2012 15:28
N12000099	AZ98	1/3/2012 15:23	1/17/2012 15:15	4.74	0.37	B	2/28/2012 21:21
N12000166	AZ98	1/17/2012 15:15	1/31/2012 15:30	4.74	0.56	B	2/28/2012 21:22
N12000203	AZ98	1/31/2012 15:30	2/14/2012 17:20	4.76	0.71	A	2/20/2012 16:20
N12000267	AZ98	2/14/2012 17:20	2/28/2012 15:13	4.71	0.47	B	3/5/2012 16:26
N12000313	AZ98	2/28/2012 15:13	3/13/2012 15:03	4.74	0.49	A	3/19/2012 14:36
N12000381	AZ98	3/13/2012 15:10	3/27/2012 15:24	4.74	0.52	A	4/4/2012 15:33
N12000434	AZ98	3/27/2012 15:24	4/10/2012 15:18	4.74	0.46	B	4/17/2012 15:22
N12000481	AZ98	4/10/2012 15:27	4/24/2012 15:18	4.74	0.7	A	4/30/2012 15:00
N12000540	AZ98	4/24/2012 15:18	5/9/2012 14:55	5.07	0.73	A	6/18/2012 18:30
N12000597	AZ98	5/9/2012 15:00	5/22/2012 15:00	4.4	1.23	A	6/25/2012 19:33
N12000647	AZ98	5/22/2012 15:00	6/5/2012 15:30	4.74	0.8	B	6/12/2012 14:56
N12000707	AZ98	6/5/2012 15:30	6/19/2012 15:10	4.73	0.7	A	7/31/2012 13:29
N12000761	AZ98	6/19/2012 15:20	7/3/2012 15:10	4.74	1.92	A	7/11/2012 15:29
N12000937	AZ98	7/3/2012 15:20	7/17/2012 16:11	4.75	2.08	B	8/22/2012 14:49
N12000877	AZ98	7/17/2012 16:11	7/31/2012 15:10	4.72	1.99	A	8/7/2012 15:39
N12000938	AZ98	7/31/2012 15:10	8/2/2012 14:36			C	10/14/2012 5:36
N12000936	AZ98	8/2/2012 14:45	8/14/2012 15:27	4.07	1.54	A	10/14/2012 5:37
N12000985	AZ98	8/14/2012 15:35	8/28/2012 15:05	4.73	1.82	A	9/4/2012 14:32
N12001053	AZ98	8/28/2012 15:05	9/11/2012 15:42	4.75	1.43	A	9/20/2012 14:19
N12001111	AZ98	9/11/2012 15:47	9/25/2012 15:10	4.73	1.46	A	10/2/2012 14:45
N12001150	AZ98	9/25/2012 15:15	10/9/2012 15:05	4.74	1.07	A	10/15/2012 15:36
N12001223	AZ98	10/9/2012 15:12	10/23/2012 15:01	4.74	0.78	A	10/30/2012 16:18
N12001285	AZ98	10/23/2012 15:06	11/6/2012 22:40	4.84	0.71	A	11/15/2012 15:18

N12001348	AZ98	11/6/2012 22:42	11/20/2012 15:15	4.63	0.92	B	12/4/2012 15:43
N12001395	AZ98	11/20/2012 15:15	12/4/2012 15:45	4.74	0.87	A	12/10/2012 15:32
N12001463	AZ98	12/4/2012 15:45	12/18/2012 15:26	4.73	0.8	B	12/27/2012 16:26
N13000065	AZ98	12/18/2012 15:26	1/3/2013 22:10	5.51	0.57	B	3/29/2013 17:55
N13000113	AZ98	1/3/2013 22:10	1/15/2013 15:48	3.97	0.42	A	3/13/2013 13:16
N13000182	AZ98	1/15/2013 15:50	1/29/2013 15:30	4.73	0.52	A	2/5/2013 18:40
N13000239	AZ98	1/29/2013 15:30	2/12/2013 15:35	4.74	0.52	A	2/25/2013 17:45
N13000308	AZ98	2/12/2013 15:35	2/26/2013 15:15	4.73	0.31	A	3/5/2013 16:47
N13000361	AZ98	2/26/2013 15:18	3/12/2013 15:20	4.74	0.6	A	3/18/2013 15:13
N13000422	AZ98	3/12/2013 15:25	3/26/2013 15:16	4.74	0.41	A	4/1/2013 16:04
N13000497	AZ98	3/26/2013 15:20	4/9/2013 15:15	4.74	0.5	A	4/17/2013 17:36
N13000546	AZ98	4/9/2013 15:20	4/23/2013 15:10	4.74	0.69	A	4/29/2013 15:16
N13000611	AZ98	4/23/2013 15:10	5/7/2013 15:35	4.74	0.72	A	5/13/2013 17:08
N13000676	AZ98	5/7/2013 15:35	5/21/2013 20:41	4.81	1.08	A	5/28/2013 15:28
N13000735	AZ98	5/21/2013 20:46	6/4/2013 15:15	4.66	0.85	A	6/10/2013 17:34
N13000799	AZ98	6/4/2013 15:15	6/18/2013 15:25	4.74	1.2	A	6/24/2013 15:22
N13000871	AZ98	6/18/2013 15:28	7/2/2013 15:25	4.74	1.37	B	7/10/2013 17:29
N13000922	AZ98	7/2/2013 15:25	7/16/2013 15:07	4.73	3.42	A	7/22/2013 15:32
N13000982	AZ98	7/16/2013 15:07	7/30/2013 15:47	4.75	1.44	A	9/24/2013 14:53
N13001049	AZ98	7/30/2013 15:47	8/13/2013 15:05	4.73	1.89	A	8/19/2013 15:46
N13001124	AZ98	8/13/2013 15:05	8/27/2013 15:07	4.74	1.84	A	9/3/2013 17:45
N13001185	AZ98	8/27/2013 15:07	9/10/2013 15:35	4.74	1.4	A	9/17/2013 15:32
N13001239	AZ98	9/10/2013 15:45	9/24/2013 15:25	4.73	1.47	A	9/30/2013 15:53
N13001304	AZ98	9/24/2013 15:25	10/8/2013 20:50	4.81	0.8	B	11/26/2013 15:50
N13001365	AZ98	10/8/2013 20:50	10/22/2013 15:35	4.66	0.52	A	10/29/2013 16:04
N13001418	AZ98	10/22/2013 15:35	11/5/2013 15:15			C	11/26/2013 21:04
N13001488	AZ98	11/5/2013 15:15	11/19/2013 15:52	4.75	0.97	A	11/26/2013 14:38
N13001554	AZ98	11/19/2013 15:52	12/4/2013 15:00	5.06	1.27	A	12/10/2013 17:19
N13001636	AZ98	12/4/2013 15:00	12/17/2013 15:40	4.41	1.39	B	1/9/2014 15:38
N14000042	AZ98	12/17/2013 15:40	12/31/2013 15:45	4.74	1	A	1/8/2014 20:14
N14000114	AZ98	12/31/2013 15:45	1/14/2014 15:13	4.73	0.67	A	1/21/2014 19:15
N14000164	AZ98	1/14/2014 15:13	1/28/2014 15:05	4.74	0.66	A	2/3/2014 16:31
N14000242	AZ98	1/28/2014 15:05	2/11/2014 15:26	4.74	0.6	A	2/17/2014 15:37
N14000330	AZ98	2/11/2014 15:26	2/25/2014 16:03	4.75	0.89	A	3/4/2014 17:10
N14000378	AZ98	2/25/2014 16:03	3/11/2014 15:00	4.72	0.8	A	3/17/2014 16:39
N14000449	AZ98	3/11/2014 15:00	3/25/2014 15:10	4.74	0.73	A	3/31/2014 15:52
N14000530	AZ98	3/25/2014 15:10	4/8/2014 20:20	4.81	0.36	A	4/15/2014 17:09
N14000589	AZ98	4/8/2014 20:20	4/22/2014 15:45	4.67	0.62	A	4/29/2014 16:08
N14000652	AZ98	4/22/2014 15:45	5/6/2014 15:09	4.73	0.8	A	5/12/2014 16:16
N14000722	AZ98	5/6/2014 15:09	5/20/2014 15:08	4.74	0.47	A	5/27/2014 16:24
N14000792	AZ98	5/20/2014 15:17	6/3/2014 15:09	4.74	1.04	B	6/10/2014 12:55
N14000858	AZ98	6/3/2014 15:10	6/17/2014 15:15	4.74	1	A	6/23/2014 17:02
N14000936	AZ98	6/17/2014 15:15	7/1/2014 15:10	4.74	1.17	B	7/9/2014 17:03
N14000993	AZ98	7/1/2014 15:20	7/15/2014 15:35	4.74	2.41	A	7/22/2014 14:06
N14001072	AZ98	7/15/2014 15:40	7/29/2014 15:45	4.74	2.44	B	8/11/2014 18:23
N14001127	AZ98	7/29/2014 15:50	8/12/2014 16:08	4.74	2.54	A	8/20/2014 14:33
N14001196	AZ98	8/12/2014 16:13	8/26/2014 16:05	4.74	3.06	A	9/4/2014 14:00

N14001271	AZ98	8/26/2014 16:10	9/10/2014 23:16	5.18	1.88	B	9/22/2014 15:31
N14001314	AZ98	9/10/2014 23:18	9/23/2014 19:24	4.34	1.92	A	9/29/2014 18:43
N14001394	AZ98	9/23/2014 19:30	10/7/2014 15:34	4.68	1.61	A	10/13/2014 16:30
N14001470	AZ98	10/7/2014 15:35	10/21/2014 16:15	4.75	1.27	A	10/29/2014 12:49
N14001527	AZ98	10/21/2014 16:20	11/4/2014 15:25	4.72	0.94	A	11/10/2014 16:01
N14001597	AZ98	11/4/2014 15:26	11/18/2014 15:24	4.74	0.55	A	11/24/2014 16:55
N14001671	AZ98	11/18/2014 15:30	12/2/2014 15:58	4.74	0.58	A	12/8/2014 20:08
N14001737	AZ98	12/2/2014 16:05	12/16/2014 15:50	4.73	0.74	A	2/11/2015 15:13
N15000059	AZ98	12/16/2014 16:00	12/31/2014 16:00	5.08	0.35	A	1/9/2015 15:25
N15000132	AZ98	12/31/2014 16:00	1/13/2015 15:23	4.39	0.55	A	1/26/2015 19:22
N11000178	CA44	3/15/2011 18:40	3/29/2011 18:35	4.74	0.19	A	6/28/2011 15:52
N11000221	CA44	3/29/2011 18:36	4/12/2011 17:44	4.73	0.45	B	6/28/2011 15:52
N11000261	CA44	4/12/2011 17:46	4/26/2011 17:54	4.74	0.21	A	6/28/2011 15:52
N11000302	CA44	4/26/2011 17:57	5/10/2011 15:55	4.71	0.99	A	6/28/2011 15:52
N11000345	CA44	5/10/2011 15:55	5/24/2011 19:04	4.78	1.01	B	6/28/2011 15:52
N11000395	CA44	5/24/2011 19:09	6/7/2011 22:20	4.78	0.19	A	6/28/2011 15:52
N11000428	CA44	6/7/2011 22:22	6/21/2011 18:40	4.69	0.8	A	6/24/2011 15:46
N11000500	CA44	6/21/2011 18:41	7/6/2011 21:03	5.11	0.19	B	7/28/2011 19:40
N11000539	CA44	7/6/2011 21:05	7/19/2011 17:15	4.35	1.94	A	7/26/2011 15:07
N11000596	CA44	7/19/2011 17:16	8/2/2011 16:58	4.73	2.09	A	8/9/2011 15:01
N11000650	CA44	8/2/2011 17:01	8/16/2011 20:34	4.79	2.1	B	8/23/2011 16:56
N11000700	CA44	8/16/2011 20:35	8/31/2011 18:28	5.05	0.15	B	9/8/2011 14:38
N11000745	CA44	8/31/2011 18:28	9/13/2011 16:15	4.37	1.93	A	9/20/2011 14:24
N11000802	CA44	9/13/2011 16:15	9/27/2011 18:39	4.77	0.83	B	12/1/2011 16:08
N11000849	CA44	9/27/2011 18:41	10/11/2011 15:43	4.7	0.62	B	10/18/2011 15:15
N11000901	CA44	10/11/2011 15:43	10/25/2011 16:25	4.75	0.42	A	11/1/2011 15:02
N11000951	CA44	10/25/2011 16:25	11/8/2011 20:40	4.8	0.81	A	11/17/2011 17:19
N11001000	CA44	11/8/2011 20:41	11/22/2011 18:45	4.71	0.18	B	12/1/2011 15:57
N11001053	CA44	11/22/2011 18:45	12/6/2011 22:20	4.79	0.29	A	12/14/2011 14:29
N12000111	CA44	12/6/2011 22:20	12/13/2011 21:20			C	2/28/2012 21:23
N12000040	CA44	12/13/2011 21:20	12/20/2011 21:40	2.37	1.48	B	1/27/2012 19:14
N12000046	CA44	12/20/2011 21:40	1/3/2012 23:45	4.77	0.2	A	1/10/2012 15:41
N12000104	CA44	1/3/2012 23:45	1/17/2012 20:45	4.7	0.51	A	1/24/2012 17:11
N12000162	CA44	1/17/2012 20:45	1/31/2012 19:55	4.73	0.51	A	2/7/2012 16:16
N12000218	CA44	1/31/2012 19:55	2/14/2012 20:15	4.74	0.05	B	2/21/2012 15:54
N12000271	CA44	2/14/2012 20:15	2/28/2012 20:30	4.74	0.55	B	3/6/2012 15:30
N12000320	CA44	2/28/2012 20:30	3/13/2012 16:39	4.68	0.91	A	3/20/2012 14:29
N12000377	CA44	3/13/2012 16:41	3/27/2012 19:38	4.78	0.58	A	4/3/2012 14:57
N12000435	CA44	3/27/2012 19:40	4/10/2012 21:54	4.77	0.48	B	4/17/2012 15:24
N12000488	CA44	4/10/2012 21:56	4/24/2012 20:39	4.72	0.65	A	5/1/2012 15:42
N12000544	CA44	4/24/2012 20:41	5/8/2012 15:32	4.67	0.6	A	6/18/2012 18:30
N12000591	CA44	5/8/2012 15:32	5/22/2012 20:47	4.81	1.46	A	5/30/2012 15:00
N12000650	CA44	5/22/2012 20:47	6/6/2012 0:22	4.79	0.97	A	6/13/2012 15:48
N12000703	CA44	6/6/2012 0:24	6/19/2012 19:10	4.66	1.37	A	6/26/2012 14:59
N12000758	CA44	6/19/2012 19:13	7/3/2012 20:11	4.75	1.81	A	7/11/2012 15:21
N12000822	CA44	7/3/2012 20:13	7/17/2012 18:37	4.72	3.14	B	9/5/2012 21:13
N12000876	CA44	7/17/2012 18:37	7/31/2012 19:34	4.75	2.84	B	9/5/2012 21:13

N12000939	CA44	7/31/2012 19:34	8/14/2012 20:43	4.75	2.98	B	8/23/2012 14:16
N12000998	CA44	8/14/2012 20:47	8/28/2012 19:37	4.72	1.99	B	9/6/2012 14:53
N12001049	CA44	8/28/2012 19:39	9/12/2012 23:40	5.13	2.55	B	9/19/2012 15:34
N12001104	CA44	9/12/2012 23:40	9/25/2012 20:45	4.36	2.42	B	10/2/2012 14:24
N12001161	CA44	9/25/2012 20:50	10/9/2012 18:40	4.71	2.3	B	10/16/2012 15:47
N12001224	CA44	10/9/2012 18:45	10/23/2012 17:00	4.71	0.77	B	10/30/2012 16:23
N12001280	CA44	10/23/2012 17:00	11/6/2012 19:50	4.78	0.55	B	12/11/2012 23:02
N12001328	CA44	11/6/2012 19:50	11/20/2012 19:55	4.74	0.5	A	11/27/2012 19:02
N12001405	CA44	11/20/2012 19:55	12/4/2012 20:00	4.74	0.16	A	12/11/2012 15:42
N12001467	CA44	12/4/2012 20:00	12/18/2012 18:55	4.72	0.18	B	12/27/2012 16:39
N13000043	CA44	12/18/2012 18:55	12/31/2012 23:05	4.46	0.13	A	1/9/2013 17:50
N13000115	CA44	12/31/2012 23:05	1/15/2013 18:20	5.01	0.52	A	2/25/2013 18:17
N13000187	CA44	1/15/2013 18:20	1/29/2013 19:30	4.75	0.34	A	5/9/2013 16:40
N13000250	CA44	1/29/2013 19:30	2/12/2013 18:35	4.72	0.38	A	2/19/2013 15:57
N13000311	CA44	2/12/2013 18:35	2/26/2013 18:45	4.74	0.54	A	3/5/2013 16:57
N13000359	CA44	2/26/2013 18:45	3/12/2013 17:30	4.72	0.63	A	3/18/2013 15:08
N13000418	CA44	3/12/2013 17:30	3/26/2013 14:20	4.69	0.44	A	4/1/2013 15:53
N13000496	CA44	3/26/2013 14:20	4/9/2013 18:00	4.79	0.75	A	4/16/2013 16:49
N13000559	CA44	4/9/2013 18:00	4/23/2013 16:00	4.71	0.7	A	4/30/2013 15:24
N13000620	CA44	4/23/2013 16:00	5/7/2013 17:50	4.76	0.7	A	5/14/2013 15:12
N13000687	CA44	5/7/2013 17:50	5/21/2013 19:35	4.76	0.94	A	5/30/2013 14:12
N13000747	CA44	5/21/2013 19:35	6/4/2013 17:16	4.71	1.25	A	6/11/2013 15:44
N13000811	CA44	6/4/2013 17:18	6/18/2013 22:05	4.81	1.79	B	6/25/2013 15:05
N13000873	CA44	6/18/2013 22:05	7/2/2013 18:00	4.68	1.14	B	7/10/2013 18:12
N13000932	CA44	7/2/2013 18:00	7/16/2013 17:57	4.74	2.54	A	7/23/2013 15:50
N13000997	CA44	7/16/2013 17:57	7/30/2013 18:05	4.74	2.59	B	8/6/2013 15:02
N13001056	CA44	7/30/2013 18:05	8/13/2013 16:52	4.72	1.87	B	8/30/2013 14:41
N13001131	CA44	8/13/2013 16:54	8/28/2013 19:49	5.12	2.3	B	9/9/2013 13:21
N13001188	CA44	8/28/2013 19:50	9/10/2013 21:04	4.42	3.54	B	10/16/2013 19:45
N13001256	CA44	9/10/2013 21:05	9/24/2013 17:37	4.69	2.14	B	10/1/2013 17:15
N13001364	CA44	9/24/2013 17:38	10/17/2013 16:43	7.77	0.94	B	11/26/2013 17:28
N13001358	CA44	10/17/2013 16:43	10/22/2013 18:15	1.71	1.75	A	11/26/2013 17:14
N13001431	CA44	10/22/2013 18:15	11/5/2013 18:50	4.75	0.88	A	11/12/2013 16:13
N13001497	CA44	11/5/2013 19:00	11/19/2013 19:40	4.75	0.95	A	11/26/2013 16:43
N13001564	CA44	11/19/2013 19:44	12/4/2013 22:23	5.11	0.38	B	12/11/2013 17:33
N13001631	CA44	12/4/2013 22:23	12/17/2013 21:26	4.39	0.45	B	2/3/2014 14:57
N14000046	CA44	12/17/2013 21:27	12/31/2013 19:46	4.71	0.55	A	1/8/2014 20:22
N14000116	CA44	12/31/2013 22:00	1/14/2014 20:54	4.72	0.17	A	1/21/2014 19:24
N14000186	CA44	1/14/2014 22:00	1/28/2014 20:00	4.71	0.58	A	2/4/2014 15:52
N14000263	CA44	1/28/2014 20:10	2/11/2014 18:45	4.72	0.54	A	2/18/2014 17:05
N14000335	CA44	2/11/2014 18:45	2/25/2014 19:55	4.75	0.4	A	4/1/2014 14:33
N14000395	CA44	2/25/2014 19:55	3/11/2014 16:53	4.7	0.69	A	3/18/2014 15:15
N14000465	CA44	3/11/2014 16:55	3/25/2014 20:20	4.79	1.12	A	4/1/2014 16:03
N14000532	CA44	3/25/2014 20:25	4/8/2014 19:49	4.73	0.68	A	4/15/2014 17:16
N14000588	CA44	4/8/2014 20:00	4/22/2014 18:40	4.72	1.14	A	4/29/2014 16:06
N14000668	CA44	4/22/2014 18:45	5/6/2014 20:25	4.76	0.89	A	6/26/2014 18:50
N14000736	CA44	5/6/2014 20:30	5/20/2014 16:00	4.67	1.28	A	5/29/2014 14:32

N14000801	CA44	5/20/2014 16:00	6/3/2014 20:56	4.81	1.66	B	6/10/2014 15:38
N14000868	CA44	6/3/2014 20:56	6/17/2014 20:38	4.73	1.91	A	6/25/2014 15:17
N14000935	CA44	6/17/2014 20:39	7/1/2014 17:00	4.69	1.46	B	7/9/2014 17:02
N14000994	CA44	7/1/2014 17:05	7/15/2014 19:02	4.77	2.6	A	7/22/2014 14:38
N14001058	CA44	7/15/2014 19:03	7/29/2014 19:59	4.75	2.88	A	8/5/2014 15:39
N14001132	CA44	7/29/2014 20:00	8/12/2014 19:09	4.73	2.76	B	8/20/2014 14:46
N14001202	CA44	8/12/2014 19:09	8/26/2014 20:15	4.75	3.01	B	9/4/2014 16:53
N14001263	CA44	8/26/2014 20:20	9/9/2014 16:00	4.68	3.07	A	9/16/2014 16:30
N14001319	CA44	9/9/2014 16:00	9/23/2014 20:40	4.8	3.11	B	10/14/2014 14:05
N14001405	CA44	9/23/2014 20:45	10/7/2014 20:09	4.73	1.5	A	10/14/2014 15:28
N14001468	CA44	10/7/2014 20:12	10/21/2014 20:50	4.75	2.64	A	10/29/2014 12:43
N14001542	CA44	10/21/2014 20:50	11/4/2014 19:45	4.72	1.07	A	11/11/2014 19:13
N14001617	CA44	11/4/2014 19:50	11/18/2014 19:35	4.73	0.58	B	12/16/2014 16:34
N14001681	CA44	11/18/2014 19:40	12/2/2014 18:40	4.72	0.29	A	12/9/2014 17:34
N14001739	CA44	12/2/2014 18:45	12/16/2014 21:20	4.77	0.14	B	12/23/2014 15:10
N15000055	CA44	12/16/2014 21:25	12/30/2014 21:15	4.74	0.5	B	1/9/2015 14:57
N15000130	CA44	12/30/2014 21:20	1/13/2015 19:30	4.71	0.46	A	1/21/2015 15:44
N11000143	CA67	3/1/2011 23:17	3/15/2011 20:58	4.71	0.85	A	7/5/2011 19:26
N11000182	CA67	3/15/2011 20:58	3/29/2011 20:47	4.74	0.62	A	7/5/2011 19:26
N11000220	CA67	3/29/2011 20:47	4/12/2011 15:10	4.66	0.77	A	7/5/2011 19:27
N11000262	CA67	4/12/2011 15:10	4/26/2011 20:34	4.81	1.43	A	7/5/2011 19:26
N11000303	CA67	4/26/2011 20:34	5/10/2011 20:14	4.73	1.19	A	7/5/2011 20:32
N11000350	CA67	5/10/2011 20:14	5/24/2011 21:06	4.75	1.67	B	7/5/2011 20:33
N11000393	CA67	5/24/2011 21:06	6/7/2011 21:00	4.74	0.15	B	7/29/2011 21:02
N11000450	CA67	6/7/2011 21:00	6/21/2011 19:51	4.72	1.96	A	7/28/2011 18:15
N11000502	CA67	6/21/2011 19:51	7/12/2011 18:13	7.08	1.02	B	7/19/2011 14:37
N11000545	CA67	7/12/2011 18:13	7/19/2011 20:55	2.41	0.29	A	8/8/2011 19:42
N11000600	CA67	7/19/2011 20:55	8/2/2011 21:42	4.75	2.71	B	10/1/2011 15:55
N11000653	CA67	8/2/2011 21:42	8/16/2011 21:34	4.74	2.64	A	10/1/2011 15:56
N11000701	CA67	8/16/2011 21:34	8/31/2011 22:15	5.09	0.67	B	9/9/2011 16:07
N11000744	CA67	8/31/2011 22:15	9/13/2011 15:50	4.31	0.55	A	9/20/2011 14:22
N11000798	CA67	9/13/2011 15:50	9/27/2011 18:18	4.77	1.88	A	10/4/2011 14:54
N11000855	CA67	9/27/2011 18:18	10/11/2011 23:08	4.81	0.53	B	10/25/2011 14:28
N11000903	CA67	10/11/2011 23:08	10/26/2011 22:22	5.07	0.77	A	11/2/2011 15:54
N11000954	CA67	10/26/2011 22:22	11/9/2011 23:08	4.75	0.7	A	11/18/2011 16:52
N11000999	CA67	11/9/2011 23:08	11/22/2011 22:30	4.39	0.7	B	12/1/2011 15:56
N11001044	CA67	11/22/2011 22:30	12/6/2011 17:58	4.67	0.38	A	2/2/2012 16:10
N11001112	CA67	12/6/2011 17:58	12/20/2011 17:35	4.73	0.21	A	12/29/2011 15:32
N12000059	CA67	12/20/2011 17:35	1/4/2012 0:44	4.84	0.15	A	1/12/2012 15:30
N12000109	CA67	1/4/2012 0:44	1/17/2012 23:12	4.72	0.51	A	1/25/2012 16:08
N12000150	CA67	1/17/2012 23:12	1/31/2012 17:58	4.66	0.73	A	2/21/2012 21:58
N12000212	CA67	1/31/2012 17:58	2/14/2012 17:12			C	5/10/2012 16:23
N12000270	CA67	2/14/2012 17:12	2/28/2012 17:59	4.75	0.62	B	5/29/2012 14:48
N12000328	CA67	2/28/2012 17:59	3/13/2012 18:00	4.74	0.49	A	5/29/2012 14:49
N12000378	CA67	3/13/2012 18:00	3/27/2012 16:45	4.72	0.77	A	5/29/2012 14:49
N12000427	CA67	3/27/2012 16:45	4/10/2012 16:00			C	5/29/2012 14:50
N12000485	CA67	4/10/2012 16:00	4/24/2012 18:39	4.78	1.26	A	5/1/2012 15:36

N12000546	CA67	4/24/2012 18:39	5/8/2012 15:47	4.7	1.27	B	6/27/2012 22:48
N12000586	CA67	5/8/2012 15:47	5/22/2012 17:20	4.76	2.12	A	6/18/2012 18:31
N12000646	CA67	5/22/2012 17:20	6/6/2012 0:59	4.85	2.17	A	6/12/2012 14:54
N12000708	CA67	6/6/2012 0:59	6/19/2012 19:50	4.67	1.76	A	7/18/2012 18:52
N12000763	CA67	6/19/2012 19:55	7/3/2012 17:33	4.7	2.39	A	7/11/2012 15:34
N12000825	CA67	7/3/2012 17:45	7/17/2012 15:58	4.71	3.32	A	7/26/2012 14:13
N12000885	CA67	7/17/2012 15:58	7/31/2012 17:11	4.75	1.76	B	10/14/2012 5:37
N12001001	CA67	7/31/2012 17:11	8/16/2012 21:30	5.48	3.42	B	11/16/2012 5:16
N12000994	CA67	8/16/2012 21:30	8/28/2012 15:48	3.98	3.87	A	9/5/2012 15:19
N12001052	CA67	8/28/2012 15:48	9/11/2012 16:48	4.75	2.13	A	9/19/2012 15:40
N12001107	CA67	9/11/2012 16:48	9/25/2012 17:28	4.75	1.75	A	10/2/2012 14:29
N12001162	CA67	9/25/2012 17:28	10/9/2012 16:18	4.72	1.44	A	10/16/2012 15:50
N12001221	CA67	10/9/2012 16:18	10/23/2012 16:06	4.74	0.99	A	12/11/2012 20:57
N12001279	CA67	10/23/2012 16:06	11/6/2012 17:29	4.76	0.9	A	11/13/2012 16:20
N12001337	CA67	11/6/2012 17:29	11/20/2012 16:24	4.72	0.58	A	11/28/2012 17:16
N12001410	CA67	11/20/2012 16:24	12/4/2012 16:40	4.74	0.94	B	12/14/2012 16:15
N13000001	CA67	12/4/2012 16:40	12/18/2012 16:59	4.74	0.79	B	1/2/2013 14:53
N13000062	CA67	12/18/2012 16:59	1/3/2013 0:48	5.19	0.22	B	1/10/2013 17:43
N13000114	CA67	1/3/2013 0:48	1/15/2013 17:43	4.3	0.54	A	3/13/2013 13:16
N13000180	CA67	1/15/2013 17:43	1/29/2013 17:11	4.73	1.05	A	2/5/2013 18:36
N13000251	CA67	1/29/2013 17:11	2/12/2013 17:20	4.74	0.51	A	2/19/2013 16:00
N13000309	CA67	2/12/2013 17:20	2/26/2013 19:16	4.77	0.72	A	3/5/2013 16:49
N13000377	CA67	2/26/2013 19:16	3/12/2013 16:51	4.7	0.57	A	3/20/2013 15:01
N13000429	CA67	3/12/2013 16:51	3/26/2013 15:36	4.72	0.98	A	4/1/2013 16:41
N13000489	CA67	3/26/2013 15:36	4/9/2013 16:15	4.75	1.57	A	4/16/2013 16:30
N13000564	CA67	4/9/2013 16:15	4/23/2013 16:33	4.74	1.48	A	5/2/2013 14:14
N13000627	CA67	4/23/2013 16:58	5/7/2013 15:55	4.72	1.49	A	5/15/2013 15:59
N13000682	CA67	5/7/2013 15:55	5/21/2013 15:14	4.73	1.86	A	5/29/2013 15:46
N13000749	CA67	5/21/2013 15:14	6/4/2013 16:06	4.75	2.19	A	7/9/2013 15:56
N13000815	CA67	6/4/2013 16:06	6/18/2013 16:03	4.74	2.21	B	6/28/2013 15:54
N13000878	CA67	6/18/2013 16:03	7/2/2013 16:09	4.74	3.26	B	7/11/2013 14:15
N13000937	CA67	7/2/2013 16:09	7/16/2013 15:08	4.72	3.44	B	7/24/2013 16:07
N13000992	CA67	7/16/2013 15:12	7/30/2013 21:42	4.83	4.1	A	8/6/2013 14:47
N13001129	CA67	7/30/2013 21:42	8/13/2013 15:45	4.65	2.48	B	9/4/2013 16:03
N13001133	CA67	8/13/2013 15:54	8/27/2013 15:19	4.73	2.98	B	9/9/2013 13:44
N13001240	CA67	8/27/2013 15:24	9/17/2013 17:06	7.13	2.75	B	10/30/2013 14:46
N13001311	CA67	9/17/2013 17:06	10/1/2013 15:54	4.72	1.44	B	12/13/2013 20:54
N13001373	CA67	10/1/2013 15:54	10/22/2013 22:18	7.2	0.89	B	11/26/2013 17:32
N13001436	CA67	10/22/2013 22:18	11/5/2013 23:37	4.76	0.67	A	11/14/2013 15:23
N13001498	CA67	11/5/2013 23:37	11/19/2013 17:10	4.65	0.86	B	1/3/2014 17:06
N13001566	CA67	11/19/2013 17:18	12/4/2013 0:19	4.84	0.95	A	12/11/2013 17:45
N13001637	CA67	12/4/2013 0:29	12/17/2013 20:12	4.68	0.57	B	12/30/2013 20:13
N14000053	CA67	12/17/2013 20:12	12/31/2013 17:00	4.69	0.34	A	1/8/2014 20:41
N14000132	CA67	12/31/2013 17:00	1/14/2014 17:00	4.74	0.58	A	1/22/2014 16:48
N14000195	CA67	1/14/2014 17:00	1/28/2014 19:09	4.77	0.32	A	2/5/2014 16:53
N14000259	CA67	1/28/2014 19:09	2/11/2014 23:19	4.8	0.78	A	2/18/2014 16:56
N14000333	CA67	2/11/2014 23:19	2/25/2014 22:15	4.72	1.49	A	3/4/2014 17:19

N14000402	CA67	2/25/2014 22:15	3/11/2014 22:27	4.74	1.18	A	3/19/2014 18:12
N14000467	CA67	3/11/2014 22:27	3/25/2014 23:50	4.76	1.06	A	4/1/2014 16:11
N14000536	CA67	3/25/2014 23:52	4/8/2014 15:12	4.62	1.15	A	4/16/2014 15:12
N14000601	CA67	4/8/2014 15:12	4/23/2014 2:14	4.89	1.94	A	4/30/2014 15:44
N14000659	CA67	4/23/2014 2:14	5/6/2014 15:00	4.58	1.6	A	5/13/2014 15:40
N14000731	CA67	5/6/2014 15:00	5/20/2014 22:21	4.84	1.72	A	5/28/2014 16:32
N14000851	CA67	5/20/2014 22:21	6/3/2014 19:22	4.7	2.31	B	6/23/2014 15:55
N14000925	CA67	6/3/2014 19:22	7/1/2014 15:30	9.42	2.33	B	7/8/2014 14:45
N14001003	CA67	7/1/2014 15:30	7/15/2014 22:24	4.84	3.19	A	7/23/2014 15:24
N14001071	CA67	7/15/2014 22:24	7/29/2014 16:29	4.65	2.77	A	8/7/2014 14:42
N14001137	CA67	7/29/2014 16:29	8/12/2014 15:55	4.73	3.52	B	8/22/2014 16:26
N14001203	CA67	8/12/2014 15:55	8/26/2014 20:57	4.81	2.72	A	10/13/2014 20:00
N14001267	CA67	8/26/2014 20:57	9/10/2014 0:28	4.79	2.46	A	9/17/2014 14:48
N14001334	CA67	9/10/2014 0:28	9/23/2014 21:36	4.7	2.28	A	9/30/2014 17:13
N14001406	CA67	9/23/2014 21:36	10/7/2014 21:29	4.74	1.28	A	10/15/2014 16:10
N14001478	CA67	10/7/2014 21:29	10/21/2014 23:03	4.76	1.91	A	10/29/2014 15:35
N14001549	CA67	10/21/2014 23:03	11/4/2014 22:43	4.73	1.04	B	11/18/2014 16:28
N14001677	CA67	11/4/2014 22:43	12/1/2014 23:17	9.15	0.82	B	12/30/2014 15:18
N15000026	CA67	12/1/2014 23:17	12/16/2014 15:14	4.96	0.88	B	1/20/2015 21:05
N15000069	CA67	12/16/2014 15:14	12/30/2014 17:04	4.76	0.82	B	1/13/2015 19:33
N15000136	CA67	12/30/2014 17:04	1/13/2015 23:09	4.82	0.73	B	2/13/2015 16:22
N11000184	CA83	3/22/2011 17:56	4/5/2011 16:05	4.71	1.9	A	6/28/2011 15:52
N11000218	CA83	4/5/2011 16:15	4/12/2011 15:55	2.36	2.18	A	6/28/2011 15:52
N11000259	CA83	4/12/2011 15:57	4/26/2011 15:28	4.73	2.53	A	6/28/2011 15:52
N11000301	CA83	4/26/2011 15:32	5/10/2011 15:49	4.74	2.62	B	7/5/2011 20:34
N11000346	CA83	5/10/2011 15:52	5/24/2011 15:40	4.74	3.24	B	6/28/2011 15:52
N11000379	CA83	5/24/2011 15:45	6/7/2011 15:35	4.74	2.29	A	6/28/2011 15:52
N11000445	CA83	6/7/2011 15:35	6/21/2011 15:50	4.74	5.2	B	7/29/2011 21:04
N11000499	CA83	6/21/2011 15:54	7/5/2011 22:17	4.83	5.06	B	7/13/2011 15:06
N11000593	CA83	7/5/2011 22:21	7/20/2011 21:37	5.07	3.18	B	8/8/2011 15:49
N11000586	CA83	7/20/2011 21:40	8/2/2011 16:23	4.32	7.2	B	8/8/2011 15:25
N11000648	CA83	8/2/2011 16:25	8/16/2011 16:39	4.74	7.16	B	10/1/2011 15:57
N11000691	CA83	8/16/2011 17:22	8/30/2011 14:58	4.7	1.09	B	9/6/2011 14:52
N11000748	CA83	8/30/2011 15:00	9/13/2011 22:45	4.85	2.51	A	10/20/2011 20:21
N11000790	CA83	9/13/2011 23:20	9/27/2011 16:42	4.64	5.18	A	10/3/2011 15:14
N11000850	CA83	9/27/2011 17:03	10/11/2011 16:43	4.73	0.52	B	10/19/2011 13:56
N11000897	CA83	10/11/2011 16:43	10/25/2011 16:25	4.73	4.57	A	11/16/2011 21:52
N11000948	CA83	10/25/2011 16:30	11/7/2011 17:02	4.41	4.71	A	11/15/2011 15:36
N11001060	CA83	11/7/2011 17:02	11/8/2011 17:05			C	2/2/2012 16:13
N11001001	CA83	11/8/2011 17:05	11/22/2011 17:11	4.74	0.5	B	12/30/2011 15:47
N11001054	CA83	11/22/2011 17:13	12/6/2011 17:12	4.74	1.33	A	12/14/2011 16:15
N11001107	CA83	12/6/2011 17:13	12/20/2011 17:10	4.74	2.05	A	12/28/2011 18:24
N12000044	CA83	12/20/2011 17:13	1/3/2012 17:12	4.74	2.3	A	1/10/2012 15:37
N12000106	CA83	1/3/2012 17:15	1/17/2012 16:57	4.73	3.22	A	1/24/2012 17:14
N12000157	CA83	1/17/2012 16:59	1/31/2012 17:12	4.74	3.04	A	2/7/2012 15:59
N12000204	CA83	1/31/2012 17:14	2/14/2012 16:22	4.73	1.53	A	4/5/2012 22:08
N12000268	CA83	2/14/2012 16:25	2/28/2012 23:15	4.83	1.3	B	3/6/2012 15:17

N12000323	CA83	2/28/2012 23:16	3/13/2012 15:56	4.63	0.41	A	3/20/2012 14:39
N12000379	CA83	3/13/2012 16:03	3/27/2012 15:58	4.74	1.63	A	4/3/2012 15:04
N12000436	CA83	3/27/2012 15:59	4/10/2012 15:55	4.74	1.36	B	4/17/2012 15:25
N12000486	CA83	4/10/2012 15:58	4/24/2012 15:20	4.73	2.49	A	5/1/2012 15:38
N12000536	CA83	4/24/2012 15:25	5/8/2012 15:25	4.74	2.76	A	6/18/2012 18:32
N12000598	CA83	5/8/2012 15:30	5/22/2012 16:13	4.75	5.73	A	6/25/2012 19:38
N12000644	CA83	5/22/2012 16:15	6/5/2012 15:45	4.73	5.81	A	6/12/2012 14:49
N12000704	CA83	6/5/2012 15:49	6/19/2012 16:16	4.74	5.08	B	6/26/2012 15:08
N12000760	CA83	6/19/2012 16:18	7/3/2012 16:03	4.73	6.91	A	7/11/2012 15:27
N12000817	CA83	7/3/2012 16:03	7/17/2012 15:22	4.73	6.71	B	8/21/2012 17:45
N12000880	CA83	7/17/2012 15:25	7/31/2012 16:11	4.75	8.64	A	9/5/2012 21:14
N12000935	CA83	7/31/2012 16:15	8/14/2012 16:00	4.73	9.84	B	10/14/2012 5:38
N12000995	CA83	8/14/2012 16:03	8/28/2012 16:11	4.74	8.4	A	9/5/2012 15:20
N12001046	CA83	8/28/2012 16:23	9/11/2012 16:48	4.74	9.07	A	9/25/2012 16:51
N12001105	CA83	9/11/2012 16:48	9/25/2012 15:50	4.72	8.39	A	10/16/2012 18:31
N12001160	CA83	9/25/2012 15:53	10/9/2012 16:13	4.74	7.42	A	10/16/2012 15:45
N12001225	CA83	10/9/2012 16:17	10/23/2012 16:28	4.74	2.13	A	10/30/2012 16:25
N12001275	CA83	10/23/2012 16:30	11/6/2012 16:55	4.74	2.75	A	11/13/2012 16:07
N12001343	CA83	11/6/2012 16:58	11/20/2012 18:03	4.75	1.87	B	11/30/2012 17:30
N12001404	CA83	11/20/2012 18:05	12/4/2012 17:38	4.73	1.67	A	12/11/2012 15:39
N12001464	CA83	12/4/2012 17:45	12/18/2012 17:03	4.73	0.87	B	12/27/2012 16:30
N13000048	CA83	12/18/2012 17:09	1/2/2013 17:34	5.08	0.54	A	1/9/2013 18:05
N13000111	CA83	1/2/2013 17:40	1/15/2013 17:44	4.4	0.9	A	1/22/2013 16:54
N13000186	CA83	1/15/2013 17:45	1/29/2013 17:17	4.73	0.08	B	5/9/2013 16:31
N13000252	CA83	1/29/2013 17:19	2/12/2013 17:23	4.74	2.45	A	2/25/2013 17:51
N13000314	CA83	2/12/2013 17:29	2/26/2013 17:24	4.74	2.36	A	3/6/2013 16:33
N13000373	CA83	2/26/2013 17:27	3/12/2013 15:52	4.72	2.11	A	4/17/2013 18:27
N13000439	CA83	3/12/2013 15:56	3/26/2013 16:52	4.75	4.27	B	6/17/2013 20:45
N13000486	CA83	3/26/2013 16:52	4/9/2013 16:30	4.73	3.22	A	6/17/2013 21:23
N13000558	CA83	4/9/2013 16:50	4/23/2013 16:08	4.73	0.81	A	4/30/2013 15:22
N13000626	CA83	4/23/2013 16:13	5/7/2013 16:05	4.74	3.1	A	5/14/2013 17:03
N13000679	CA83	5/7/2013 16:08	5/21/2013 16:23	4.74	5.64	A	5/29/2013 15:40
N13000746	CA83	5/21/2013 16:24	6/4/2013 17:03	4.75	5.11	B	6/11/2013 15:42
N13000808	CA83	6/4/2013 17:06	6/18/2013 16:28	4.73	8.69	B	7/30/2013 14:29
N13000867	CA83	6/18/2013 16:34	7/2/2013 16:46	4.74	8.25	A	9/3/2013 19:46
N13000936	CA83	7/2/2013 16:50	7/16/2013 16:48	4.74	8.04	A	9/12/2013 21:17
N13000994	CA83	7/16/2013 16:50	7/30/2013 16:40	4.74	9.84	A	8/6/2013 14:52
N13001062	CA83	7/30/2013 16:40	8/13/2013 16:31	4.74	7.47	A	8/21/2013 15:52
N13001122	CA83	8/13/2013 16:32	8/27/2013 16:20	4.74	8.6	A	9/3/2013 17:40
N13001172	CA83	8/27/2013 16:35	9/9/2013 17:00	4.41	10.38	B	10/16/2013 19:35
N13001258	CA83	9/9/2013 17:02	9/24/2013 15:15	5.05	7.56	A	10/2/2013 14:40
N13001357	CA83	9/24/2013 15:16	10/22/2013 16:10	9.49	4.75	B	1/3/2014 20:25
N13001430	CA83	10/22/2013 16:12	11/5/2013 17:53	4.76	3.18	A	11/12/2013 16:11
N13001499	CA83	11/5/2013 18:00	11/19/2013 17:33			C	1/9/2014 15:40
N13001567	CA83	11/19/2013 17:33	12/6/2013 18:22	5.76	0.62	B	2/24/2014 16:30
N13001635	CA83	12/6/2013 18:30	12/17/2013 17:40	3.71	1.2	B	12/30/2013 20:06
N14000054	CA83	12/17/2013 17:45	12/31/2013 17:40	4.74	2.15	A	1/8/2014 20:43

N14000126	CA83	12/31/2013 17:40	1/14/2014 18:34	4.75	3.51	A	3/4/2014 15:19
N14000188	CA83	1/14/2014 18:41	1/28/2014 17:25	4.72	3.07	A	2/4/2014 15:58
N14000265	CA83	1/28/2014 17:30	2/11/2014 16:15	4.72	2.02	A	2/18/2014 17:10
N14000336	CA83	2/11/2014 16:20	2/25/2014 17:10	4.75	4.74	A	3/5/2014 15:35
N14000399	CA83	2/25/2014 17:10	3/11/2014 16:32	4.73	2.25	A	3/18/2014 15:26
N14000454	CA83	3/11/2014 16:37	3/25/2014 16:41	4.74	3.99	A	3/31/2014 16:07
N14000525	CA83	3/25/2014 16:43	4/8/2014 15:55	4.73	1.78	A	4/15/2014 15:14
N14000600	CA83	4/8/2014 16:01	4/22/2014 15:07	4.73	5.85	A	4/30/2014 15:37
N14000661	CA83	4/22/2014 15:14	5/6/2014 15:52	4.75	1.86	A	5/13/2014 15:44
N14000728	CA83	5/6/2014 16:06	5/20/2014 17:30	4.76	4.65	B	6/26/2014 14:39
N14000804	CA83	5/20/2014 17:35	6/3/2014 16:07	4.72	5.05	B	6/10/2014 15:49
N14000863	CA83	6/3/2014 16:12	6/17/2014 16:42	4.74	7.25	B	6/24/2014 15:31
N14000923	CA83	6/17/2014 16:44	7/1/2014 19:12	4.77	6.63	A	7/22/2014 19:07
N14001002	CA83	7/1/2014 19:14	7/15/2014 17:00	4.71	7.73	A	7/23/2014 15:09
N14001062	CA83	7/15/2014 17:10	7/29/2014 16:22	4.73	10.58	A	8/5/2014 15:52
N14001131	CA83	7/29/2014 16:23	8/12/2014 17:07	4.75	7.65	A	8/20/2014 14:43
N14001198	CA83	8/12/2014 17:09	8/26/2014 15:39	4.72	7.11	A	9/4/2014 14:04
N14001265	CA83	8/26/2014 15:41	9/9/2014 16:26	4.75	8.12	A	9/16/2014 16:45
N14001321	CA83	9/9/2014 16:35	9/23/2014 16:49	4.74	5.57	A	9/30/2014 16:25
N14001402	CA83	9/23/2014 16:52	10/7/2014 16:07	4.73	5.74	A	10/14/2014 15:20
N14001474	CA83	10/7/2014 16:13	10/21/2014 16:17	4.74	7.19	A	10/29/2014 13:02
N14001546	CA83	10/21/2014 16:18	11/4/2014 16:40	4.74	5.45	B	11/13/2014 15:54
N14001603	CA83	11/4/2014 16:45	11/18/2014 17:35	4.75	3.47	A	11/25/2014 16:05
N14001679	CA83	11/18/2014 18:00	12/2/2014 17:25	4.73	1.62	A	12/9/2014 17:24
N15000068	CA83	12/2/2014 17:30	12/16/2014 17:17	4.73	0.93	B	1/13/2015 19:31
N15000062	CA83	12/16/2014 17:18	12/30/2014 17:50	4.75	0.91	B	2/12/2015 15:11
N15000114	CA83	12/30/2014 17:55	1/13/2015 17:35	4.73	1.75	A	2/25/2015 21:37
N12001109	CO10	9/11/2012 15:35	9/25/2012 17:37	4.77	0.72	B	10/2/2012 14:40
N12001282	CO10	9/25/2012 17:37	10/2/2012 17:15			C	12/11/2012 23:05
N12001350	CO10	10/2/2012 17:15	10/9/2012 16:30	2.36	0.94	B	12/5/2012 17:06
N12001196	CO10	10/9/2012 16:30	10/23/2012 15:50	4.73	0.19	A	10/29/2012 13:50
N12001286	CO10	10/23/2012 15:50	11/5/2012 22:45	4.5	0.56	B	11/19/2012 17:01
N12001303	CO10	11/5/2012 23:25	11/13/2012 22:50	2.7	0.36	A	11/26/2012 18:27
N12001353	CO10	11/13/2012 22:50	11/20/2012 23:51	2.38	0.34	B	12/5/2012 17:16
N12001351	CO10	11/20/2012 23:51	11/27/2012 19:02	2.3	0.32	A	12/12/2012 17:03
N13000110	CO10	11/27/2012 19:02	12/4/2012 23:00			C	1/22/2013 15:24
N12001412	CO10	12/4/2012 23:00	12/11/2012 23:48	2.38	0.36	A	12/18/2012 16:15
N13000053	CO10	12/11/2012 23:48	12/26/2012 19:45	5.02	0.21	A	1/22/2013 15:25
N13000066	CO10	12/26/2012 19:45	1/8/2013 18:50	4.39	0.48	A	1/14/2013 16:33
N13000192	CO10	1/8/2013 18:50	1/16/2013 18:20	2.7	0.99	B	2/25/2013 17:52
N13000193	CO10	1/16/2013 18:20	1/30/2013 8:20	4.6	0.16	A	2/7/2013 15:23
N13000254	CO10	1/30/2013 8:20	2/13/2013 22:29	4.94	0.25	A	5/2/2013 19:35
N13000318	CO10	2/13/2013 22:29	2/26/2013 20:08			C	3/11/2013 16:11
N13000381	CO10	2/26/2013 20:08	3/13/2013 18:30	5.05	0.19	A	3/27/2013 17:21
N13000425	CO10	3/13/2013 18:30	3/26/2013 22:21	4.45	0.31	A	4/1/2013 16:24
N13000492	CO10	3/26/2013 22:21	4/9/2013 15:35	4.64	0.38	A	4/16/2013 16:39
N13000557	CO10	4/9/2013 15:35	4/23/2013 23:13	4.85	0.53	A	4/30/2013 15:18

N13000630	CO10	4/23/2013 23:13	5/7/2013 20:37	4.7	0.48	B	6/18/2013 14:32
N13000672	CO10	5/7/2013 20:37	5/21/2013 21:13	4.75	0.54	A	6/27/2013 19:26
N13000742	CO10	5/21/2013 21:13	6/4/2013 23:15	4.77	0.63	A	6/11/2013 13:16
N13000781	CO10	6/4/2013 23:15	6/18/2013 15:35	4.63	0.7	A	6/21/2013 19:19
N13000856	CO10	6/18/2013 15:35	7/2/2013 14:52	4.73	0.74	A	7/9/2013 13:38
N13000927	CO10	7/2/2013 14:52	7/17/2013 1:27	4.89	1	A	7/22/2013 15:56
N13000986	CO10	7/17/2013 1:27	7/31/2013 3:09	4.76	0.75	B	9/24/2013 14:29
N13001030	CO10	7/31/2013 3:09	8/13/2013 19:50	4.63	0.67	B	8/16/2013 16:37
N13001119	CO10	8/13/2013 19:50	8/28/2013 17:35	5.04	0.69	B	9/3/2013 17:05
N13001170	CO10	8/28/2013 17:35	9/10/2013 18:44	4.42	0.95	B	9/16/2013 15:48
N13001233	CO10	9/10/2013 18:44	9/24/2013 16:20	4.7	0.65	B	9/27/2013 18:16
N13001286	CO10	9/24/2013 16:20	10/8/2013 15:42	4.73	0.46	B	10/11/2013 16:49
N13001360	CO10	10/8/2013 15:42	10/22/2013 15:50	4.74	0.45	A	10/29/2013 15:37
N13001428	CO10	10/22/2013 15:50	11/5/2013 19:05	4.78	0.38	A	11/12/2013 16:06
N13001490	CO10	11/5/2013 19:05	11/19/2013 19:16	4.74	0.18	A	11/26/2013 14:42
N13001568	CO10	11/19/2013 19:16	12/3/2013 20:35	4.76	0.36	B	2/24/2014 17:02
N13001629	CO10	12/3/2013 20:35	12/17/2013 20:40	4.74	0.3	B	1/28/2014 17:15
N14000045	CO10	12/17/2013 20:40	1/1/2014 2:22	4.82	0.42	B	1/8/2014 20:21
N14000112	CO10	1/1/2014 2:46	1/14/2014 20:52			C	3/18/2014 16:47
N14000356	CO10	1/14/2014 20:52	1/21/2014 23:00			C	3/13/2014 20:27
N14000155	CO10	1/21/2014 23:00	1/28/2014 16:00	2.27	0.23	A	3/13/2014 20:25
N14000249	CO10	1/28/2014 16:55	2/11/2014 18:45	4.76	0.41	A	2/17/2014 15:59
N14000311	CO10	2/11/2014 18:45	2/25/2014 15:45	4.7	0.56	A	3/3/2014 16:49
N14000376	CO10	2/25/2014 15:45	3/11/2014 17:17	4.76	0.47	A	3/17/2014 16:35
N14000471	CO10	3/11/2014 17:17	3/25/2014 21:05	4.79	0.54	A	4/3/2014 14:03
N14000535	CO10	3/25/2014 21:05	4/8/2014 18:50	4.71	0.52	A	4/16/2014 15:10
N14000602	CO10	4/8/2014 18:50	4/22/2014 16:53	4.71	0.31	A	5/16/2014 18:38
N14000667	CO10	4/22/2014 17:33	5/6/2014 16:10	4.72	0.35	A	5/13/2014 17:01
N14000713	CO10	5/6/2014 16:10	5/20/2014 18:35	4.77	0.4	A	5/27/2014 15:03
N14000789	CO10	5/20/2014 18:35	6/3/2014 22:10	4.79	0.46	B	6/10/2014 12:41
N14000847	CO10	6/3/2014 22:10	6/17/2014 17:54	4.68	0.75	A	6/23/2014 15:21
N14000926	CO10	6/17/2014 17:54	7/1/2014 20:51	4.78	0.66	A	7/8/2014 14:46
N14000972	CO10	7/1/2014 20:51	7/15/2014 16:41	4.68	0.7	A	7/21/2014 12:56
N14001068	CO10	7/15/2014 16:41	7/29/2014 19:33	4.78	0.9	A	8/5/2014 16:14
N14001100	CO10	7/29/2014 19:33	8/12/2014 16:16	4.69	0.49	B	8/15/2014 16:35
N14001180	CO10	8/12/2014 16:16	8/26/2014 16:22	4.74	0.52	B	9/2/2014 13:10
N14001260	CO10	8/26/2014 16:22	9/9/2014 16:57	4.75	0.53	A	9/15/2014 16:03
N14001330	CO10	9/9/2014 16:57	9/23/2014 16:13	4.73	0.76	A	9/30/2014 16:56
N14001369	CO10	9/23/2014 16:13	10/7/2014 16:50	4.75	0.37	A	10/10/2014 15:45
N14001471	CO10	10/7/2014 16:50	10/21/2014 18:07	4.76	0.37	A	10/29/2014 12:51
N14001543	CO10	10/21/2014 18:07	11/4/2014 17:20	4.73	0.29	B	12/16/2014 15:11
N14001611	CO10	11/4/2014 17:20	11/18/2014 18:30	4.75	0.21	B	11/26/2014 16:58
N14001665	CO10	11/18/2014 18:30	12/2/2014 22:20	4.79	0.42	A	12/8/2014 19:51
N14001726	CO10	12/2/2014 22:25	12/16/2014 23:25	4.75	0.19	A	12/22/2014 14:54
N15000044	CO10	12/16/2014 23:25	12/30/2014 21:01	4.7	0.11	A	1/7/2015 19:48
N15000118	CO10	12/30/2014 21:01	1/13/2015 21:50	4.75	0.63	A	1/21/2015 14:35
N11000342	CO88	5/10/2011 16:35	5/24/2011 19:30	4.78	0.47	B	7/5/2011 20:51

N11000392	CO88	5/24/2011 19:35	6/7/2011 22:10	4.77	0.57	A	6/28/2011 15:52
N11000443	CO88	6/7/2011 22:12	6/21/2011 18:40	4.69	0.45	B	6/27/2011 16:24
N11000495	CO88	6/21/2011 18:50	7/5/2011 21:08	4.77	0.76	A	7/12/2011 15:13
N11000542	CO88	7/5/2011 21:08	7/19/2011 22:18	4.75	0.48	A	7/26/2011 15:22
N11000592	CO88	7/19/2011 22:18	8/2/2011 21:50	4.73	0.71	A	8/8/2011 15:42
N11000631	CO88	8/2/2011 21:50	8/16/2011 16:56	4.67	0.6	A	10/18/2011 16:51
N11000692	CO88	8/16/2011 17:00	8/30/2011 22:40	4.82	0.53	A	9/6/2011 14:54
N11000743	CO88	8/30/2011 22:45	9/13/2011 19:50	4.7	0.45	A	9/19/2011 14:38
N11000784	CO88	9/13/2011 19:52	9/27/2011 17:39	4.71	0.28	A	9/30/2011 15:48
N11000839	CO88	9/27/2011 17:45	10/11/2011 17:20	4.73	0.1	A	10/17/2011 14:56
N11000888	CO88	10/11/2011 17:22	10/25/2011 15:48	4.72	0.04	B	10/31/2011 14:47
N11000942	CO88	10/25/2011 15:52	11/8/2011 20:28	4.8	0.03	B	12/30/2011 15:50
N11000994	CO88	11/8/2011 20:32	11/22/2011 20:29	4.74	0.05	B	2/3/2012 18:20
N11001049	CO88	11/22/2011 20:30	12/6/2011 19:55	4.73	0.4	A	12/12/2011 17:19
N11001092	CO88	12/6/2011 19:55	12/20/2011 19:05	4.73	0.21	B	12/23/2011 16:19
N12000055	CO88	12/20/2011 19:05	1/3/2012 16:49	4.71	0.06	B	1/10/2012 16:07
N12000087	CO88	1/3/2012 16:49	1/17/2012 17:20	4.75	0.06	B	1/20/2012 19:05
N12000151	CO88	1/17/2012 17:20	1/31/2012 17:05	4.73	0.5	B	2/28/2012 22:40
N12000199	CO88	1/31/2012 17:05	2/14/2012 20:25	4.78	0.08	B	2/20/2012 16:12
N12000262	CO88	2/14/2012 20:31	2/28/2012 21:22	4.75	0.21	B	3/5/2012 16:15
N12000318	CO88	2/28/2012 21:24	3/13/2012 19:42	4.71	0.28	A	3/19/2012 14:46
N12000368	CO88	3/13/2012 19:45	3/27/2012 16:30	4.69	0.35	B	5/12/2012 5:51
N12000413	CO88	3/27/2012 16:30	4/10/2012 18:09	4.76	0.32	B	4/13/2012 16:41
N12000484	CO88	4/10/2012 18:10	4/24/2012 17:15	4.72	0.46	A	4/30/2012 15:04
N12000528	CO88	4/24/2012 17:15	5/8/2012 14:00	4.69	0.54	A	6/25/2012 19:41
N12000590	CO88	5/8/2012 14:00	5/22/2012 15:50	4.76	0.7	A	6/27/2012 22:42
N12000623	CO88	5/22/2012 15:50	6/5/2012 14:30	4.72	0.57	B	7/31/2012 13:31
N12000701	CO88	6/5/2012 14:30	6/19/2012 12:41	4.71	1.09	B	8/11/2012 23:04
N12000744	CO88	6/19/2012 12:41	7/3/2012 15:22	4.78	1.29	B	9/5/2012 21:24
N12000814	CO88	7/3/2012 15:22	7/17/2012 21:00	4.82	1.11	B	7/23/2012 15:23
N12000869	CO88	7/17/2012 21:00	7/31/2012 15:07			C	9/5/2012 21:25
N12000926	CO88	7/31/2012 15:08	8/14/2012 18:15	4.78	0.75	A	8/20/2012 15:02
N12000975	CO88	8/14/2012 18:15	8/28/2012 16:39	4.72	0.95	B	10/14/2012 5:40
N12001038	CO88	8/28/2012 16:40	9/11/2012 18:45	4.77	0.5	A	9/17/2012 15:46
N12001091	CO88	9/11/2012 18:46	9/25/2012 16:44	4.71	0.84	B	10/17/2012 18:15
N12001152	CO88	9/25/2012 16:46	10/9/2012 20:59	4.8	0.27	A	12/11/2012 20:59
N12001194	CO88	10/9/2012 20:59	10/23/2012 15:44	4.66	0.41	B	11/14/2012 17:31
N12001268	CO88	10/23/2012 15:45	11/6/2012 16:48	4.75	0.23	A	11/12/2012 16:45
N12001330	CO88	11/6/2012 16:49	11/20/2012 16:29	4.73	0.25	A	11/27/2012 19:10
N12001409	CO88	11/20/2012 16:29	12/11/2012 17:00			C	2/4/2013 21:55
N12001444	CO88	12/11/2012 17:00	12/18/2012 15:38	2.35	0.41	B	12/21/2012 16:39
N13000050	CO88	12/18/2012 15:38	1/1/2013 15:58	4.74	0.55	A	1/9/2013 18:17
N13000120	CO88	1/1/2013 15:58	1/15/2013 19:17	4.78	0.27	A	1/22/2013 17:36
N13000172	CO88	1/15/2013 19:17	1/29/2013 16:10	4.69	0.33	A	2/4/2013 19:29
N13000243	CO88	1/29/2013 16:10	2/12/2013 18:30	4.77	0.27	A	2/18/2013 15:52
N13000301	CO88	2/12/2013 18:30	2/26/2013 18:26	4.74	0.29	A	3/4/2013 16:58
N13000365	CO88	2/26/2013 18:26	3/12/2013 15:31	4.7	0.26	A	3/18/2013 15:34

N13000424	CO88	3/12/2013 15:31	3/26/2013 15:35			C	6/7/2013 20:15
N13000467	CO88	3/26/2013 15:35	4/9/2013 15:56	4.74	0.56	A	4/12/2013 16:18
N13000544	CO88	4/9/2013 15:59	4/23/2013 16:06	4.74	0.41	B	7/3/2013 19:59
N13000602	CO88	4/23/2013 16:08	5/7/2013 15:41	4.73	0.78	A	5/13/2013 16:00
N13000663	CO88	5/7/2013 15:42	5/21/2013 14:34	4.72	0.66	A	5/24/2013 16:40
N13000723	CO88	5/21/2013 14:34	6/4/2013 14:11	4.73	0.61	A	6/7/2013 16:24
N13000780	CO88	6/4/2013 14:11	6/18/2013 16:05	4.76	0.85	B	6/21/2013 19:15
N13000844	CO88	6/18/2013 16:05	7/2/2013 16:12	4.74	1.08	A	7/9/2013 12:52
N13000926	CO88	7/2/2013 16:12	7/16/2013 19:35	4.79	1.2	A	7/22/2013 15:53
N13000973	CO88	7/16/2013 19:35	7/30/2013 15:34	4.68	1.37	A	8/2/2013 17:06
N13001044	CO88	7/30/2013 15:34	8/13/2013 15:20	4.73	0.61	A	8/16/2013 17:18
N13001092	CO88	8/13/2013 15:20	8/27/2013 14:12	4.72	0.78	A	8/30/2013 16:36
N13001181	CO88	8/27/2013 14:12	9/10/2013 21:09	4.84	0.85	A	9/16/2013 16:24
N13001225	CO88	9/10/2013 21:09	9/24/2013 17:22	4.68	0.47	A	9/27/2013 17:07
N13001308	CO88	9/24/2013 17:22	10/17/2013 16:05	7.77	0.49	B	11/26/2013 15:32
N13001339	CO88	10/17/2013 16:05	10/22/2013 14:05	1.66	1.21	A	11/26/2013 16:12
N13001398	CO88	10/22/2013 14:05	11/5/2013 15:59	4.76	0.38	A	11/8/2013 15:32
N13001485	CO88	11/5/2013 15:59	11/19/2013 16:05	4.74	0.5	A	11/26/2013 14:31
N13001542	CO88	11/19/2013 16:05	12/5/2013 16:06	5.41	0.21	B	12/9/2013 19:11
N13001601	CO88	12/5/2013 16:06	12/17/2013 15:49	4.06	0.08	B	12/20/2013 16:01
N14000051	CO88	12/17/2013 15:49	12/31/2013 17:50			C	2/12/2014 22:16
N14000119	CO88	12/31/2013 17:50	1/14/2014 18:18	4.74	0.06	B	1/21/2014 19:31
N14000194	CO88	1/14/2014 18:18	1/28/2014 18:45	4.74	0.14	A	2/5/2014 16:49
N14000235	CO88	1/28/2014 18:45	2/11/2014 16:55	4.71	0.13	A	2/14/2014 18:30
N14000297	CO88	2/11/2014 16:55	2/25/2014 19:02	4.77	0.33	A	2/28/2014 15:29
N14000394	CO88	2/25/2014 19:20	3/11/2014 20:20	4.75	0.53	A	3/18/2014 15:13
N14000447	CO88	3/11/2014 20:21	3/25/2014 13:51	4.65	0.21	A	3/28/2014 16:10
N14000501	CO88	3/25/2014 13:51	4/8/2014 14:58	4.75	0.39	B	4/30/2014 18:18
N14000581	CO88	4/8/2014 14:58	4/22/2014 19:45	4.81	0.65	A	5/16/2014 18:39
N14000656	CO88	4/22/2014 19:45	5/6/2014 16:06	4.69	0.58	A	5/12/2014 16:34
N14000716	CO88	5/6/2014 16:06	5/20/2014 17:14	4.75	0.77	A	5/27/2014 15:20
N14000794	CO88	5/20/2014 17:15	6/3/2014 20:15	4.78	0.72	B	6/10/2014 12:59
N14000853	CO88	6/3/2014 20:15	6/17/2014 15:27	4.67	0.81	A	6/23/2014 16:12
N14000904	CO88	6/17/2014 15:27	7/1/2014 16:11	4.75	0.88	A	7/7/2014 15:04
N14000990	CO88	7/1/2014 16:12	7/15/2014 16:50	4.75	1.09	A	7/22/2014 13:52
N14001030	CO88	7/15/2014 16:50	7/29/2014 16:03	4.73	1.56	A	8/1/2014 16:11
N14001113	CO88	7/29/2014 16:06	8/12/2014 19:46	4.79	0.66	A	8/18/2014 18:27
N14001183	CO88	8/12/2014 19:47	8/26/2014 14:29	4.66	0.68	A	9/2/2014 13:17
N14001239	CO88	8/26/2014 14:31	9/9/2014 13:43	4.73	0.74	A	9/12/2014 16:12
N14001323	CO88	9/9/2014 13:43	9/23/2014 15:41	4.77	0.6	A	9/30/2014 16:38
N14001390	CO88	9/23/2014 15:41	10/7/2014 17:38	4.77	0.35	A	10/13/2014 16:16
N14001448	CO88	10/7/2014 17:38	10/21/2014 16:08	4.72	0.45	A	10/24/2014 16:45
N14001538	CO88	10/21/2014 16:08	11/4/2014 17:00	4.75	0.25	A	11/10/2014 16:28
N14001577	CO88	11/4/2014 17:01	11/18/2014 16:24	4.73	0.1	A	11/21/2014 16:16
N14001664	CO88	11/18/2014 16:24	12/2/2014 16:44	4.74	0.09	B	12/8/2014 19:37
N14001728	CO88	12/2/2014 16:45	12/16/2014 18:34	4.76	0.33	A	12/22/2014 14:59
N15000419	CO88	12/16/2014 18:34	1/13/2015 15:28			C	3/11/2015 13:39

N11000269	NE98	4/26/2011 14:50	5/10/2011 13:17	4.72	4.3	A	7/5/2011 20:48
N11000320	NE98	5/10/2011 13:18	5/24/2011 14:23	4.75	4.51	A	6/28/2011 15:52
N11000367	NE98	5/24/2011 14:25	6/7/2011 14:37	4.74	1.25	A	6/28/2011 18:39
N11000412	NE98	6/7/2011 14:43	6/21/2011 14:27	4.73	3.68	A	6/23/2011 14:46
N11000466	NE98	6/21/2011 15:34	7/5/2011 15:03	4.73	1.89	A	7/7/2011 15:00
N11000506	NE98	7/5/2011 15:05	7/19/2011 12:46	4.71	4.74	A	7/21/2011 14:29
N11000556	NE98	7/19/2011 12:49	8/2/2011 14:40	4.76	4.47	A	8/4/2011 14:13
N11000604	NE98	8/2/2011 14:42	8/16/2011 13:40	4.72	2.4	A	8/18/2011 13:49
N11000673	NE98	8/16/2011 13:46	8/30/2011 12:27	4.72	0.16	A	9/1/2011 15:06
N11000713	NE98	8/30/2011 12:29	9/13/2011 14:28	4.77	0.08	B	10/20/2011 20:07
N11000771	NE98	9/13/2011 14:31	9/27/2011 13:20	4.72	1.24	A	10/28/2011 15:55
N11000822	NE98	9/27/2011 13:22	10/11/2011 12:08	4.72	1.75	A	10/13/2011 14:31
N11000865	NE98	10/11/2011 12:09	10/25/2011 13:09	4.75	2.16	A	10/27/2011 14:03
N11000914	NE98	10/25/2011 13:10	11/8/2011 15:08	4.77	2.68	A	11/10/2011 15:24
N11000972	NE98	11/8/2011 15:13	11/22/2011 14:43	4.73	2.74	A	11/29/2011 15:30
N11001006	NE98	11/22/2011 14:48	12/5/2011 14:03			C	12/30/2011 18:47
N11001079	NE98	12/5/2011 14:10	12/20/2011 15:17	5.09	1.36	B	12/22/2011 16:28
N12000020	NE98	12/20/2011 15:20	1/3/2012 15:04	4.73	2.55	A	1/6/2012 17:35
N12000069	NE98	1/3/2012 15:04	1/17/2012 15:37	4.75	2.42	A	1/27/2012 17:50
N12000127	NE98	1/17/2012 15:37	1/31/2012 14:58	4.73	2.29	A	2/15/2012 17:35
N12000172	NE98	1/31/2012 15:03	2/14/2012 14:59	4.74	2.96	A	2/16/2012 15:21
N12000238	NE98	2/14/2012 15:04	2/28/2012 14:54	4.74	2.88	A	3/1/2012 15:35
N12000290	NE98	2/28/2012 14:56	3/13/2012 12:15	4.7	3.39	B	3/15/2012 15:02
N12000346	NE98	3/13/2012 12:17	3/27/2012 13:04	4.75	5.17	A	4/13/2012 18:59
N12000387	NE98	3/27/2012 13:07	4/10/2012 12:52	4.73	2.85	A	4/12/2012 14:22
N12000448	NE98	4/10/2012 12:54	4/24/2012 12:56	4.74	3.04	A	4/26/2012 14:42
N12000505	NE98	4/24/2012 12:58	5/8/2012 13:10	4.74	3.3	A	5/10/2012 14:30
N12000550	NE98	5/8/2012 13:12	5/21/2012 12:27	4.39	3.94	A	6/27/2012 22:49
N12000606	NE98	5/21/2012 12:30	6/5/2012 13:00	5.08	4.3	B	6/7/2012 14:36
N12000660	NE98	6/5/2012 13:04	6/19/2012 12:56	4.74	3.87	A	6/21/2012 14:21
N12000716	NE98	6/19/2012 12:58	7/3/2012 12:30	4.73	6.44	A	8/21/2012 18:17
N12000781	NE98	7/3/2012 12:31	7/17/2012 12:45	4.74	5.97	A	9/6/2012 20:06
N12000872	NE98	7/17/2012 12:45	7/31/2012 12:39	4.74	6.75	A	8/6/2012 15:29
N12000903	NE98	7/31/2012 12:39	8/14/2012 12:19	4.73	4.82	A	8/16/2012 15:06
N12000959	NE98	8/14/2012 12:19	8/28/2012 14:36	4.77	4.45	A	9/6/2012 18:53
N12001010	NE98	8/28/2012 14:36	9/11/2012 11:54	4.7	5	A	9/13/2012 14:37
N12001068	NE98	9/11/2012 13:30	9/25/2012 16:30	4.78	3.14	A	10/16/2012 18:40
N12001130	NE98	9/25/2012 16:30	10/9/2012 14:25	4.71	3.17	B	10/12/2012 16:50
N12001181	NE98	10/9/2012 14:25	10/23/2012 13:50	4.73	3.06	A	11/14/2012 17:37
N12001233	NE98	10/23/2012 13:50	11/6/2012 15:00	4.75	3.59	A	11/8/2012 15:28
N12001311	NE98	11/6/2012 15:00	11/20/2012 14:25	4.73	4.18	A	12/12/2012 21:13
N12001359	NE98	11/20/2012 14:25	12/4/2012 14:42	4.74	3.37	A	12/6/2012 15:22
N12001420	NE98	12/4/2012 14:42	12/18/2012 14:30	4.74	2.71	A	1/28/2013 17:59
N13000023	NE98	12/18/2012 14:30	1/2/2013 16:45	5.11	1.56	B	1/4/2013 16:27
N13000086	NE98	1/2/2013 16:45	1/15/2013 14:56	4.37	2.69	A	1/17/2013 16:09
N13000158	NE98	1/15/2013 14:56	1/29/2013 14:30	4.73	2.17	A	2/1/2013 16:10
N13000211	NE98	1/29/2013 14:30	2/12/2013 15:07	4.75	2.59	A	2/14/2013 15:55

N13000269	NE98	2/12/2013 15:07	2/26/2013 14:39	4.73	2.33	A	2/28/2013 15:29
N13000333	NE98	2/26/2013 14:40	3/12/2013 13:25	4.72	3.3	A	3/14/2013 14:46
N13000392	NE98	3/12/2013 13:25	3/26/2013 13:40	4.74	3.28	A	3/28/2013 15:05
N13000462	NE98	3/26/2013 13:40	4/9/2013 14:15	4.75	6.59	A	4/11/2013 15:10
N13000515	NE98	4/9/2013 14:15	4/23/2013 14:03	4.74	1.35	A	4/25/2013 14:29
N13000577	NE98	4/23/2013 14:03	5/7/2013 13:35	4.73	4.18	A	6/18/2013 14:20
N13000644	NE98	5/7/2013 14:35	5/21/2013 14:10	4.73	7.33	B	5/23/2013 17:48
N13000703	NE98	5/21/2013 14:10	6/3/2013 13:50	4.39	4.74	A	6/6/2013 14:34
N13000759	NE98	6/3/2013 13:50	6/18/2013 13:30	5.07	4.19	B	6/20/2013 14:14
N13000829	NE98	6/18/2013 13:50	7/2/2013 14:25	4.75	5.02	B	7/5/2013 17:05
N13000895	NE98	7/2/2013 14:25	7/16/2013 14:05	4.73	6.47	A	7/18/2013 14:37
N13000956	NE98	7/16/2013 14:05	7/30/2013 13:50	4.73	3.82	A	8/1/2013 15:12
N13001011	NE98	7/30/2013 13:50	8/13/2013 13:50	4.74	3.45	B	8/15/2013 14:17
N13001084	NE98	8/13/2013 13:55	8/27/2013 13:25	4.73	4.48	B	8/29/2013 15:10
N13001149	NE98	8/27/2013 13:25	9/10/2013 13:30	4.74	5.82	A	10/16/2013 20:22
N13001211	NE98	9/10/2013 13:36	9/24/2013 14:00	4.74	4.09	B	9/26/2013 14:59
N13001268	NE98	9/24/2013 14:04	10/8/2013 13:31	4.73	3.28	A	10/10/2013 14:40
N13001328	NE98	10/8/2013 13:39	10/22/2013 13:41	4.74	1.55	A	10/24/2013 15:35
N13001378	NE98	10/22/2013 13:43	11/5/2013 14:30	4.75	2.18	A	11/7/2013 15:31
N13001446	NE98	11/5/2013 14:35	11/19/2013 14:45	4.74	2.89	B	11/21/2013 15:20
N13001518	NE98	11/19/2013 14:51	12/3/2013 14:37	4.73	2.79	B	12/5/2013 16:11
N13001594	NE98	12/3/2013 14:37	12/17/2013 14:43	4.74	1.36	A	1/9/2014 15:48
N14000015	NE98	12/17/2013 14:49	12/31/2013 14:45	4.74	2.12	A	2/24/2014 16:23
N14000081	NE98	12/31/2013 14:54	1/14/2014 14:30	4.73	1.81	A	1/16/2014 18:14
N14000141	NE98	1/14/2014 14:30	1/28/2014 14:45	4.74	1.41	A	3/13/2014 20:31
N14000209	NE98	1/28/2014 14:50	2/11/2014 14:35	4.73	0.94	A	3/14/2014 19:59
N14000290	NE98	2/11/2014 14:46	2/25/2014 14:55	4.74	2.51	B	4/10/2014 20:34
N14000348	NE98	2/25/2014 14:55	3/11/2014 13:39	4.72	2.91	B	4/10/2014 20:34
N14000421	NE98	3/11/2014 13:50	3/25/2014 13:40	4.74	3.82	B	4/30/2014 18:37
N14000492	NE98	3/25/2014 13:45	4/8/2014 13:19	4.73	6.01	A	4/30/2014 18:37
N14000560	NE98	4/8/2014 13:30	4/22/2014 13:48	4.74	6.22	A	4/24/2014 15:29
N14000613	NE98	4/22/2014 13:58	5/6/2014 14:01	4.74	5.92	B	5/8/2014 14:36
N14000684	NE98	5/6/2014 14:04	5/20/2014 14:58	4.75	4.66	A	5/22/2014 14:29
N14000754	NE98	5/20/2014 15:01	6/3/2014 14:13	4.73	7.26	B	6/5/2014 16:51
N14000812	NE98	6/3/2014 14:13	6/17/2014 13:50	4.73	4.18	B	6/19/2014 14:19
N14000890	NE98	6/17/2014 13:50	7/1/2014 13:30			C	4/24/2015 20:28
N14000962	NE98	7/1/2014 13:30	7/15/2014 13:43	4.74	3.82	A	7/17/2014 16:17
N14001021	NE98	7/15/2014 13:52	7/29/2014 13:39	4.73	4.46	A	8/1/2014 12:46
N14001091	NE98	7/29/2014 13:43	8/12/2014 13:38	4.74	3.88	B	8/14/2014 15:08
N14001163	NE98	8/12/2014 13:46	8/26/2014 13:36	4.74	4.37	B	8/28/2014 15:36
N14001207	NE98	8/26/2014 13:46	9/9/2014 13:47	4.74	2.68	A	10/14/2014 15:08
N14001290	NE98	9/9/2014 13:55	9/23/2014 13:47	4.74	3.07	A	11/7/2014 19:52
N14001363	NE98	9/23/2014 13:54	10/7/2014 13:43	4.74	3.44	A	10/9/2014 15:29
N14001426	NE98	10/7/2014 13:50	10/21/2014 13:53	4.74	3.05	A	10/23/2014 15:09
N14001499	NE98	10/21/2014 14:02	11/4/2014 14:44	4.75	3.38	A	11/6/2014 16:30
N14001561	NE98	11/4/2014 14:58	11/18/2014 15:23	4.74	1.71	A	1/6/2015 15:19
N14001637	NE98	11/18/2014 15:28	12/2/2014 15:02	4.73	2.34	A	12/4/2014 16:29

N14001732	NE98	12/2/2014 15:10	12/17/2014 16:59	5.1	4.27	B	12/22/2014 15:11
N15000046	NE98	12/17/2014 17:16	12/31/2014 14:42	4.7	2.27	A	1/7/2015 19:55
N15000088	NE98	12/31/2014 14:52	1/13/2015 15:12	4.4	1.19	A	1/15/2015 16:24
N11000180	WA99	3/17/2011 1:00	3/30/2011 1:30	4.41	0.08	B	6/28/2011 15:52
N11000222	WA99	3/30/2011 1:30	4/13/2011 0:20	4.72	0.16	A	6/28/2011 15:52
N11000256	WA99	4/13/2011 0:20	4/26/2011 15:20	4.61	0.14	A	6/28/2011 15:52
N11000347	WA99	4/26/2011 15:20	5/10/2011 21:00	4.82	0.27	B	7/6/2011 0:55
N11000326	WA99	5/10/2011 21:05	5/24/2011 19:00	4.71	0.13	A	7/6/2011 0:54
N11000386	WA99	5/24/2011 19:00	6/7/2011 19:00	4.74	0.25	A	7/29/2011 20:49
N11000452	WA99	6/7/2011 19:00	6/21/2011 21:00	4.77	0.27	A	8/17/2011 14:02
N11000638	WA99	6/21/2011 21:00	7/6/2011 19:00			C	9/22/2011 15:55
N11000533	WA99	7/6/2011 19:00	7/19/2011 19:00	4.4	0.51	A	7/25/2011 15:15
N11000598	WA99	7/19/2011 19:00	8/2/2011 21:30			C	8/31/2011 21:35
N11000652	WA99	8/2/2011 21:35	8/16/2011 20:30	4.72	0.37	A	9/22/2011 15:55
N11000696	WA99	8/16/2011 20:30	8/30/2011 20:30	4.74	0.37	A	9/7/2011 14:34
N11000750	WA99	8/30/2011 20:30	9/14/2011 23:00	5.11	0.22	B	9/21/2011 14:31
N11000804	WA99	9/14/2011 23:00	9/27/2011 21:45	4.38	0.37	A	10/5/2011 15:47
N11000852	WA99	9/27/2011 21:45	10/11/2011 18:27	4.69	0.21	A	10/19/2011 13:59
N11000900	WA99	10/11/2011 18:30	10/25/2011 23:45	4.81	0.12	A	9/5/2013 19:32
N11000949	WA99	10/25/2011 23:45	11/8/2011 21:30	4.71	0.1	A	11/15/2011 15:37
N11001055	WA99	11/8/2011 21:30	11/22/2011 17:00	4.67	0.25	B	12/14/2011 16:17
N11001056	WA99	11/22/2011 17:00	12/6/2011 22:40	4.82	0.19	A	2/3/2012 21:13
N11001111	WA99	12/6/2011 22:40	12/21/2011 0:00	4.76	0.09	A	2/3/2012 21:16
N12000057	WA99	12/21/2011 0:00	1/3/2012 16:30	4.63	0.12	A	1/11/2012 16:52
N12000112	WA99	1/3/2012 16:30	1/24/2012 19:15	7.15	0.03	B	1/30/2012 15:48
N12000165	WA99	1/24/2012 19:15	1/31/2012 19:25	2.37	0.62	A	2/8/2012 15:45
N12000215	WA99	1/31/2012 19:25	2/14/2012 19:45	4.74	0.35	A	2/21/2012 15:44
N12000263	WA99	2/14/2012 19:45	2/28/2012 17:23	4.7	0.11	B	5/12/2012 15:30
N12000322	WA99	2/28/2012 17:23	3/13/2012 16:00	4.72	0.28	A	3/20/2012 14:37
N12000383	WA99	3/13/2012 16:00	3/27/2012 15:56	4.74	0.22	A	4/4/2012 15:36
N12000429	WA99	3/27/2012 15:57	4/10/2012 17:10	4.75	0.26	A	4/17/2012 14:59
N12000480	WA99	4/10/2012 17:10	4/24/2012 17:45	4.75	0.23	A	4/30/2012 14:59
N12000539	WA99	4/24/2012 17:45	5/8/2012 18:15	4.74	0.26	A	6/18/2012 18:53
N12000592	WA99	5/8/2012 18:15	5/22/2012 19:00	4.75	0.48	A	6/27/2012 22:39
N12000641	WA99	5/22/2012 19:00	6/5/2012 17:00	4.71	0.45	A	6/11/2012 15:25
N12000712	WA99	6/5/2012 17:00	6/26/2012 17:00	7.11	0.21	B	7/18/2012 18:58
N12000769	WA99	6/26/2012 17:00	7/3/2012 17:25	2.37	0.29	B	7/13/2012 16:32
N12000827	WA99	7/3/2012 17:25	7/17/2012 17:00	4.73	0.44	B	7/27/2012 16:28
N12000879	WA99	7/17/2012 17:00	7/31/2012 16:00	4.72	0.28	A	8/7/2012 15:44
N12000940	WA99	7/31/2012 16:00	8/14/2012 19:00	4.78	0.46	A	8/23/2012 14:18
N12000984	WA99	8/14/2012 19:00	8/28/2012 17:00	4.71	0.38	A	9/4/2012 14:30
N12001040	WA99	8/28/2012 17:00	9/11/2012 16:30	4.73	0.38	A	9/17/2012 15:50
N12001103	WA99	9/11/2012 16:30	9/25/2012 20:50	4.8	0.32	B	10/2/2012 14:22
N12001158	WA99	9/25/2012 20:50	10/9/2012 23:00	4.77	0.25	B	10/16/2012 15:36
N12001216	WA99	10/9/2012 23:00	10/23/2012 16:30	4.65	0.36	A	10/30/2012 15:49
N12001266	WA99	10/23/2012 16:30	11/6/2012 17:00	4.74	0.19	A	2/5/2013 4:27
N12001327	WA99	11/6/2012 17:00	11/20/2012 17:30	4.74	0.34	A	11/27/2012 19:00

N12001403	WA99	11/20/2012 17:30	12/5/2012 2:30	4.86	0.22	A	12/11/2012 15:33
N12001453	WA99	12/5/2012 2:30	12/18/2012 23:16	4.69	0.11	B	1/28/2013 18:08
N13000107	WA99	12/18/2012 23:18	1/3/2013 0:30	5.09	0.16	B	3/13/2013 13:19
N13000122	WA99	1/3/2013 0:30	1/15/2013 18:10	4.31	0.14	A	1/22/2013 17:46
N13000185	WA99	1/15/2013 18:15	1/29/2013 22:30	4.8	0.1	A	2/5/2013 18:47
N13000260	WA99	1/29/2013 22:30	2/13/2013 1:15	4.78	0.3	A	2/27/2013 18:04
N13000304	WA99	2/13/2013 1:30	2/26/2013 17:00	4.62	0.11	A	3/4/2013 17:06
N13000363	WA99	2/26/2013 17:00	3/12/2013 16:30	4.73	0.19	A	3/18/2013 15:19
N13000441	WA99	3/12/2013 16:30	4/2/2013 23:30	7.21	0.21	B	4/9/2013 15:49
N13000501	WA99	4/2/2013 23:30	4/9/2013 16:00	2.26	0.5	A	4/18/2013 14:17
N13000542	WA99	4/9/2013 16:00	4/23/2013 17:30	4.76	0.19	A	4/29/2013 15:02
N13000600	WA99	4/23/2013 17:30	5/7/2013 16:00	4.72	0.4	A	6/18/2013 14:27
N13000680	WA99	5/7/2013 16:00	5/22/2013 0:30	4.86	0.37	A	5/29/2013 15:41
N13000750	WA99	5/22/2013 0:30	6/5/2013 0:44	4.74	0.46	A	6/12/2013 17:52
N13000812	WA99	6/5/2013 0:44	6/18/2013 23:15	4.72	0.39	A	6/25/2013 15:06
N13000861	WA99	6/18/2013 23:15	7/2/2013 17:45	4.66	0.49	A	7/9/2013 18:03
N13000939	WA99	7/2/2013 17:45	7/17/2013 0:15	4.83	0.62	A	7/25/2013 14:24
N13000989	WA99	7/17/2013 0:15	7/30/2013 21:07	4.69	0.49	A	8/6/2013 14:43
N13001060	WA99	7/30/2013 21:07	8/14/2013 0:00	4.78	0.65	A	8/20/2013 15:16
N13001121	WA99	8/14/2013 0:00	8/27/2013 17:00	4.64	0.54	A	9/3/2013 17:37
N13001187	WA99	8/27/2013 17:00	9/11/2013 0:22	4.84	0.55	A	9/17/2013 15:40
N13001238	WA99	9/11/2013 0:22	9/24/2013 15:15	4.61	0.5	A	9/30/2013 15:51
N13001314	WA99	9/24/2013 15:15	10/8/2013 23:30	4.85	0.29	B	10/23/2013 16:40
N13001351	WA99	10/8/2013 23:30	10/22/2013 15:30	4.63	0.47	A	10/28/2013 18:00
N13001437	WA99	10/22/2013 15:30	11/6/2013 0:30	4.86	0.38	A	11/14/2013 15:27
N13001502	WA99	11/6/2013 0:30	11/20/2013 0:00	4.73	0.28	A	11/26/2013 17:22
N13001553	WA99	11/20/2013 0:00	12/4/2013 0:30	4.74	0.24	A	2/13/2014 15:11
N13001633	WA99	12/4/2013 0:30	12/17/2013 23:00	4.72	0.28	B	12/30/2013 19:58
N14000060	WA99	12/17/2013 23:00	1/1/2014 0:20	4.76	0.15	A	1/9/2014 15:52
N14000131	WA99	1/1/2014 0:20	1/14/2014 16:30	4.63	0.06	B	2/27/2014 16:29
N14000193	WA99	1/14/2014 16:30	1/28/2014 19:45	4.78	0.06	B	2/5/2014 16:47
N14000271	WA99	1/28/2014 19:45	2/12/2014 1:32	4.82	0.33	A	2/25/2014 17:33
N14000337	WA99	2/12/2014 1:32	2/25/2014 21:40	4.68	0.16	A	3/25/2014 21:07
N14000400	WA99	2/25/2014 21:40	3/11/2014 21:31	4.74	0.39	A	3/19/2014 18:02
N14000470	WA99	3/11/2014 21:36	3/25/2014 20:00	4.72	0.49	A	4/3/2014 14:00
N14000537	WA99	3/25/2014 20:00	4/8/2014 23:00	4.78	0.16	A	4/16/2014 15:14
N14000603	WA99	4/8/2014 23:00	4/23/2014 0:30	4.76	0.4	A	5/5/2014 15:36
N14000660	WA99	4/23/2014 0:30	5/6/2014 19:30	4.67	0.2	A	5/13/2014 15:42
N14000729	WA99	5/6/2014 19:30	5/20/2014 23:30	4.79	0.37	B	6/26/2014 14:41
N14000806	WA99	5/20/2014 23:30	6/4/2014 0:15	4.75	0.59	A	6/11/2014 16:10
N14000859	WA99	6/4/2014 0:15	6/17/2014 17:00	4.64	0.78	A	6/23/2014 17:04
N14000917	WA99	6/17/2014 17:00	7/1/2014 16:45	4.73	0.64	A	7/9/2014 13:29
N14000984	WA99	7/1/2014 16:45	7/15/2014 17:30	4.75	0.53	A	8/14/2014 15:26
N14001070	WA99	7/15/2014 17:30	7/29/2014 17:45	4.74	0.63	A	8/7/2014 14:40
N14001130	WA99	7/29/2014 17:46	8/12/2014 23:00	4.81	0.95	B	8/20/2014 14:42
N14001197	WA99	8/12/2014 23:00	8/26/2014 20:50	4.71	0.47	A	9/4/2014 14:03
N14001344	WA99	8/26/2014 20:50	9/9/2014 20:50	4.74	0.5	B	10/6/2014 13:38

N14001343	WA99	9/9/2014 20:55	9/23/2014 15:30	4.66	0.41	B	10/6/2014 13:33
N14001407	WA99	9/23/2014 15:30	10/7/2014 15:20	4.74	0.27	A	10/15/2014 16:26
N14001472	WA99	10/7/2014 15:20	10/21/2014 15:30	4.74	0.24	A	10/29/2014 12:54
N14001537	WA99	10/21/2014 15:30	11/4/2014 17:00	4.76	0.23	A	11/14/2014 20:29
N14001605	WA99	11/4/2014 17:00	11/18/2014 21:30	4.8	0.32	A	11/25/2014 16:16
N14001685	WA99	11/18/2014 21:30	12/5/2014 22:07	5.76	0.21	B	12/11/2014 15:37
N14001735	WA99	12/5/2014 22:07	12/16/2014 19:45	3.69	0.17	A	1/20/2015 20:09
N15000056	WA99	12/16/2014 19:45	12/30/2014 20:00	4.74	0.27	B	10/12/2015 13:06
N15000137	WA99	12/30/2014 20:00	1/13/2015 20:30	4.74	0.05	B	2/26/2015 16:33
N12000771	WY95	6/19/2012 17:40	7/3/2012 17:05	4.73	1.29	B	9/6/2012 20:54
N12000818	WY95	7/3/2012 17:05	7/17/2012 16:28	4.73	0.76	A	7/24/2012 16:09
N12000881	WY95	7/17/2012 16:28	7/31/2012 15:47	4.73	0.5	A	8/7/2012 15:48
N12000930	WY95	7/31/2012 15:47	8/14/2012 15:37	4.74	0.71	B	8/20/2012 15:12
N12000993	WY95	8/14/2012 15:37	8/28/2012 16:36	4.75	0.81	B	9/5/2012 15:17
N12001051	WY95	8/28/2012 16:36	9/11/2012 18:24	4.76	0.63	A	9/19/2012 15:38
N12001112	WY95	9/11/2012 18:24	10/2/2012 19:41	7.12	0.32	B	10/8/2012 15:08
N12001168	WY95	10/2/2012 19:41	10/9/2012 16:14	2.32	0.63	A	10/17/2012 15:35
N12001219	WY95	10/9/2012 16:14	10/23/2012 18:44	4.77	0.39	A	10/30/2012 16:01
N12001274	WY95	10/23/2012 18:44	11/6/2012 22:36	4.79	0.21	A	11/13/2012 16:05
N12001340	WY95	11/6/2012 22:36	11/20/2012 20:18	4.71	0.18	A	11/29/2012 15:28
N12001408	WY95	11/20/2012 20:18	11/27/2012 20:18			C	12/12/2012 21:19
N12001402	WY95	11/27/2012 20:18	12/4/2012 21:08	2.38	0.81	A	12/10/2012 15:50
N13000004	WY95	12/4/2012 21:08	12/18/2012 19:58	4.72	0.48	B	1/2/2013 15:05
N13000041	WY95	12/18/2012 19:58	1/1/2013 21:56	4.77	0.1	A	1/9/2013 17:44
N13000118	WY95	1/1/2013 21:56	1/15/2013 20:52			C	5/9/2013 16:29
N13000184	WY95	1/15/2013 20:52	1/29/2013 20:30	4.73	0.24	A	2/5/2013 18:44
N13000248	WY95	1/29/2013 20:30	2/12/2013 19:42	4.73	0.1	A	5/2/2013 22:29
N13000307	WY95	2/12/2013 19:42	2/26/2013 21:04	4.76	0.28	A	3/5/2013 16:45
N13000374	WY95	2/26/2013 21:04	3/12/2013 18:53	4.71	0.23	A	3/19/2013 16:14
N13000434	WY95	3/12/2013 18:53	3/26/2013 17:50	4.72	0.25	A	5/1/2013 16:34
N13000563	WY95	3/26/2013 17:50	4/2/2013 17:50			C	5/1/2013 16:06
N13000488	WY95	4/2/2013 17:50	4/9/2013 18:58	2.38	1.41	A	5/10/2013 20:10
N13000562	WY95	4/9/2013 18:58	4/23/2013 16:31	4.7	0.4	A	5/1/2013 16:05
N13000624	WY95	4/23/2013 16:31	5/7/2013 19:06	4.77	0.75	A	6/18/2013 14:38
N13000689	WY95	5/7/2013 19:06	5/21/2013 16:39	4.7	0.77	B	5/31/2013 15:26
N13000743	WY95	5/21/2013 16:39	6/4/2013 18:55	4.77	0.43	A	6/11/2013 15:13
N13000813	WY95	6/4/2013 18:55	6/18/2013 20:21	4.76	0.59	A	6/27/2013 14:27
N13000875	WY95	6/18/2013 20:21	7/2/2013 19:59	4.73	0.82	A	7/10/2013 18:15
N13000945	WY95	7/2/2013 19:59	7/16/2013 19:07	4.73	1.26	B	7/31/2013 16:55
N13000990	WY95	7/16/2013 19:07	7/30/2013 15:47	4.69	0.69	A	8/6/2013 14:44
N13001055	WY95	7/30/2013 15:47	8/13/2013 19:37	4.79	0.62	A	8/20/2013 15:00
N13001134	WY95	8/13/2013 19:37	8/27/2013 19:50	4.74	0.6	B	10/31/2013 15:46
N13001184	WY95	8/27/2013 19:50	9/10/2013 17:15	4.7	0.71	A	9/17/2013 15:29
N13001249	WY95	9/10/2013 17:15	9/24/2013 15:30	4.71	0.42	A	10/1/2013 15:32
N13001297	WY95	9/24/2013 15:30	10/8/2013 17:34	4.77	0.25	A	10/15/2013 15:22
N13001571	WY95	10/8/2013 17:34	10/22/2013 19:06			C	12/13/2013 21:22
N13001435	WY95	10/22/2013 19:06	11/5/2013 18:12	4.73	0.72	A	11/12/2013 16:21

N13001500	WY95	11/5/2013 18:12	11/19/2013 18:14	4.74	0.2	B	1/3/2014 17:08
N13001558	WY95	11/19/2013 18:14	12/3/2013 19:20	4.75	0.26	A	12/10/2013 17:31
N13001623	WY95	12/3/2013 19:20	12/17/2013 19:15	4.74	0.25	B	12/23/2013 16:29
N14000068	WY95	12/17/2013 19:15	1/7/2014 20:19	7.12	0.22	B	2/12/2014 22:21
N14000120	WY95	1/7/2014 20:19	1/14/2014 21:15	2.38	0.5	A	1/21/2014 19:34
N14000178	WY95	1/14/2014 21:15	1/28/2014 20:18	4.72	0.27	A	2/3/2014 18:57
N14000258	WY95	1/28/2014 20:18	2/11/2014 20:27	4.74	0.44	A	2/18/2014 16:53
N14000329	WY95	2/11/2014 20:57	2/25/2014 18:39	4.71	0.41	A	3/4/2014 17:08
N14000373	WY95	2/25/2014 18:39	3/11/2014 17:25	4.72	0.28	A	3/17/2014 16:22
N14000464	WY95	3/11/2014 17:25	3/25/2014 17:58	4.75	0.55	A	4/1/2014 16:00
N14000520	WY95	3/25/2014 17:58	4/8/2014 18:02	4.74	0.23	A	4/14/2014 18:03
N14000591	WY95	4/8/2014 18:02	4/22/2014 17:26	4.73	0.68	A	4/29/2014 16:13
N14000665	WY95	4/22/2014 17:26	5/6/2014 20:51	4.79	0.65	A	5/13/2014 16:56
N14000732	WY95	5/6/2014 20:51	5/20/2014 16:03	4.67	0.64	A	5/28/2014 16:34
N14000807	WY95	5/20/2014 16:03	6/10/2014 16:32	7.11	0.33	B	7/30/2014 21:06
N14000860	WY95	6/10/2014 16:32	6/17/2014 16:05	2.36	1.14	A	7/10/2014 19:59
N14000918	WY95	6/17/2014 16:05	7/1/2014 18:42	4.77	0.65	A	7/8/2014 14:34
N14001009	WY95	7/1/2014 18:42	7/15/2014 13:27	4.66	0.55	B	7/31/2014 13:38
N14001044	WY95	7/15/2014 13:27	7/29/2014 17:30	4.79	0.81	A	8/21/2014 13:57
N14001138	WY95	7/29/2014 17:30	8/12/2014 16:07	4.72	0.51	B	10/15/2014 12:54
N14001272	WY95	8/12/2014 16:07	8/26/2014 16:02	4.74	0.65	B	9/22/2014 16:07
N14001261	WY95	8/26/2014 16:02	9/9/2014 17:14	4.75	0.43	A	9/22/2014 16:02
N14001336	WY95	9/9/2014 17:14	9/23/2014 16:30	4.73	0.75	A	9/30/2014 17:18
N14001396	WY95	9/23/2014 16:30	10/7/2014 23:37	4.84	0.39	A	10/13/2014 16:36
N14001465	WY95	10/7/2014 23:37	10/21/2014 16:58	4.64	0.66	A	10/29/2014 12:14
N14001548	WY95	10/21/2014 16:58	11/5/2014 0:37	4.85	0.26	A	11/25/2014 20:56
N14001589	WY95	11/5/2014 0:37	11/18/2014 21:18	4.69	0.1	A	11/24/2014 16:20
N14001674	WY95	11/18/2014 21:18	12/2/2014 22:31	4.75	0.21	A	12/9/2014 17:08
N14001729	WY95	12/2/2014 22:31	12/16/2014 18:48	4.69	0.17	B	1/27/2015 16:21
N15000066	WY95	12/16/2014 18:48	1/6/2015 21:14	7.14	0.24	B	1/26/2015 19:37

CASTNET IONS

SITE_ID	TYPE	DATEON	DATEOFF	TSO4	TNO3	TNH4	NHNO3	WSO2
MOR409	C	1/3/2012 8:35	1/11/2012 14:12	0.206	0.0719	0.0438	0.0326	0.0484
CHA467	C	1/3/2012 9:00	1/10/2012 8:30	0.4717	0.2709	0.1954	0.3512	0.3998
SEK430	C	1/3/2012 9:00	1/10/2012 8:38	1.0476	7.8184	2.6673	1.0374	0.377
SAN189	C	1/3/2012 9:26	1/10/2012 6:57	0.2137	0.3361	0.1244	0.2663	0.2022
CNT169	C	1/3/2012 12:04	1/10/2012 11:08	0.1288	0.0526	0.0528	0.157	0.1166
ROM406	C	1/3/2012 12:29	1/10/2012 12:40	0.1644	0.0522	0.0622	0.1609	0.0963
YOS404	C	1/3/2012 14:20	1/10/2012 10:20	0.213	0.0841	0.0886	0.5442	0.1164
GTH161	C	1/3/2012 14:58	1/10/2012 17:26	0.1633	0.0345	0.0632	0.0995	0.0598
JOT403	C	1/3/2012 15:57	1/10/2012 12:59	0.2592	0.2322	0.0997	1.5648	0.165
SAN189	C	1/10/2012 7:02	1/17/2012 9:57	0.6684	0.8081	0.3309	0.1906	0.3166
CHA467	C	1/10/2012 8:43	1/17/2012 9:55	0.397	0.1301	0.1505	0.2871	0.322
SEK430	C	1/10/2012 8:50	1/17/2012 8:34	0.3686	1.2877	0.4125	1.1623	0.2601
YOS404	C	1/10/2012 10:25	1/17/2012 12:07	0.2402	0.7807	0.2583	0.2478	0.129
CNT169	C	1/10/2012 11:22	1/17/2012 13:10	0.1642	0.0483	0.0557	0.1419	0.1549
ROM406	C	1/10/2012 12:54	1/17/2012 10:57	0.173	0.0532	0.0672	0.1656	0.1085
GTH161	C	1/10/2012 17:45	1/18/2012 11:04	0.1632	0.0992	0.0681	0.1412	0.1093
MOR409	C	1/11/2012 14:30	1/17/2012 15:43	0.152	0.0678	0.0629	0.0615	0.0729
SEK430	C	1/17/2012 8:46	1/24/2012 8:51	0.3407	2.7075	0.693	0.6142	0.1799
CHA467	C	1/17/2012 10:00	1/24/2012 9:10	0.3157	0.1873	0.093	0.1979	0.1951
SAN189	C	1/17/2012 10:05	1/24/2012 10:05	1.7765	3.7177	1.3011	0.1147	0.5113
ROM406	C	1/17/2012 11:05	1/24/2012 11:57	0.1626	0.0714	0.0589	0.1017	0.0864
YOS404	C	1/17/2012 12:15	1/24/2012 12:00	0.0896	0.0348	0.021	0.0858	0.0441
CNT169	C	1/17/2012 13:16	1/24/2012 11:26					
JOT403	C	1/17/2012 14:59	1/24/2012 10:08	0.2909	0.8871	0.131	1.5327	0.1462
MOR409	C	1/17/2012 15:55	1/24/2012 11:20	0.0761	0.0773	0.044	0.0855	0.0913
GTH161	C	1/18/2012 11:11	1/24/2012 17:44	0.1446	0.0885	0.054	0.1077	0.0591
SEK430	C	1/24/2012 9:06	1/31/2012 8:34	0.6142	2.7381	1.0291	1.3414	0.1434
CHA467	C	1/24/2012 9:20	1/31/2012 8:50	0.4211	0.2189	0.1784	0.3211	0.2766
SAN189	C	1/24/2012 10:09	1/31/2012 9:20	0.7077	1.0144	0.4687	0.3455	0.2572
JOT403	C	1/24/2012 10:12	1/31/2012 8:53	0.2868	0.2555	0.1528	0.7777	0.123
CNT169	C	1/24/2012 11:32	1/31/2012 14:26	0.1863	0.0376	0.0743	0.1218	0.0801
MOR409	C	1/24/2012 11:46	1/31/2012 12:25	0.2505	0.0698	0.0471	0.0364	0.0526
ROM406	C	1/24/2012 12:11	1/31/2012 10:51	0.3247	0.0511	0.1234	0.1951	0.1126
YOS404	C	1/24/2012 12:15	1/31/2012 11:40	0.2143	0.1123	0.1075	0.2203	0.0647
GTH161	C	1/24/2012 17:47	1/31/2012 11:52	0.2232	0.0412	0.0838	0.1078	0.0517
SEK430	C	1/31/2012 8:47	2/7/2012 8:28	0.8137	2.4904	1.0132	1.9751	0.1987
CHA467	C	1/31/2012 9:00	2/7/2012 9:02	0.6144	0.3651	0.244	0.3141	0.3665
JOT403	C	1/31/2012 9:00	2/7/2012 9:26	0.5018	0.2184	0.2096	1.091	0.1901
SAN189	C	1/31/2012 9:25	2/7/2012 9:26	0.8595	2.2746	0.849	0.1485	0.2062
ROM406	C	1/31/2012 10:55	2/7/2012 9:48	0.5771	0.7618	0.4229	0.1652	0.1107
YOS404	C	1/31/2012 11:45	2/7/2012 11:05	0.3206	0.1621	0.142	0.4683	0.1305
GTH161	C	1/31/2012 12:03	2/7/2012 17:31	0.4733	0.2598	0.2329	0.2095	0.0754
MOR409	C	1/31/2012 12:37	2/7/2012 10:50	0.3044	0.0592	0.1103	0.0781	0.0963
CNT169	C	1/31/2012 14:32	2/7/2012 14:02	0.4005	0.3115	0.2114	0.1642	0.085
SEK430	C	2/7/2012 8:45	2/14/2012 8:53	0.4658	0.9029	0.396	0.6066	0.1219

CHA467	C	2/7/2012 9:20	2/14/2012 9:20	0.8161	0.5068	0.2898	0.407	0.5122
JOT403	C	2/7/2012 9:35	2/14/2012 8:21	0.5489	0.8103	0.2347	0.9321	0.1918
SAN189	C	2/7/2012 9:36	2/14/2012 9:25	0.785	1.838	0.7224	0.1319	0.2097
ROM406	C	2/7/2012 9:58	2/14/2012 13:00	0.5885	0.4483	0.3419	0.3756	0.0997
MOR409	C	2/7/2012 11:04	2/14/2012 12:23	0.2243	0.0874	0.0942	0.0551	0.0487
YOS404	C	2/7/2012 11:05	2/14/2012 12:05	0.228	0.2589	0.1389	0.1621	0.0703
CNT169	C	2/7/2012 14:10	2/14/2012 13:08	0.2885	0.054	0.116	0.2121	0.0959
GTH161	C	2/7/2012 17:52	2/15/2012 10:18	0.3048	0.0771	0.1205	0.0974	0.0548
JOT403	C	2/14/2012 8:29	2/21/2012 8:32	0.4741	1.4339	0.3248	1.1963	0.2182
CHA467	C	2/14/2012 9:20	2/21/2012 9:15	0.6154	0.556	0.2124	0.2678	0.3874
SEK430	C	2/14/2012 9:27	2/21/2012 8:31	0.504	1.6799	0.6161	0.6213	0.2107
SAN189	C	2/14/2012 9:29	2/21/2012 9:26	0.917	2.3414	0.939	0.2286	0.3472
YOS404	C	2/14/2012 12:05	2/21/2012 10:20	0.3402	0.2238	0.1419	0.3632	0.1063
MOR409	C	2/14/2012 12:40	2/21/2012 10:25	0.1127	0.0495	0.0454	0.0452	0.0747
ROM406	C	2/14/2012 13:08	2/21/2012 12:50	0.5423	0.4428	0.2899	0.399	0.1657
CNT169	C	2/14/2012 13:14	2/28/2012 11:18	0.1389	0.0562	0.058	0.1216	0.0675
GTH161	C	2/15/2012 10:24	2/21/2012 11:05	0.2592	0.0805	0.1071	0.1422	0.103
JOT403	C	2/21/2012 8:33	2/28/2012 9:03	0.7109	0.9904	0.2127	0.8148	0.2107
SEK430	C	2/21/2012 8:55	2/28/2012 8:30	0.7369	1.8839	0.6597	1.178	0.2651
CHA467	C	2/21/2012 9:30	2/28/2012 8:50	0.6649	0.341	0.2208	0.3707	0.421
SAN189	C	2/21/2012 9:32	2/28/2012 9:21	0.9808	1.1731	0.6448	0.1903	0.3351
MOR409	C	2/21/2012 10:25	2/28/2012 11:28	0.2513	0.2141	0.0956	0.1339	0.2649
YOS404	C	2/21/2012 10:30	2/28/2012 12:00	0.4932	0.6212	0.2361	0.3184	0.1742
GTH161	C	2/21/2012 11:23	2/29/2012 14:31	0.3078	0.0743	0.0893	0.114	0.1111
ROM406	C	2/21/2012 12:55	2/28/2012 12:10	0.3607	0.1573	0.1132	0.137	0.1875
SEK430	C	2/28/2012 8:45	3/6/2012 8:36	0.4625	0.5485	0.1655	0.5595	0.1389
CHA467	C	2/28/2012 8:55	3/6/2012 8:24	0.5287	0.3118	0.1716	0.2307	0.3375
JOT403	C	2/28/2012 9:08	3/6/2012 9:41	0.5759	1.5036	0.2296	0.8063	0.2633
SAN189	C	2/28/2012 9:50	3/6/2012 9:04	1.5455	1.728	1.0359	0.2675	0.2653
CNT169	C	2/28/2012 11:24	3/6/2012 12:36	0.2495	0.1173	0.0764	0.1048	0.0962
MOR409	C	2/28/2012 11:30	3/6/2012 10:30	0.2766	0.0936	0.0937	0.0711	0.1378
YOS404	C	2/28/2012 12:10	3/7/2012 11:00	0.2805	0.212	0.0612	0.2089	0.0976
ROM406	C	2/28/2012 12:16	3/6/2012 8:56	0.4439	0.1441	0.1193	0.0953	0.1106
GTH161	C	2/29/2012 14:35	3/6/2012 15:49	0.3956	0.1665	0.0969	0.0825	0.0958
CHA467	C	3/6/2012 8:33	3/13/2012 8:30	0.9185	0.5686	0.2928	0.1112	0.3055
SEK430	C	3/6/2012 8:50	3/13/2012 8:35	0.8265	1.5926	0.5174	0.5083	0.2737
ROM406	C	3/6/2012 9:04	3/13/2012 13:08	0.5406	0.3241	0.226	0.462	0.2172
SAN189	C	3/6/2012 9:08	3/13/2012 6:01	1.572	0.8797	0.6434	0.6918	0.4851
JOT403	C	3/6/2012 9:43	3/13/2012 8:30	0.9525	0.9702	0.338	0.4211	0.1925
MOR409	C	3/6/2012 10:35	3/13/2012 11:00	0.391	0.103	0.1081	0.073	0.062
CNT169	C	3/6/2012 12:52	3/13/2012 12:41	0.6155	0.3642	0.2411	0.0713	0.1443
GTH161	C	3/6/2012 15:50	3/13/2012 14:58	0.5153	0.2889	0.1951	0.1403	0.1163
YOS404	C	3/7/2012 11:14	3/13/2012 9:41	0.7456	0.9063	0.3541	0.2063	0.151
SAN189	C	3/13/2012 6:10	3/20/2012 8:51	2.0546	1.065	0.6531	1.4756	0.5694
JOT403	C	3/13/2012 8:35	3/20/2012 7:50	0.4988	0.6745	0.2034	1.1971	0.1391
CHA467	C	3/13/2012 8:37	3/20/2012 9:12	0.5453	0.2978	0.1859	0.2927	0.425
SEK430	C	3/13/2012 9:28	3/20/2012 7:33	0.4745	0.5195	0.1561	0.3035	0.1452

YOS404	C	3/13/2012 9:50	3/20/2012 11:20	0.3694	0.2312	0.096	0.1439	0.0634
MOR409	C	3/13/2012 11:30	3/20/2012 9:35	0.2117	0.1054	0.0765	0.1071	0.1588
CNT169	C	3/13/2012 12:48	3/20/2012 11:20	0.3016	0.1729	0.1165	0.226	0.1555
ROM406	C	3/13/2012 13:16	3/20/2012 13:12	0.3352	0.1434	0.1203	0.2427	0.1155
GTH161	C	3/13/2012 15:05	3/20/2012 13:11	0.2859	0.1124	0.1093	0.1423	0.0987
SEK430	C	3/20/2012 7:49	3/27/2012 8:21	0.6124	0.674	0.2337	0.6744	0.1474
JOT403	C	3/20/2012 7:54	3/27/2012 9:09	0.4178	0.3829	0.1492	1.3768	0.1767
SAN189	C	3/20/2012 8:55	3/27/2012 8:27	1.4203	1.0216	0.5918	1.9617	0.361
CHA467	C	3/20/2012 9:26	3/27/2012 8:40	0.572	0.2196	0.2133	0.3879	0.4824
MOR409	C	3/20/2012 9:40	3/27/2012 12:45	0.3289	0.1275	0.1052	0.0736	0.072
CNT169	C	3/20/2012 11:35	3/27/2012 10:29	0.2519	0.1047	0.1007	0.2326	0.1586
YOS404	C	3/20/2012 12:20	3/27/2012 11:20	0.4536	0.4156	0.1483	0.298	0.0985
GTH161	C	3/20/2012 13:28	3/28/2012 14:12	0.3362	0.1381	0.1294	0.1648	0.1065
ROM406	C	3/20/2012 13:29	3/27/2012 10:58	0.355	0.19	0.1446	0.3735	0.1707
SAN189	C	3/27/2012 8:30	4/2/2012 10:46	1.3775	0.9065	0.5171	1.0881	0.3885
SEK430	C	3/27/2012 8:38	4/3/2012 8:22	0.7421	0.9417	0.2806	0.5016	0.1447
CHA467	C	3/27/2012 8:47	4/3/2012 8:25	0.7174	0.4097	0.2394	0.3825	0.1846
CNT169	C	3/27/2012 10:36	4/3/2012 12:02	0.437	0.3458	0.0666	0.1253	0.0928
ROM406	C	3/27/2012 11:18	4/3/2012 9:53	0.4558	0.3297	0.1314	0.1951	0.0941
YOS404	C	3/27/2012 11:25	4/3/2012 9:20	0.5156	0.5389	0.0771	0.1349	0.0812
MOR409	C	3/27/2012 12:50	4/3/2012 9:25	0.1825	0.0514	0.0782	0.0516	0.0908
GTH161	C	3/28/2012 14:16	4/5/2012 10:00	0.4613	0.3379	0.1588	0.1009	0.0818
SAN189	C	4/2/2012 10:51	4/10/2012 8:17	1.0833	0.8507	0.4265	0.8226	0.4893
CHA467	C	4/3/2012 8:37	4/10/2012 9:00	0.8784	0.448	0.3178	0.4477	0.4237
SEK430	C	4/3/2012 8:43	4/10/2012 8:33	1.2815	0.6023	0.4347	0.8504	0.2746
YOS404	C	4/3/2012 9:24	4/10/2012 15:11	1.4547	0.5831	0.4721	0.4705	0.4163
MOR409	C	4/3/2012 9:30	4/10/2012 11:24	0.5901	0.1362	0.1905	0.0899	0.0782
ROM406	C	4/3/2012 10:04	4/10/2012 10:39	0.7124	0.4221	0.2866	0.4258	0.2129
CNT169	C	4/3/2012 12:35	4/10/2012 9:02	0.6935	0.2409	0.2455	0.214	0.2203
JOT403	C	4/3/2012 12:51	4/10/2012 7:40	1.0282	0.7346	0.3649	1.7134	0.3241
GTH161	C	4/5/2012 10:04	4/10/2012 10:00	0.7807	0.282	0.2767	0.2064	0.1728
JOT403	C	4/10/2012 7:42	4/17/2012 13:58	0.895	0.8397	0.3258	1.1449	0.1796
SAN189	C	4/10/2012 8:20	4/16/2012 8:35	1.0521	1.3089	0.2744	0.4377	0.2969
SEK430	C	4/10/2012 8:47	4/17/2012 8:24	0.8696	0.3018	0.2848	0.312	0.1936
CNT169	C	4/10/2012 9:07	4/17/2012 11:30	0.6053	0.2386	0.236	0.1758	0.0892
CHA467	C	4/10/2012 9:15	4/17/2012 9:45	0.7808	0.5538	0.2579	0.2059	0.2683
GTH161	C	4/10/2012 10:04	4/20/2012 9:28	0.6505	0.293	0.1726	0.0812	0.0841
ROM406	C	4/10/2012 10:58	4/17/2012 11:32	0.7425	0.4525	0.2794	0.2703	0.1309
MOR409	C	4/10/2012 11:30	4/17/2012 10:00	0.4842	0.1601	0.1383	0.1286	0.0475
YOS404	C	4/10/2012 15:14	4/17/2012 13:58	0.6241	0.1194	0.1639	0.2413	0.073
SAN189	C	4/16/2012 8:40	4/24/2012 8:17	0.9991	0.3095	0.4293	1.0838	0.2418
SEK430	C	4/17/2012 8:35	4/24/2012 7:40	2.0067	0.6156	0.8908	2.0959	0.6346
CHA467	C	4/17/2012 9:57	4/24/2012 9:40	0.9405	0.2668	0.3379	0.6283	0.3277
MOR409	C	4/17/2012 10:00	4/24/2012 10:30	0.5947	0.1981	0.198	0.1415	0.0977
CNT169	C	4/17/2012 11:35	4/24/2012 12:43	0.5108	0.1429	0.1933	0.3075	0.0971
ROM406	C	4/17/2012 12:24	4/24/2012 11:58	0.5875	0.161	0.2072	0.4397	0.1339
JOT403	C	4/17/2012 14:00	4/24/2012 11:17	0.8141	0.4212	0.3095	2.1449	0.5152

YOS404	C	4/17/2012 14:05	4/24/2012 13:27	0.7916	0.3335	0.3019	0.4298	0.2235
GTH161	C	4/20/2012 9:38	4/24/2012 10:11	0.889	0.3107	0.3215	0.5412	0.1749
SAN189	C	4/24/2012 8:34	5/1/2012 8:07	1.6705	2.4004	0.8217	0.8862	0.2759
SEK430	C	4/24/2012 8:57	5/1/2012 8:43	1.528	0.5262	0.5877	1.2859	0.3673
CHA467	C	4/24/2012 9:53	5/1/2012 9:15	0.9333	0.4473	0.3436	0.3888	0.6279
GTH161	C	4/24/2012 10:14	5/1/2012 11:29	0.2755	0.0784	0.0904	0.0467	0.0679
MOR409	C	4/24/2012 10:40	5/1/2012 10:00	0.1753	0.0713	0.0676	0.0529	0.0515
JOT403	C	4/24/2012 11:21	5/1/2012 12:58	1.026	0.7585	0.4003	1.2262	0.3612
ROM406	C	4/24/2012 12:09	5/1/2012 14:34	0.6584	0.2486	0.2667	0.4929	0.1767
YOS404	C	4/24/2012 13:44	5/1/2012 12:34	1.0933	0.3175	0.375	0.5075	0.1642
CNT169	C	4/24/2012 13:59	5/1/2012 10:27	0.5396	0.2023	0.2097	0.2867	0.1194
SAN189	C	5/1/2012 8:11	5/8/2012 8:33	1.6227	1.3611	0.6716	1.5444	0.2898
CHA467	C	5/1/2012 9:30	5/7/2012 8:35	1.0749	0.3003	0.3909	0.4896	0.4009
SEK430	C	5/1/2012 9:47	5/8/2012 8:14	1.749	1.112	0.6499	1.4261	0.7604
MOR409	C	5/1/2012 10:00	5/8/2012 11:00	0.5845	0.1067	0.1977	0.0976	0.0804
CNT169	C	5/1/2012 10:34	5/7/2012 18:16	0.6332	0.3446	0.2036	0.1503	0.1757
GTH161	C	5/1/2012 11:30	5/9/2012 8:10					
YOS404	C	5/1/2012 12:35	5/8/2012 8:50	1.1021	0.5506	0.3771	0.2859	0.2164
JOT403	C	5/1/2012 13:02	5/8/2012 7:23	1.2487	0.7287	0.4462	1.3232	0.2347
ROM406	C	5/1/2012 14:42	5/8/2012 15:26	0.7944	0.4352	0.1613	0.3962	0.1769
CHA467	C	5/7/2012 8:47	5/15/2012 8:26	1.1745	0.4729	0.4086	0.6417	0.2408
JOT403	C	5/8/2012 7:25	5/15/2012 14:04	1.4629	1.2238	0.4865	1.9053	0.3263
SEK430	C	5/8/2012 8:28	5/15/2012 8:21	1.9995	1.164	0.7289	1.4054	1.3103
SAN189	C	5/8/2012 8:36	5/15/2012 7:56	0.9422	0.3887	0.3864	0.9653	0.3826
YOS404	C	5/8/2012 9:02	5/15/2012 12:55	1.1927	0.8027	0.3982	0.5624	0.53
MOR409	C	5/8/2012 11:00	5/15/2012 9:40	0.9883	0.3997	0.212	0.2861	0.2038
ROM406	C	5/8/2012 15:35	5/15/2012 14:57	0.7808	0.193	0.2372	0.493	0.1632
GTH161	C	5/9/2012 8:20	5/16/2012 8:38	0.949	0.2219	0.3227	0.2046	0.093
CNT169	C	5/9/2012 11:06	5/15/2012 13:31	0.8071	0.2412	0.2519	0.3632	0.1996
SAN189	C	5/15/2012 8:02	5/21/2012 7:45	1.4754	1.0203	0.5935	0.7814	0.4702
SEK430	C	5/15/2012 8:30	5/22/2012 9:04	2.0842	2.047	0.6583	1.5299	1.2534
CHA467	C	5/15/2012 8:37	5/22/2012 9:31	1.0951	0.473	0.397	0.5208	0.4064
MOR409	C	5/15/2012 9:50	5/22/2012 10:50	0.8097	0.4185	0.1583	0.1877	0.0915
YOS404	C	5/15/2012 13:05	5/22/2012 12:55	1.2055	0.98	0.3848	0.5892	0.3852
CNT169	C	5/15/2012 13:40	5/22/2012 12:45	0.7301	0.2463	0.2488	0.3737	0.1646
JOT403	C	5/15/2012 14:08	5/22/2012 8:48	1.2894	1.4866	0.4328	2.2393	0.3361
ROM406	C	5/15/2012 15:11	5/22/2012 15:03	0.7671	0.2343	0.2715	0.4808	0.2036
GTH161	C	5/16/2012 10:25	5/29/2012 8:02	0.8052	0.3198	0.2501	0.1956	0.097
SAN189	C	5/21/2012 7:50	5/29/2012 8:33	1.3228	0.8425	0.4271	1.1721	0.3002
JOT403	C	5/22/2012 8:50	5/29/2012 13:58	1.0996	1.4742	0.373	1.6567	0.2793
SEK430	C	5/22/2012 9:24	5/29/2012 8:36	1.1665	1.085	0.4555	0.9018	0.7116
CHA467	C	5/22/2012 9:40	5/29/2012 8:30	0.9094	0.4946	0.3194	0.4131	0.2931
MOR409	C	5/22/2012 11:00	5/29/2012 16:26	0.5137	0.1372	0.1552	0.1181	0.0766
CNT169	C	5/22/2012 12:57	5/29/2012 12:37	0.6604	0.2931	0.223	0.1944	0.1082
YOS404	C	5/22/2012 13:04	5/29/2012 9:24	0.8011	0.3019	0.2273	0.4481	0.261
ROM406	C	5/22/2012 15:10	5/29/2012 9:34	0.7851	0.434	0.3104	0.4226	0.1322
GTH161	C	5/29/2012 8:18	6/5/2012 15:45	0.3375	0.1171	0.1303	0.1392	0.0858

CHA467	C	5/29/2012 8:30	6/5/2012 8:50	1.0041	0.3899	0.3758	0.9053	0.3297
SAN189	C	5/29/2012 8:38	6/5/2012 8:23	0.7794	0.3156	0.3468	1.2754	0.3297
SEK430	C	5/29/2012 8:49	6/5/2012 8:30	2.1001	0.9317	0.8003	1.9752	1.7395
ROM406	C	5/29/2012 9:42	6/5/2012 8:09	0.6325	0.2324	0.2476	0.589	0.2266
YOS404	C	5/29/2012 9:59	6/5/2012 15:43	0.9098	0.231	0.235	0.5704	0.3846
CNT169	C	5/29/2012 12:42	6/5/2012 13:18	0.5074	0.1434	0.1989	0.2972	0.1349
JOT403	C	5/29/2012 14:02	6/5/2012 13:38	1.4776	0.7838	0.5069	2.4937	0.4086
MOR409	C	5/29/2012 16:33	6/5/2012 9:41	0.6024	0.1727	0.2287	0.081	0.0457
ROM406	C	6/5/2012 8:23	6/12/2012 13:12	0.6895	0.291	0.2984	0.5856	0.2408
SAN189	C	6/5/2012 8:26	6/12/2012 8:07	2.1241	0.9583	0.8434	1.4265	0.5335
CHA467	C	6/5/2012 9:00	6/12/2012 8:40	0.6284	0.2403	0.2467	0.5475	0.2948
SEK430	C	6/5/2012 9:13	6/12/2012 8:40	1.1612	0.8983	0.4693	1.4497	1.0637
MOR409	C	6/5/2012 9:50	6/12/2012 8:30	0.4831	0.2069	0.1467	0.054	0.0445
CNT169	C	6/5/2012 13:29	6/12/2012 10:52	0.6146	0.4082	0.2091	0.2515	0.1956
JOT403	C	6/5/2012 13:38	6/12/2012 7:32	1.0667	1.4372	0.3769	2.193	0.3761
YOS404	C	6/5/2012 15:47	6/12/2012 9:03	0.5107	0.2672	0.219	0.3793	0.389
GTH161	C	6/5/2012 15:50	6/12/2012 8:05	0.3299	0.132	0.1237	0.1238	0.1167
JOT403	C	6/12/2012 7:37	6/19/2012 11:12	1.3273	0.6748	0.4534	1.7387	0.3542
GTH161	C	6/12/2012 8:13	6/19/2012 8:10	1.2362	0.4694	0.4406	0.4722	0.2133
SAN189	C	6/12/2012 8:13	6/19/2012 8:17	1.2789	0.7235	0.464	1.4282	0.4222
CHA467	C	6/12/2012 8:55	6/19/2012 8:35	1.4713	0.4818	0.5181	0.6123	0.426
SEK430	C	6/12/2012 9:00	6/19/2012 8:50	1.9065	1.0516	0.6772	2.3388	1.91
MOR409	C	6/12/2012 9:00	6/19/2012 10:15	0.3767	0.1172	0.1025	0.0632	0.0433
YOS404	C	6/12/2012 10:22	6/19/2012 10:52	0.882	0.5207	0.3184	0.894	0.6266
CNT169	C	6/12/2012 10:55	6/19/2012 13:07	0.5327	0.2069	0.208	0.3398	0.1903
ROM406	C	6/12/2012 13:20	6/19/2012 15:27	0.6516	0.2853	0.2822	0.552	0.2555
GTH161	C	6/19/2012 8:15	6/26/2012 8:46	0.1331	0.0533	0.0612	0.055	0.0449
SAN189	C	6/19/2012 8:22	6/26/2012 7:48	1.78	1.0927	0.6726	1.2138	0.4424
CHA467	C	6/19/2012 8:50	6/26/2012 8:20	1.3504	0.5728	0.4633	0.929	0.394
SEK430	C	6/19/2012 9:26	6/26/2012 8:40	1.5572	1.354	0.6588	1.6724	1.6885
MOR409	C	6/19/2012 10:20	6/26/2012 9:10	0.3756	0.0623	0.1401	0.1487	0.0551
YOS404	C	6/19/2012 10:59	6/26/2012 11:05	0.8409	0.6772	0.3753	0.6934	0.6386
JOT403	C	6/19/2012 11:12	6/26/2012 14:23	0.9049	0.6159	0.3223	1.9027	0.1988
CNT169	C	6/19/2012 13:11	6/26/2012 10:44	0.6791	0.298	0.3	0.3945	0.1809
ROM406	C	6/19/2012 15:34	6/26/2012 12:34	0.9252	0.4449	0.3797	0.8203	0.319
SAN189	C	6/26/2012 7:53	7/3/2012 7:51	2.0342	1.2186	0.6846	1.3133	0.7778
CHA467	C	6/26/2012 8:34	7/3/2012 8:30	1.3804	0.5363	0.4747	1.3415	0.3434
GTH161	C	6/26/2012 8:50	7/3/2012 8:57	0.7409	0.1873	0.2874	0.3188	0.1141
SEK430	C	6/26/2012 8:57	7/3/2012 8:36	1.8684	0.6205	0.7603	2.3209	1.981
MOR409	C	6/26/2012 9:15	7/3/2012 10:03	0.5137	0.0688	0.175	0.0979	0.0436
CNT169	C	6/26/2012 11:09	7/3/2012 11:03	0.8429	0.4626	0.3694	0.6204	0.2071
YOS404	C	6/26/2012 12:21	7/3/2012 10:55	0.8688	0.2817	0.3625	0.8421	0.7331
ROM406	C	6/26/2012 12:42	7/3/2012 9:12	0.8322	0.2949	0.328	0.5491	0.1635
JOT403	C	6/26/2012 14:28	7/3/2012 9:08	0.7977	0.8045	0.2858	2.2018	0.3797
SAN189	C	7/3/2012 7:58	7/10/2012 8:08	1.7702	1.1229	0.5505	1.2405	0.4788
CHA467	C	7/3/2012 8:35	7/10/2012 8:20	1.2988	0.4109	0.4354	1.3577	0.1158
SEK430	C	7/3/2012 9:12	7/10/2012 8:31	2.371	1.0755	0.8993	2.4111	2.0838

JOT403	C	7/3/2012 9:13	7/11/2012 15:22	1.5018	1.2891	0.4147	1.7103	0.5195
ROM406	C	7/3/2012 9:21	7/10/2012 15:42	0.7779	0.2711	0.271	0.5662	0.1047
GTH161	C	7/3/2012 9:45	7/10/2012 9:50	0.4239	0.0459	0.1792	0.2051	0.0577
MOR409	C	7/3/2012 10:15	7/10/2012 10:45	1.3414	0.09	0.2762	0.5951	0.1928
YOS404	C	7/3/2012 10:57	7/10/2012 9:27	1.3605	0.6902	0.4818	1.2107	1.098
CNT169	C	7/3/2012 11:03	7/10/2012 9:58	0.6168	0.1117	0.1742	0.5796	0.0936
SAN189	C	7/10/2012 8:13	7/17/2012 7:58	1.8339	0.8956	0.7039	1.8833	0.4786
CHA467	C	7/10/2012 8:35	7/17/2012 8:27	1.2538	0.2019	0.4623	1.3076	0.2068
SEK430	C	7/10/2012 8:42	7/17/2012 8:23	2.0846	0.8209	0.8914	2.6053	1.7116
YOS404	C	7/10/2012 9:51	7/17/2012 10:15	1.3062	0.6072	0.5871	1.4516	1.0422
GTH161	C	7/10/2012 10:00	7/18/2012 9:44	0.5483	0.0589	0.2169		
CNT169	C	7/10/2012 10:08	7/17/2012 11:17	0.6426	0.1175	0.2615	0.6051	0.1653
MOR409	C	7/10/2012 10:50	7/17/2012 8:55	1.0432	0.0664	0.2594	0.5286	0.086
ROM406	C	7/10/2012 15:48	7/17/2012 13:17	0.8213	0.1158	0.3177	0.8821	0.1841
JOT403	C	7/11/2012 15:26	7/17/2012 8:28	1.3111	0.967	0.4286	1.8134	0.5315
SAN189	C	7/17/2012 8:05	7/31/2012 7:55	1.6681	0.714	0.4529	1.3975	0.6476
JOT403	C	7/17/2012 8:28	7/24/2012 13:01	1.6355	0.9336	0.524	2.6351	0.5749
CHA467	C	7/17/2012 8:35	7/24/2012 8:45	1.321	0.3159	0.431	1.0106	0.1936
SEK430	C	7/17/2012 9:00	7/24/2012 8:19	1.9294	0.7366	0.8005	2.6721	1.3015
MOR409	C	7/17/2012 9:00	7/24/2012 9:12	0.5984	0.0993	0.1631	0.2557	0.0434
YOS404	C	7/17/2012 10:20	7/24/2012 10:27	1.2057	0.3967	0.4881	1.2026	0.5223
CNT169	C	7/17/2012 11:21	7/24/2012 11:26	0.5267	0.0714	0.2049	0.5451	0.077
ROM406	C	7/17/2012 13:26	7/24/2012 9:26	0.7523	0.1062	0.2764	0.6486	0.1609
GTH161	C	7/18/2012 9:45	7/24/2012 13:25	0.5293	0.0759	0.1999	0.2907	0.0772
SEK430	C	7/24/2012 8:29	7/31/2012 8:47	1.7886	0.8382	0.7546	2.646	1.5164
CHA467	C	7/24/2012 8:57	7/31/2012 8:28	1.3666	0.3936	0.4363	0.9079	0.2215
MOR409	C	7/24/2012 9:26	7/31/2012 8:45	0.6679	0.0461	0.2403	0.3163	0.0671
ROM406	C	7/24/2012 9:30	7/31/2012 8:20	0.5331	0.1099	0.2161	0.5133	0.1325
YOS404	C	7/24/2012 10:40	7/31/2012 11:52	1.0671	0.428	0.4328	1.2779	0.6677
CNT169	C	7/24/2012 11:43	7/31/2012 10:03	0.4874	0.0832	0.207	0.5259	0.1019
JOT403	C	7/24/2012 13:01	7/31/2012 9:30	1.2418	0.8182	0.3751	1.7796	0.3868
GTH161	C	7/24/2012 13:43	7/31/2012 8:19	0.6078	0.1373	0.2252	0.3321	0.0774
SAN189	C	7/31/2012 7:55	8/7/2012 7:30	1.1238	0.7313	0.4429	1.6649	0.4746
GTH161	C	7/31/2012 8:24	8/7/2012 9:16	0.3064	0.0651	0.1381	0.1972	0.0667
ROM406	C	7/31/2012 8:35	8/7/2012 13:42	0.589	0.1056	0.2154	0.6799	0.2685
CHA467	C	7/31/2012 8:42	8/7/2012 10:00	2.1122	0.4203	0.6624	1.166	0.2763
SEK430	C	7/31/2012 8:55	8/7/2012 9:00	1.5865	0.677	0.6893	3.043	1.6441
MOR409	C	7/31/2012 9:00	8/7/2012 11:01	0.8927	0.0451	0.2744	0.5067	0.1057
JOT403	C	7/31/2012 9:35	8/7/2012 10:56	1.8322	0.8681	0.6064	3.465	0.5447
CNT169	C	7/31/2012 10:07	8/7/2012 9:19	0.461	0.0938	0.1787	0.5157	0.1597
YOS404	C	7/31/2012 11:57	8/7/2012 11:00	0.7743	0.2578	0.326	1.1882	0.5336
SAN189	C	8/7/2012 7:37	8/14/2012 7:26	0.8535	0.6886	0.278	1.0397	0.2935
GTH161	C	8/7/2012 9:20	8/14/2012 17:17	0.5344	0.1024	0.2309	0.3014	0.0829
CNT169	C	8/7/2012 9:29	8/14/2012 9:53	0.6217	0.2586	0.3517	0.6113	0.247
SEK430	C	8/7/2012 9:48	8/14/2012 8:45	1.7488	0.5767	0.7264	2.9213	1.3017
CHA467	C	8/7/2012 10:15	8/14/2012 9:41	1.3151	0.4028	0.5022	0.9522	0.2567
JOT403	C	8/7/2012 10:59	8/15/2012 14:23	2.0681	1.1689	0.5995	2.6649	0.7163

MOR409	C	8/7/2012 11:03	8/14/2012 12:00	0.8974	0.0576	0.2689	0.5873	0.2026
YOS404	C	8/7/2012 11:48	8/14/2012 10:40	1.2779	0.2691	0.5056	1.4326	0.3902
ROM406	C	8/7/2012 13:52	8/14/2012 10:22	0.7072	0.2433	0.3819	0.7167	0.264
SAN189	C	8/14/2012 7:26	8/21/2012 8:10	0.983	0.5927	0.4187	0.963	0.4155
SEK430	C	8/14/2012 8:50	8/21/2012 9:48	1.7143	0.6501	0.734	2.5145	1.2452
CHA467	C	8/14/2012 9:52	8/21/2012 8:27	1.1627	0.209	0.3965	1.1163	0.092
CNT169	C	8/14/2012 9:57	8/21/2012 11:50	0.5527	0.2695	0.3276	0.5635	0.2581
ROM406	C	8/14/2012 10:39	8/21/2012 10:04	0.6134	0.3006	0.3991	0.606	0.2767
YOS404	C	8/14/2012 11:37	8/21/2012 11:00	1.0126	0.2002	0.4126	1.1957	0.296
MOR409	C	8/14/2012 12:05	8/21/2012 9:50	0.6647	0.066	0.2047	0.4412	0.1235
GTH161	C	8/14/2012 17:20	8/23/2012 9:50	0.6157	0.1407	0.3265	0.3264	0.1127
JOT403	C	8/15/2012 14:28	8/28/2012 7:17	1.9697	1.0144	0.2704	2.4042	0.8014
SAN189	C	8/21/2012 8:10	8/28/2012 8:43	2.9079	0.363	0.8087	2.3229	0.2704
CHA467	C	8/21/2012 8:38	8/28/2012 8:40	1.3577	0.2626	0.4454	1.1025	0.2023
MOR409	C	8/21/2012 9:59	8/28/2012 9:30	0.7274	0.163	0.2129	0.3117	0.06
SEK430	C	8/21/2012 10:06	8/28/2012 9:03	1.3463	0.954	0.5947	2.2895	1.2981
ROM406	C	8/21/2012 10:08	8/28/2012 10:02	0.556	0.1679	0.3083	0.5791	0.1388
YOS404	C	8/21/2012 11:10	8/28/2012 11:50	0.6391	0.3198	0.272	0.9384	0.2896
CNT169	C	8/21/2012 12:04	8/28/2012 11:24	0.4727	0.154	0.2949	0.5297	0.1547
GTH161	C	8/23/2012 9:55	8/28/2012 9:56	0.3162	0.0694	0.1897	0.226	0.0875
JOT403	C	8/28/2012 7:27	9/4/2012 15:41	2.1777	0.7668	0.6415	1.7741	3.6826
CHA467	C	8/28/2012 8:55	9/4/2012 8:00	1.4608	0.3607	0.5174	0.8774	0.434
SEK430	C	8/28/2012 9:24	9/4/2012 8:54	1.4056	1.1768	0.5949	2.2382	1.1139
MOR409	C	8/28/2012 9:30	9/4/2012 8:20	0.9188	0.228	0.2435	0.333	0.0856
SAN189	C	8/28/2012 9:58	9/5/2012 8:29	1.5652	1.0599	0.5333	1.0217	0.7954
GTH161	C	8/28/2012 10:00	9/11/2012 15:25	0.547	0.0789	0.2076	0.2511	0.0636
ROM406	C	8/28/2012 10:08	9/4/2012 10:29	0.7315	0.1004	0.2872	0.5655	0.1168
CNT169	C	8/28/2012 11:25	9/4/2012 9:45	0.589	0.1211	0.2467	0.5064	0.0903
YOS404	C	8/28/2012 12:10	9/4/2012 11:40	0.7224	0.4944	0.3022	0.909	0.3883
MOR409	C	9/4/2012 8:20	9/11/2012 9:10	0.6037	0.1436	0.1658	0.3674	0.142
CHA467	C	9/4/2012 8:24	9/11/2012 8:53	1.6133	0.5251	0.5406	0.8795	0.2417
CNT169	C	9/4/2012 9:56	9/11/2012 11:52	0.4456	0.1361	0.2247	0.4333	0.1788
SEK430	C	9/4/2012 9:59	9/11/2012 10:03	1.8289	1.2376	0.8008	2.5074	1.3784
ROM406	C	9/4/2012 11:32	9/11/2012 12:26	0.566	0.1875	0.2753	0.5869	0.147
YOS404	C	9/4/2012 12:00	9/11/2012 12:50	1.207	0.4619	0.4998	1.361	0.5398
JOT403	C	9/4/2012 15:51	9/11/2012 8:53	2.7241	1.1124	0.762	2.5276	2.3326
SAN189	C	9/5/2012 8:29	9/11/2012 7:08	0.6793	0.4008	0.2909	0.4339	0.5522
GTH161	C	9/7/2012 12:15	9/11/2012 5:25	0.0472	0.0405	0.0294	0.0411	0.0884
SAN189	C	9/11/2012 7:08	9/18/2012 5:41	0.7035	0.4995	0.3094	0.672	0.3698
JOT403	C	9/11/2012 8:54	9/18/2012 13:10	1.6963	0.3933	0.6125	2.0693	0.9484
CHA467	C	9/11/2012 9:07	9/18/2012 8:07	0.9265	0.1432	0.3877	0.6333	0.2007
MOR409	C	9/11/2012 9:10	9/19/2012 8:45	0.6501	0.0538	0.216	0.4555	0.1728
SEK430	C	9/11/2012 10:15	9/18/2012 8:42	1.4314	0.7855	0.5853	2.0242	0.9568
CNT169	C	9/11/2012 11:57	9/18/2012 11:50	0.4138	0.1827	0.2743	0.3477	0.2335
ROM406	C	9/11/2012 12:29	9/18/2012 10:40	0.3763	0.2125	0.2282	0.4126	0.2089
YOS404	C	9/11/2012 13:05	9/18/2012 14:20	0.8781	0.4142	0.3842	1.301	0.4393
GTH161	C	9/11/2012 15:35	9/21/2012 11:20	0.3139	0.0854	0.1829	0.1521	0.1046

SAN189	C	9/18/2012 6:48	9/25/2012 12:12	0.6332	0.6011	0.2447	0.276	0.5515
CHA467	C	9/18/2012 8:29	9/25/2012 8:24	0.9638	0.1804	0.3997	0.5933	0.2782
SEK430	C	9/18/2012 9:18	9/25/2012 8:43	1.7409	1.1603	0.7389	2.4186	1.1346
ROM406	C	9/18/2012 11:30	9/25/2012 10:21	0.5293	0.1794	0.3251	0.5067	0.2873
CNT169	C	9/18/2012 11:53	9/25/2012 11:41	0.4577	0.2154	0.2912	0.3648	0.3407
JOT403	C	9/18/2012 13:17	9/25/2012 9:17	1.4039	0.4259	0.5186	2.0474	0.4842
YOS404	C	9/18/2012 14:35	9/25/2012 11:55	1.0734	0.5418	0.4656	1.3135	0.4954
MOR409	C	9/19/2012 8:45	9/25/2012 8:20	0.8391	0.0658	0.3277	0.3557	0.0685
GTH161	C	9/21/2012 11:25	9/25/2012 10:03	0.4585	0.1091	0.2625	0.2425	0.1109
MOR409	C	9/25/2012 8:30	10/2/2012 11:00	0.8459	0.0951	0.245	0.4333	0.0823
CHA467	C	9/25/2012 8:33	10/2/2012 8:25	1.1233	0.1961	0.4291	0.5355	0.3453
SEK430	C	9/25/2012 9:03	10/2/2012 8:55	1.4036	0.9986	0.6699	1.9065	0.8322
JOT403	C	9/25/2012 9:19	10/2/2012 13:26	1.2406	0.4407	0.4666	1.2857	0.3975
GTH161	C	9/25/2012 10:05	10/2/2012 10:05	0.354	0.0344	0.1659	0.1213	0.0944
ROM406	C	9/25/2012 10:24	10/2/2012 10:57	0.5296	0.0807	0.2593	0.3959	0.1086
CNT169	C	9/25/2012 11:58	10/2/2012 13:55	0.4784	0.072	0.2441	0.2869	0.1526
YOS404	C	9/25/2012 12:10	10/2/2012 10:30	0.8071	0.3646	0.3793	0.977	0.335
SAN189	C	9/25/2012 12:15	10/2/2012 12:38	0.9392	1.3241	0.4114	0.625	0.7774
CHA467	C	10/2/2012 8:45	10/9/2012 9:05	0.892	0.1832	0.3559	0.539	0.3721
SEK430	C	10/2/2012 9:43	10/9/2012 9:06	1.5499	2.0957	0.8234	1.6621	0.8767
GTH161	C	10/2/2012 10:08	10/9/2012 11:10	0.369	0.1136	0.1772	0.2101	0.1674
YOS404	C	10/2/2012 10:35	10/9/2012 10:00	0.9666	0.7239	0.428	0.8717	0.3485
ROM406	C	10/2/2012 11:00	10/9/2012 14:04	0.4265	0.2534	0.1537	0.4371	0.1508
MOR409	C	10/2/2012 11:10	10/9/2012 9:00	0.5843	0.1169	0.2065	0.2972	0.1515
SAN189	C	10/2/2012 12:40	10/9/2012 8:55	0.8133	0.3951	0.3223	0.2722	0.267
JOT403	C	10/2/2012 13:34	10/9/2012 8:10	0.8237	0.7269	0.3122	2.327	0.2508
CNT169	C	10/2/2012 16:40	10/9/2012 10:47	0.3819	0.1839	0.1312	0.2249	0.2072
JOT403	C	10/9/2012 8:11	10/16/2012 13:44	0.4961	0.3979	0.1865	1.2537	0.1345
SAN189	C	10/9/2012 8:55	10/16/2012 8:57	1.0935	1.1064	0.4701	0.5467	0.4389
CHA467	C	10/9/2012 9:11	10/16/2012 8:40	0.9211	0.2813	0.3243	0.2892	0.5224
MOR409	C	10/9/2012 9:15	10/16/2012 8:50	0.4022	0.0693	0.1599	0.245	0.0633
SEK430	C	10/9/2012 9:16	10/16/2012 9:03	1.03	1.6142	0.6127	1.6255	0.2048
YOS404	C	10/9/2012 10:10	10/16/2012 10:00	0.6174	0.1838	0.1279	1.235	0.0786
CNT169	C	10/9/2012 10:54	10/16/2012 14:32	0.4552	0.1862	0.1849	0.2738	0.1729
GTH161	C	10/9/2012 11:10	10/19/2012 10:15	0.4474	0.0793	0.1725	0.1595	0.126
ROM406	C	10/9/2012 14:21	10/16/2012 12:05	0.5186	0.176	0.221	0.5468	0.1334
CHA467	C	10/16/2012 8:57	10/23/2012 8:17	0.7104	0.2709	0.2604	0.5591	0.4557
SAN189	C	10/16/2012 8:57	10/23/2012 8:50	1.6689	2.1383	0.7295	0.173	0.1476
MOR409	C	10/16/2012 9:00	10/23/2012 9:00	0.244	0.0577	0.0726	0.0303	0.0449
SEK430	C	10/16/2012 9:15	10/23/2012 9:20	1.1904	1.4359	0.5942	1.5827	0.3544
YOS404	C	10/16/2012 10:10	10/23/2012 8:15	0.5045	0.279	0.1848	0.6295	0.2093
ROM406	C	10/16/2012 12:24	10/23/2012 9:45	0.2991	0.1019	0.1329	0.2439	0.1409
JOT403	C	10/16/2012 13:48	10/23/2012 7:46	0.6495	0.6277	0.2498	1.5353	0.2995
CNT169	C	10/16/2012 14:38	10/23/2012 11:40					
GTH161	C	10/19/2012 10:22	10/23/2012 8:30	0.2865	0.119	0.128	0.1739	0.1159
JOT403	C	10/23/2012 7:49	10/30/2012 13:25	0.5351	0.3826	0.2061	1.2345	0.187
YOS404	C	10/23/2012 8:20	10/30/2012 11:45	0.3281	0.1901	0.1457	0.3392	0.1251

CHA467	C	10/23/2012 8:23	10/30/2012 8:27	0.7717	0.2733	0.2912	0.4369	0.4347
GTH161	C	10/23/2012 8:37	10/31/2012 14:30	0.2436	0.0459	0.1021	0.1256	0.1067
SAN189	C	10/23/2012 8:55	10/30/2012 8:58	1.5871	1.8818	0.9919	0.428	0.2915
MOR409	C	10/23/2012 9:10	10/30/2012 8:10	0.1451	0.0337	0.0511	0.0304	0.0451
SEK430	C	10/23/2012 9:32	10/30/2012 8:55	0.5442	0.6121	0.2632	1.468	0.2651
ROM406	C	10/23/2012 10:49	10/30/2012 11:55	0.3093	0.0676	0.1272	0.2678	0.1087
CNT169	C	10/23/2012 11:48	10/30/2012 11:54	0.2618	0.0548	0.1136	0.1809	0.0624
MOR409	C	10/30/2012 8:20	11/6/2012 8:20	0.098	0.0549	0.0382	0.0299	0.0444
CHA467	C	10/30/2012 8:43	11/6/2012 14:38	1.334	0.1918	0.505	0.4859	0.6953
SAN189	C	10/30/2012 8:58	11/6/2012 8:55	1.4403	3.3101	0.885	0.3469	0.3583
SEK430	C	10/30/2012 9:17	11/6/2012 8:43	1.0603	2.0298	0.8331	2.5728	0.3308
YOS404	C	10/30/2012 11:57	11/6/2012 12:59	0.2607	0.1009	0.1169	0.6449	0.1326
ROM406	C	10/30/2012 12:06	11/6/2012 10:39	0.2212	0.0782	0.1012	0.3848	0.1671
CNT169	C	10/30/2012 12:12	11/6/2012 15:48	0.1796	0.097	0.0863	0.3398	0.2013
JOT403	C	10/30/2012 13:29	11/6/2012 9:14	0.4354	0.2052	0.1822	2.3613	0.238
GTH161	C	10/31/2012 16:40	11/5/2012 15:21	0.2129	0.0799	0.1018	0.1733	0.1423
GTH161	C	11/5/2012 15:42	11/13/2012 14:59	0.2716	0.0936	0.1128	0.0924	0.0732
MOR409	C	11/6/2012 8:30	11/13/2012 9:10	0.292	0.1068	0.1106	0.0495	0.0662
SAN189	C	11/6/2012 8:55	11/13/2012 8:45	0.9934	2.0142	0.6093	0.2334	0.223
JOT403	C	11/6/2012 9:16	11/13/2012 8:57	0.4898	0.3841	0.1886	0.9395	0.2398
SEK430	C	11/6/2012 9:50	11/13/2012 9:11	0.6502	0.9401	0.3155	0.8032	0.2306
ROM406	C	11/6/2012 12:14	11/13/2012 12:29	0.276	0.069	0.1146	0.2027	0.1594
YOS404	C	11/6/2012 13:15	11/13/2012 14:45	0.4211	0.1499	0.1299	0.4038	0.1456
CHA467	C	11/6/2012 14:40	11/13/2012 8:40	0.8779	0.3086	0.3446	0.3139	0.3246
CNT169	C	11/6/2012 15:55	11/13/2012 13:39	0.2897	0.0852	0.122	0.1797	0.1567
SAN189	C	11/13/2012 8:50	11/20/2012 8:35	1.2914	2.4051	0.8776	0.5352	0.6963
JOT403	C	11/13/2012 9:00	11/20/2012 8:15	0.3007	0.321	0.1276	0.6665	0.1252
CHA467	C	11/13/2012 9:05	11/20/2012 8:30	0.5117	0.2061	0.1995	0.3473	0.5899
MOR409	C	11/13/2012 9:10	11/20/2012 8:20	0.1911	0.0477	0.0794	0.0417	0.0449
SEK430	C	11/13/2012 9:17	11/20/2012 9:30	0.271	0.3621	0.1441	0.7557	0.1391
ROM406	C	11/13/2012 13:30	11/20/2012 10:05	0.3455	0.0901	0.1433	0.424	0.1875
CNT169	C	11/13/2012 13:45	11/20/2012 13:55	0.248	0.0668	0.1061	0.2337	0.0882
YOS404	C	11/13/2012 14:50	11/20/2012 11:15	0.1696	0.0478	0.0613	0.1998	0.08
GTH161	C	11/13/2012 15:08	11/20/2012 15:37					
JOT403	C	11/20/2012 8:18	11/27/2012 9:29	0.6074	0.3049	0.2439	1.5218	0.2941
CHA467	C	11/20/2012 8:35	11/27/2012 10:05	0.8591	0.1552	0.3515	0.4021	0.3997
SAN189	C	11/20/2012 8:35	11/27/2012 8:45	1.0839	1.2607	0.5501	0.3089	0.4155
MOR409	C	11/20/2012 8:45	11/26/2012 12:00	0.1514	0.0988	0.0438	0.0345	0.0511
SEK430	C	11/20/2012 9:48	11/27/2012 9:00	0.5285	1.018	0.4061	1.7528	0.2305
ROM406	C	11/20/2012 10:15	11/27/2012 11:21	0.201	0.0718	0.0819	0.2035	0.1594
YOS404	C	11/20/2012 11:20	11/27/2012 10:00	0.1413	0.0478	0.0645	0.1722	0.0771
CNT169	C	11/20/2012 14:12	11/27/2012 13:17	0.1669	0.0437	0.0719	0.1996	0.1687
GTH161	C	11/20/2012 16:17	11/27/2012 11:00	0.1964	0.0438	0.0819	0.0922	0.0832
MOR409	C	11/26/2012 12:10	12/4/2012 18:10	0.1279	0.0251	0.0529	0.0256	0.0416
SAN189	C	11/27/2012 8:50	12/4/2012 8:55	1.2798	4.0026	1.0496	0.4724	0.3809
SEK430	C	11/27/2012 9:12	12/4/2012 9:12	0.3407	0.2151	0.1342	0.2915	0.0806
JOT403	C	11/27/2012 9:32	12/4/2012 8:32	0.4317	0.3088	0.1655	0.6481	0.1788

CHA467	C	11/27/2012 10:25	12/4/2012 8:13	0.7988	0.2124	0.294	0.3282	0.4207
YOS404	C	11/27/2012 10:30	12/4/2012 12:20	0.2402	0.0254	0.075	0.1266	0.1019
GTH161	C	11/27/2012 11:45	12/4/2012 14:11	0.3418	0.1279	0.1241	0.1344	0.1164
ROM406	C	11/27/2012 12:09	12/4/2012 11:21	0.2971	0.1007	0.1187	0.1816	0.4032
CNT169	C	11/27/2012 13:24	12/4/2012 13:29	0.2892	0.1003	0.1086	0.2401	0.3536
CHA467	C	12/4/2012 8:25	12/11/2012 8:30	0.3605	0.2563	0.1693	0.3144	0.4347
JOT403	C	12/4/2012 8:34	12/11/2012 11:11	0.2476	0.1399	0.1068	0.5924	0.1485
SAN189	C	12/4/2012 8:55	12/11/2012 8:43	1.0703	1.648	0.6092	0.2209	0.3833
SEK430	C	12/4/2012 9:42	12/11/2012 9:32	0.4758	1.885	0.6835	0.6782	0.1924
ROM406	C	12/4/2012 12:14	12/11/2012 11:18	0.2725	0.0497	0.1128	0.1553	0.1498
YOS404	C	12/4/2012 12:30	12/11/2012 11:30	0.1453	0.0368	0.0636	0.0683	0.0661
GTH161	C	12/4/2012 14:11	12/11/2012 11:15	0.2167	0.0819	0.0886	0.1139	0.0851
MOR409	C	12/4/2012 18:16	12/11/2012 15:46	0.1785	0.0611	0.0561	0.031	0.056
SAN189	C	12/11/2012 8:43	12/18/2012 8:39	1.3072	4.3535	1.2107	0.1734	0.2626
CHA467	C	12/11/2012 8:44	12/18/2012 10:06	0.4113	0.2232	0.154	0.1396	0.4711
SEK430	C	12/11/2012 9:50	12/18/2012 9:10	0.3057	0.9214	0.3389	0.6046	0.0998
JOT403	C	12/11/2012 11:15	12/18/2012 8:51	0.3214	1.3792	0.3969	0.6815	0.2382
ROM406	C	12/11/2012 11:25	12/18/2012 9:35	0.1394	0.0512	0.0623	0.1236	0.1224
YOS404	C	12/11/2012 12:30	12/18/2012 9:45	0.0597	0.0642	0.0406	0.1681	0.0748
GTH161	C	12/11/2012 12:39	12/19/2012 12:33	0.1555	0.0457	0.0656	0.0763	0.0775
CNT169	C	12/11/2012 14:05	12/18/2012 12:25	0.1048	0.0242	0.0491	0.1316	0.1073
MOR409	C	12/11/2012 15:55	12/18/2012 14:58	0.1042	0.0316	0.0409	0.0361	0.0659
SAN189	C	12/18/2012 8:39	12/26/2012 9:07	1.0105	2.8366	1.0776	0.155	0.2803
JOT403	C	12/18/2012 8:54	12/26/2012 15:40	0.2713	0.4168	0.1171	0.5959	0.1785
SEK430	C	12/18/2012 9:20	12/26/2012 9:05	0.2172	0.1644	0.075	0.1582	0.1064
YOS404	C	12/18/2012 10:00	12/24/2012 11:35	0.1839	0.0342	0.0592	0.0738	0.0939
CHA467	C	12/18/2012 10:24	12/24/2012 9:00	0.5508	0.1563	0.2166	0.3354	0.4643
ROM406	C	12/18/2012 10:35	12/25/2012 11:22	0.3315	0.2153	0.1732	0.1736	0.1275
CNT169	C	12/18/2012 13:48	12/26/2012 14:06	0.2802	0.1027	0.1202	0.115	0.1167
MOR409	C	12/18/2012 15:06	12/26/2012 11:20	0.0532	0.0269	0.0311	0.0274	0.0524
GTH161	C	12/19/2012 12:37	12/26/2012 11:58	0.2421	0.0514	0.0931	0.0752	0.0817
CHA467	C	12/24/2012 9:20	12/31/2012 8:20	0.4049	0.3576	0.1107	0.284	0.476
YOS404	C	12/24/2012 12:00	12/31/2012 13:40	0.1081	0.1019	0.0519	0.1588	0.0931
ROM406	C	12/25/2012 11:31	1/1/2013 13:00	0.2957	0.4587	0.2275	0.2893	0.2167
SAN189	C	12/26/2012 9:12	1/2/2013 10:42	1.3069	3.5251	1.485	0.1293	0.533
SEK430	C	12/26/2012 9:29	1/2/2013 9:14	0.2424	0.6754	0.2896	0.3491	0.1659
MOR409	C	12/26/2012 11:25	1/2/2013 9:00	0.0746	0.0375	0.0429	0.0311	0.0462
GTH161	C	12/26/2012 12:16	1/1/2013 12:51	0.2014	0.0565	0.0811	0.104	0.0907
CNT169	C	12/26/2012 14:16	1/1/2013 13:11	0.2214	0.0621	0.0865	0.1119	0.135
JOT403	C	12/26/2012 15:49	1/2/2013 16:52	0.2172	0.4197	0.1191	0.5697	0.1893
CHA467	C	12/31/2012 8:30	1/8/2013 8:21	0.4186	0.1634	0.1993	0.4242	0.2285
YOS404	C	12/31/2012 13:45	1/8/2013 11:45	0.1316	0.0353	0.0531	0.3374	0.105
GTH161	C	1/1/2013 12:57	1/9/2013 13:06	0.1019	0.0207	0.049	0.0922	0.0971
ROM406	C	1/1/2013 13:59	1/8/2013 11:32	0.1343	0.0236	0.0544	0.0763	0.144
CNT169	C	1/1/2013 14:00	1/8/2013 13:11	0.1295	0.0231	0.059	0.0947	0.112
MOR409	C	1/2/2013 9:10	1/9/2013 7:30	0.113	0.0387	0.0542	0.0393	0.0597
SAN189	C	1/2/2013 10:42	1/8/2013 8:41	0.724	2.2463	0.9172	0.1527	0.3957

JOT403	C	1/2/2013 16:54	1/8/2013 8:59	0.2287	0.3406	0.1104	0.7845	0.1899
SEK430	C	1/3/2013 10:17	1/8/2013 9:20	0.2124	0.2358	0.1435	0.4829	0.1509
SAN189	C	1/8/2013 8:45	1/15/2013 8:38	0.6208	1.3392	0.5951	0.1441	0.4879
CHA467	C	1/8/2013 8:49	1/15/2013 9:07	0.2886	0.3701	0.1611	0.2206	0.5532
JOT403	C	1/8/2013 9:08	1/15/2013 9:01	0.2524	0.334	0.1197	0.4861	0.1579
SEK430	C	1/8/2013 9:32	1/15/2013 9:35	0.4126	2.4886	0.8575	0.2795	0.2059
ROM406	C	1/8/2013 11:42	1/15/2013 12:48	0.325	0.4266	0.2108	0.1611	0.1737
YOS404	C	1/8/2013 11:57	1/15/2013 9:45	0.1539	0.402	0.1348	0.1671	0.1043
CNT169	C	1/8/2013 14:27	1/15/2013 13:13	0.2498	0.093	0.109	0.1061	0.1614
MOR409	C	1/9/2013 7:30	1/15/2013 9:35	0.198	0.0795	0.0952	0.0832	0.0881
GTH161	C	1/9/2013 13:30	1/16/2013 10:50	0.2166	0.0282	0.0784	0.192	0.1152
SAN189	C	1/15/2013 8:38	1/22/2013 8:40	0.5979	0.6156	0.3378	0.2856	0.2399
JOT403	C	1/15/2013 9:05	1/22/2013 8:59	0.1597	0.0627	0.0732	0.3797	0.0956
CHA467	C	1/15/2013 9:18	1/22/2013 8:15	0.4433	0.1121	0.184	0.3364	0.4238
MOR409	C	1/15/2013 9:35	1/22/2013 9:00	0.123	0.0414	0.0708	0.0519	0.0554
SEK430	C	1/15/2013 9:49	1/22/2013 9:45	0.1516	0.0803	0.0776	0.6041	0.1213
YOS404	C	1/15/2013 9:55	1/22/2013 10:45	0.0942	0.0255	0.043	0.1277	0.0527
CNT169	C	1/15/2013 13:24	1/22/2013 12:43	0.0928	0.032	0.0415	0.1134	0.0853
ROM406	C	1/15/2013 13:30	1/22/2013 10:17	0.0925	0.0303	0.038	0.1094	0.0722
GTH161	C	1/16/2013 10:50	1/22/2013 11:32					
CHA467	C	1/22/2013 8:34	1/29/2013 9:05	0.4055	0.1942	0.1773	0.2181	0.3389
SAN189	C	1/22/2013 8:40	1/29/2013 8:36	1.3413	2.9503	1.0793	0.1368	0.2958
JOT403	C	1/22/2013 9:03	1/29/2013 8:58	0.3984	0.626	0.2089	0.7504	0.2487
MOR409	C	1/22/2013 9:05	1/30/2013 9:00	0.109	0.0778	0.0979	0.079	0.1171
SEK430	C	1/22/2013 10:09	1/29/2013 9:03	0.3604	1.6583	0.6232	0.2438	0.1273
ROM406	C	1/22/2013 10:25	1/29/2013 9:41	0.1033	0.0458	0.0562	0.1475	0.0661
YOS404	C	1/22/2013 11:05	1/29/2013 11:40	0.0872	0.0609	0.0343	0.0981	0.0758
GTH161	C	1/22/2013 11:48	1/30/2013 13:40	0.1213	0.0226	0.0525	0.0813	0.0664
CNT169	C	1/22/2013 12:58	1/29/2013 13:12	0.1643	0.0241	0.0733	0.1538	0.0847
SAN189	C	1/29/2013 8:36	2/5/2013 9:47	1.3342	1.809	0.9839	0.1484	0.3717
JOT403	C	1/29/2013 9:00	2/5/2013 9:18	0.1544	0.1969	0.0794	0.3551	0.0993
CHA467	C	1/29/2013 9:15	2/5/2013 8:20	0.14	0.0586	0.0709	0.2598	0.1649
SEK430	C	1/29/2013 9:21	2/5/2013 8:59	0.6281	2.8304	1.0841	0.9274	0.1408
ROM406	C	1/29/2013 10:29	2/5/2013 11:52	0.1291	0.023	0.0627	0.1163	0.099
YOS404	C	1/29/2013 11:50	2/5/2013 12:03	0.1312	0.0475	0.0653	0.1247	0.0751
CNT169	C	1/29/2013 13:18	2/5/2013 12:41	0.1175	0.0232	0.0519	0.0972	0.0783
MOR409	C	1/30/2013 9:00	2/5/2013 8:45	0.13	0.0351	0.0768	0.0356	0.0528
GTH161	C	1/30/2013 13:40	2/4/2013 14:57	0.1329	0.0324	0.0668	0.0843	0.0725
GTH161	C	2/4/2013 15:16	2/13/2013 11:52	0.3059	0.0825	0.1241	0.1532	0.0818
CHA467	C	2/5/2013 8:33	2/12/2013 8:50	0.4978	0.3206	0.2169	0.3058	0.333
MOR409	C	2/5/2013 8:50	2/12/2013 15:23	0.4216	0.3684	0.2144	0.1596	0.0546
JOT403	C	2/5/2013 9:36	2/12/2013 9:04	0.3911	0.7699	0.2665	1.104	0.1505
SAN189	C	2/5/2013 9:47	2/12/2013 9:04	1.931	3.6942	1.6986	0.1611	0.2072
SEK430	C	2/5/2013 10:24	2/12/2013 9:23	0.8893	3.6137	1.3249	0.4873	0.1708
ROM406	C	2/5/2013 12:12	2/12/2013 10:55	0.4696	0.3046	0.2501	0.1531	0.1318
YOS404	C	2/5/2013 12:15	2/12/2013 10:25	0.3933	0.6237	0.3007	0.2485	0.1352
CNT169	C	2/5/2013 13:06	2/12/2013 12:24	0.3399	0.0564	0.1419	0.2297	0.1276

SAN189	C	2/12/2013 9:04	2/19/2013 8:45	0.9037	1.0644	0.6047	0.1747	0.303
JOT403	C	2/12/2013 9:08	2/19/2013 10:12	0.3475	0.5345	0.2044	0.8423	0.1587
CHA467	C	2/12/2013 9:20	2/19/2013 8:15	0.4233	0.0948	0.1674	0.3387	0.3108
SEK430	C	2/12/2013 9:35	2/19/2013 9:09	0.7093	1.7781	0.6168	0.8492	0.233
YOS404	C	2/12/2013 10:30	2/19/2013 10:20	0.0371	0.0436	0.0283	0.2043	0.0868
ROM406	C	2/12/2013 12:24	2/19/2013 10:58	0.3032	0.085	0.1287	0.167	0.1152
CNT169	C	2/12/2013 12:30	2/19/2013 12:50	0.2157	0.0755	0.098	0.1337	0.0917
MOR409	C	2/12/2013 15:27	2/19/2013 15:10	0.1471	0.0743	0.0455	0.0307	0.0498
GTH161	C	2/13/2013 11:52	2/19/2013 16:25	0.2217	0.1094	0.0939	0.1501	0.0784
CHA467	C	2/19/2013 8:15	2/26/2013 8:32	0.4859	0.3929	0.1881	0.3228	0.2489
SAN189	C	2/19/2013 8:45	2/26/2013 8:58	1.9227	7.2665	2.5285	0.1779	0.5485
SEK430	C	2/19/2013 9:20	2/26/2013 9:07	0.512	1.0178	0.403	0.5411	0.2497
YOS404	C	2/19/2013 10:30	2/26/2013 10:15	0.3941	0.4935	0.2225	0.3816	0.1015
JOT403	C	2/19/2013 10:32	2/26/2013 11:08	0.3884	0.9517	0.2494	0.8816	0.1689
ROM406	C	2/19/2013 11:11	2/26/2013 10:11	0.4629	0.6854	0.3449	0.2661	0.1803
CNT169	C	2/19/2013 13:11	2/26/2013 13:42	0.3607	0.2681	0.1938	0.1703	0.14
MOR409	C	2/19/2013 15:12	2/26/2013 9:00	0.2814	0.0933	0.0631	0.0574	0.0556
GTH161	C	2/19/2013 16:40	2/26/2013 11:55	0.3957	0.1539	0.1705	0.1669	0.112
SAN189	C	2/26/2013 8:58	3/5/2013 8:41	2.2213	4.2527	2.0381	0.1201	0.2344
MOR409	C	2/26/2013 9:10	3/5/2013 8:40	0.219	0.0891	0.0638	0.0331	0.0906
CHA467	C	2/26/2013 9:15	3/5/2013 8:17	0.3791	0.1178	0.1454	0.3428	0.2177
SEK430	C	2/26/2013 9:22	3/5/2013 8:47	0.6274	0.5179	0.2863	1.5643	0.2977
YOS404	C	2/26/2013 10:30	3/5/2013 9:45	0.4022	0.1807	0.1509	0.5228	0.1527
JOT403	C	2/26/2013 11:10	3/5/2013 9:18	0.34	0.2306	0.1302	0.4999	0.1197
ROM406	C	2/26/2013 11:47	3/5/2013 10:26	0.3099	0.0686	0.1231	0.1953	0.1228
GTH161	C	2/26/2013 11:55	3/5/2013 12:18	0.3149	0.0525	0.1239	0.1709	0.0742
CNT169	C	2/26/2013 13:49	3/5/2013 14:05	0.2906	0.0651	0.1252	0.227	0.0769
CHA467	C	3/5/2013 8:35	3/12/2013 8:40	0.4367	0.2171	0.1565	0.2343	0.3116
SAN189	C	3/5/2013 8:41	3/12/2013 8:20	2.2493	3.8922	1.4852	0.1499	0.4221
MOR409	C	3/5/2013 8:50	3/12/2013 9:00	0.2625	0.1029	0.1295	0.1568	0.0815
JOT403	C	3/5/2013 9:25	3/12/2013 8:06	0.3701	0.3307	0.1316	0.5399	0.1335
SEK430	C	3/5/2013 9:27	3/12/2013 8:49	0.484	0.6753	0.1727	0.3961	0.1713
YOS404	C	3/5/2013 9:55	3/12/2013 9:52	0.3963	0.3076	0.0994	0.3801	0.1025
ROM406	C	3/5/2013 10:33	3/12/2013 9:32	0.5718	0.6098	0.232	0.2562	0.1496
GTH161	C	3/5/2013 12:38	3/13/2013 12:10	0.3818	0.1639	0.1384	0.1308	0.0793
CNT169	C	3/5/2013 14:20	3/12/2013 12:00	0.406	0.1871	0.149	0.1504	0.1547
JOT403	C	3/12/2013 8:15	3/19/2013 8:11	0.6259	0.2735	0.208	1.5894	0.137
SAN189	C	3/12/2013 8:25	3/19/2013 7:30	1.7802	1.9903	1.1456	0.2283	0.3287
CHA467	C	3/12/2013 8:55	3/19/2013 8:19	0.6018	0.2234	0.2145	0.461	0.3351
SEK430	C	3/12/2013 9:02	3/19/2013 7:51	1.2067	2.0263	0.9017	1.5275	0.385
MOR409	C	3/12/2013 9:05	3/19/2013 9:00	0.3403	0.0697	0.0953	0.0358	0.0484
YOS404	C	3/12/2013 10:00	3/19/2013 10:15	0.5281	0.2164	0.1659	0.2707	0.1085
ROM406	C	3/12/2013 10:34	3/19/2013 8:37	0.4345	0.2368	0.1439	0.2703	0.1
CNT169	C	3/12/2013 12:15	3/19/2013 11:30	0.3944	0.1674	0.1297	0.2159	0.1461
GTH161	C	3/13/2013 12:10	3/19/2013 16:32	0.4522	0.2106	0.1122	0.1539	0.0803
SAN189	C	3/19/2013 7:38	3/26/2013 8:35	2.1459	3.3513	1.4712	0.1194	0.7774
SEK430	C	3/19/2013 8:02	3/26/2013 8:15	1.7723	2.2474	1.027	1.2513	0.5228

CHA467	C	3/19/2013 8:19	3/26/2013 8:33	1.5228	0.5457	0.4554	0.5937	0.6225
ROM406	C	3/19/2013 8:45	3/26/2013 9:28	0.8567	0.239	0.2868	0.139	0.1416
MOR409	C	3/19/2013 9:10	3/26/2013 18:51	0.7836	0.1478	0.2417	0.0925	0.1462
YOS404	C	3/19/2013 10:25	3/26/2013 7:00	1.4983	0.2721	0.4603	0.2982	0.3574
JOT403	C	3/19/2013 10:51	3/26/2013 7:48	1.8361	0.8428	0.5939	1.7241	0.4522
CNT169	C	3/19/2013 11:40	3/26/2013 11:29	0.6653	0.163	0.2346	0.1229	0.1858
GTH161	C	3/19/2013 16:53	3/26/2013 15:53	0.7131	0.1917	0.2358	0.145	0.1226
YOS404	C	3/26/2013 7:10	4/2/2013 7:40	0.5475	0.2409	0.1459	0.4811	0.1333
JOT403	C	3/26/2013 7:56	4/2/2013 8:15	0.7273	0.6541	0.247	1.7863	0.2003
SEK430	C	3/26/2013 8:30	4/2/2013 8:19	1.1307	0.5681	0.2868	1.7711	0.425
SAN189	C	3/26/2013 8:41	4/2/2013 8:35	1.8359	3.7708	1.3146	0.4128	0.4258
CHA467	C	3/26/2013 8:52	4/2/2013 8:20	0.8332	0.3834	0.2539	0.4933	0.4351
ROM406	C	3/26/2013 10:25	4/2/2013 10:07	0.6901	0.5228	0.2623	0.4032	0.1028
CNT169	C	3/26/2013 11:35	4/2/2013 11:34	0.608	0.4307	0.1975	0.2786	0.1199
GTH161	C	3/26/2013 15:58	4/2/2013 14:45	0.6253	0.3203	0.2019	0.3171	0.086
MOR409	C	3/26/2013 18:54	4/2/2013 15:23	0.5405	0.1091	0.1742	0.1511	0.073
YOS404	C	4/2/2013 8:00	4/9/2013 11:15	0.5097	0.1188	0.0912	0.3059	0.0766
JOT403	C	4/2/2013 8:21	4/9/2013 7:57	0.8287	0.7395	0.2794	1.4703	0.161
CHA467	C	4/2/2013 8:30	4/9/2013 9:07	0.8385	0.4128	0.2098	0.4456	0.3711
SAN189	C	4/2/2013 8:35	4/9/2013 8:25	1.5801	3.3717	1.0775	0.7014	0.358
SEK430	C	4/2/2013 9:02	4/9/2013 9:17	1.0434	0.7282	0.4477	0.8935	0.2082
ROM406	C	4/2/2013 10:17	4/9/2013 8:45	0.628	0.2398	0.2031	0.3224	0.119
CNT169	C	4/2/2013 12:09	4/9/2013 12:27	0.6197	0.2585	0.1636	0.1827	0.0888
GTH161	C	4/2/2013 15:05	4/9/2013 8:42	0.6151	0.1591	0.1386	0.1909	0.0723
MOR409	C	4/2/2013 15:30	4/8/2013 8:45	0.3911	0.0895	0.1091	0.0656	0.0652
JOT403	C	4/9/2013 8:09	4/16/2013 8:43	0.6759	0.964	0.224	1.1297	0.2463
SAN189	C	4/9/2013 8:25	4/16/2013 9:04	1.2531	1.1066	0.7351	0.17	0.1294
MOR409	C	4/9/2013 8:50	4/16/2013 8:51	0.264	0.0945	0.0652	0.0302	0.0448
GTH161	C	4/9/2013 8:52	4/16/2013 13:04	0.4769	0.2347	0.1568	0.1302	0.0701
CHA467	C	4/9/2013 9:28	4/16/2013 8:15	0.6888	0.6164	0.2267	0.2813	0.4048
SEK430	C	4/9/2013 9:28	4/16/2013 9:05	1.0295	1.0698	0.4369	1.0159	0.6616
ROM406	C	4/9/2013 9:35	4/18/2013 7:38	0.5359	0.4491	0.2552	0.2627	0.0676
YOS404	C	4/9/2013 11:27	4/16/2013 9:08	0.4999	0.4451	0.1767	0.2933	0.1364
CNT169	C	4/9/2013 12:34	4/17/2013 15:29	0.3377	0.2644	0.1576	0.091	0.0663
CHA467	C	4/16/2013 8:25	4/23/2013 8:36	0.6449	0.3698	0.2307	0.301	0.2528
JOT403	C	4/16/2013 8:49	4/23/2013 8:06	0.9275	0.9324	0.3575	1.2722	0.3101
MOR409	C	4/16/2013 9:00	4/23/2013 10:00	0.3765	0.0708	0.1155	0.0838	0.049
SAN189	C	4/16/2013 9:04	4/23/2013 8:56	1.254	1.3236	0.7323	0.1783	0.2125
SEK430	C	4/16/2013 9:20	4/23/2013 9:21	1.2431	0.5473	0.5559	1.1216	1.0115
YOS404	C	4/16/2013 9:23	4/23/2013 8:10	0.7904	0.2214	0.2933	0.3466	0.2547
GTH161	C	4/16/2013 13:10	4/23/2013 16:50	0.7283	0.296	0.2203	0.062	0.0663
CNT169	C	4/17/2013 15:36	4/23/2013 10:52	0.5321	0.1436	0.1934	0.0991	0.0584
ROM406	C	4/18/2013 7:45	4/23/2013 9:03	0.6481	0.1882	0.2371	0.1493	0.0967
JOT403	C	4/23/2013 8:15	4/30/2013 7:52	1.3684	1.0129	0.4763	1.244	0.3437
YOS404	C	4/23/2013 8:17	4/30/2013 16:00	1.2748	0.4175	0.4284	0.6226	0.4714
CHA467	C	4/23/2013 8:50	4/30/2013 8:50	0.8497	0.4726	0.2865	0.4498	0.4066
SAN189	C	4/23/2013 9:00	4/30/2013 7:54	1.4034	0.5142	0.5406	0.9376	0.3398

SEK430	C	4/23/2013 9:30	4/30/2013 9:00	2.6146	1.2212	1.0267	1.8264	1.8869
ROM406	C	4/23/2013 9:50	4/30/2013 7:38	0.8883	0.3033	0.2796	0.4023	0.171
MOR409	C	4/23/2013 10:05	4/30/2013 9:05	0.5992	0.128	0.1608	0.1986	0.0811
CNT169	C	4/23/2013 11:03	4/30/2013 14:51	0.8399	0.3014	0.2362	0.2157	0.1919
GTH161	C	4/23/2013 16:55	4/30/2013 10:03	0.721	0.2737	0.2258	0.2108	0.0917
ROM406	C	4/30/2013 7:48	5/7/2013 9:05	0.6836	0.9013	0.3973	0.4628	0.2165
SAN189	C	4/30/2013 7:54	5/7/2013 7:36	1.0205	1.1598	0.525	0.4863	0.2493
JOT403	C	4/30/2013 7:58	5/7/2013 8:16	1.4227	0.8535	0.3909	1.1073	0.3139
CHA467	C	4/30/2013 9:02	5/7/2013 8:50	2.2854	0.8873	0.3194	0.2404	0.3837
SEK430	C	4/30/2013 9:15	5/7/2013 8:52	1.9973	1.2413	0.4541	1.1298	1.1542
MOR409	C	4/30/2013 9:15	5/7/2013 8:20	0.6957	0.2623	0.1936	0.4069	0.1922
GTH161	C	4/30/2013 10:19	5/7/2013 14:12	0.7506	0.2804	0.1496	0.1818	0.1125
CNT169	C	4/30/2013 14:55	5/7/2013 12:11	0.8125	0.6138	0.3205	0.2404	0.1309
YOS404	C	4/30/2013 16:00	5/7/2013 10:49	1.3073	0.7796	0.2355	0.3309	0.4546
SAN189	C	5/7/2013 7:36	5/14/2013 7:40	1.2577	0.4763	0.5027	1.8474	0.3473
JOT403	C	5/7/2013 8:23	5/14/2013 7:53	1.0164	0.7727	0.345	1.6987	0.2183
MOR409	C	5/7/2013 8:25	5/14/2013 15:15	1.0868	0.0819	0.2157	0.4871	0.0957
CHA467	C	5/7/2013 9:03	5/14/2013 8:35	1.0941	0.5063	0.3722	0.4593	0.3314
SEK430	C	5/7/2013 9:05	5/14/2013 9:23	1.6976	0.4733	0.6946	1.6384	0.8464
ROM406	C	5/7/2013 9:58	5/14/2013 8:26	0.8276	0.1816	0.3218	0.4658	0.1258
YOS404	C	5/7/2013 10:58	5/14/2013 8:54	0.9366	0.2547	0.3226	0.494	0.2626
CNT169	C	5/7/2013 12:27	5/14/2013 14:30	0.8182	0.2196	0.3132	0.4649	0.1211
GTH161	C	5/7/2013 14:16	5/15/2013 15:33	0.7019	0.0894	0.2502	0.2442	0.0716
SAN189	C	5/14/2013 7:40	5/21/2013 8:10	1.2737	1.3461	0.397	0.7875	0.543
JOT403	C	5/14/2013 7:56	5/21/2013 7:57	1.2523	1.3042	0.3992	1.4541	0.3326
ROM406	C	5/14/2013 8:31	5/21/2013 7:58	0.7416	0.1969	0.2716	0.3253	0.1383
CHA467	C	5/14/2013 8:47	5/21/2013 13:57	1.1887	0.4977	0.4295	0.5985	0.4355
YOS404	C	5/14/2013 9:02	5/21/2013 11:25	0.9897	0.2602	0.316	0.4899	0.4124
SEK430	C	5/14/2013 9:49	5/21/2013 8:00	1.5003	1.0514	0.5458	1.3268	1.2961
MOR409	C	5/14/2013 15:25	5/21/2013 17:10	0.5088	0.1603	0.1496	0.0803	0.047
CNT169	C	5/14/2013 16:30	5/21/2013 14:40	0.6993	0.2512	0.2401	0.2031	0.1324
GTH161	C	5/15/2013 15:38	5/23/2013 12:00	0.6961	0.1117	0.1853	0.2554	0.0961
JOT403	C	5/21/2013 8:09	5/28/2013 7:55	1.6075	2.0171	0.4188	1.3496	0.4832
SAN189	C	5/21/2013 8:10	5/28/2013 8:11	1.0962	0.9888	0.4601	0.6691	0.3108
ROM406	C	5/21/2013 8:46	5/28/2013 8:12	0.8756	0.3909	0.2994	0.8443	0.1971
SEK430	C	5/21/2013 9:32	5/28/2013 8:23	1.4764	1.5765	0.4918	1.1228	1.5394
YOS404	C	5/21/2013 11:46	5/28/2013 14:43	0.7715	0.4944	0.0977	0.3538	0.3772
CHA467	C	5/21/2013 14:19	5/28/2013 9:00	1.105	0.33	0.3599	0.559	0.7015
CNT169	C	5/21/2013 14:47	5/28/2013 15:11	0.8116	0.374	0.2933	0.4505	0.235
MOR409	C	5/21/2013 17:15	5/28/2013 8:00	0.1836	0.0564	0.0759	0.0419	0.0548
GTH161	C	5/23/2013 15:21	5/30/2013 11:38					
JOT403	C	5/28/2013 8:00	6/4/2013 7:57	1.1689	1.2389	0.3894	2.2213	0.3885
SAN189	C	5/28/2013 8:15	6/4/2013 9:07	0.8122	0.5343	0.2975	0.7799	0.2917
MOR409	C	5/28/2013 8:15	6/4/2013 16:37	0.414	0.1775	0.1122	0.1242	0.0883
SEK430	C	5/28/2013 8:35	6/4/2013 8:31	1.9021	0.7353	0.6896	1.8518	1.7847
ROM406	C	5/28/2013 9:05	6/4/2013 9:25	0.5318	0.1757	0.188	0.3367	0.2098
CHA467	C	5/28/2013 9:15	6/4/2013 8:45	1.1751	0.6884	0.3468	0.4974	0.6491

YOS404	C	5/28/2013 15:00	6/4/2013 8:15	1.1845	0.4538	0.4103	0.6692	0.787
CNT169	C	5/28/2013 15:18	6/4/2013 12:34	0.4043	0.0717	0.1369	0.1976	0.1374
JOT403	C	6/4/2013 8:09	6/11/2013 7:51	1.1017	0.7786	0.3565	2.229	0.3608
YOS404	C	6/4/2013 8:30	6/11/2013 13:37	1.17	0.3693	0.4165	0.8771	0.6933
SEK430	C	6/4/2013 8:51	6/11/2013 8:40	3.3146	1.1069	1.2028	3.6242	3.2735
SAN189	C	6/4/2013 9:07	6/11/2013 7:30	0.8345	0.6997	0.3466	0.8261	0.2352
CHA467	C	6/4/2013 9:10	6/11/2013 9:55	0.9838	0.4368	0.3258	0.7123	0.471
ROM406	C	6/4/2013 9:30	6/11/2013 8:25	0.4761	0.1226	0.1871	0.6126	0.1636
CNT169	C	6/4/2013 12:46	6/11/2013 13:44	0.4284	0.1072	0.1722	0.3646	0.195
GTH161	C	6/4/2013 16:17	6/12/2013 7:30	0.4668	0.1566	0.1685	0.2427	0.1173
MOR409	C	6/4/2013 16:40	6/11/2013 8:40	0.7433	0.4272	0.1971	0.3127	0.1283
SAN189	C	6/11/2013 7:36	6/18/2013 7:40	1.0013	0.7201	0.2914	1.237	0.4597
JOT403	C	6/11/2013 7:57	6/18/2013 8:07	0.8428	0.6192	0.2961	1.9865	0.2195
MOR409	C	6/11/2013 8:45	6/18/2013 15:23	0.4041	0.0664	0.1235	0.0838	0.1001
ROM406	C	6/11/2013 8:53	6/18/2013 9:46	0.8332	0.513	0.3165	0.5978	0.2967
SEK430	C	6/11/2013 8:54	6/18/2013 8:05	1.6894	0.8961	0.653	2.2779	2.561
CHA467	C	6/11/2013 10:00	6/19/2013 9:06	1.5589	0.6283	0.5274	0.9877	0.6993
YOS404	C	6/11/2013 13:45	6/18/2013 13:20	0.8098	0.4781	0.3004	0.6596	0.8412
CNT169	C	6/11/2013 13:51	6/18/2013 13:14	0.6513	0.3413	0.2505	0.3517	0.2065
GTH161	C	6/12/2013 7:37	6/18/2013 9:09	0.8139	0.2585	0.2877	0.2561	0.1328
SAN189	C	6/18/2013 7:40	6/25/2013 8:16	1.2903	0.8918	0.3831	0.9955	0.3463
JOT403	C	6/18/2013 8:13	6/25/2013 7:48	1.0473	1.7795	0.3148	2.7971	0.3936
SEK430	C	6/18/2013 8:50	6/25/2013 9:10	1.2695	0.8847	0.5198	1.4469	1.6436
GTH161	C	6/18/2013 9:15	6/25/2013 19:16	0.5417	0.2734	0.1904	0.2085	0.1635
ROM406	C	6/18/2013 10:07	6/25/2013 9:06	0.6523	0.397	0.2636	0.5915	0.2956
CNT169	C	6/18/2013 13:25	6/25/2013 15:57	0.5381	0.326	0.1957	0.327	0.2053
YOS404	C	6/18/2013 13:28	6/25/2013 11:10	0.4432	0.179	0.1324	0.4448	0.5112
MOR409	C	6/18/2013 15:43	6/25/2013 7:50	0.2577	0.0513	0.0829	0.0467	0.0611
CHA467	C	6/19/2013 9:21	6/25/2013 8:10	1.2902	0.4469	0.4444	0.636	0.4683
JOT403	C	6/25/2013 7:51	7/2/2013 8:10	1.2854	0.7408	0.4332	3.256	0.5989
MOR409	C	6/25/2013 8:00	7/2/2013 11:10	0.4026	0.082	0.1335	0.1736	0.1062
SAN189	C	6/25/2013 8:16	7/2/2013 8:27	0.6837	0.4337	0.3369	0.7987	0.2823
CHA467	C	6/25/2013 8:42	7/2/2013 8:25	1.0032	0.549	0.3356	0.5826	0.3701
SEK430	C	6/25/2013 9:29	7/2/2013 8:21	2.6177	0.3833	1.0485	3.068	2.6922
ROM406	C	6/25/2013 10:34	7/2/2013 10:01	0.5223	0.4571	0.2049	0.3549	0.1727
YOS404	C	6/25/2013 11:20	7/2/2013 9:10	0.8253	0.1098	0.3199	0.7892	0.6694
CNT169	C	6/25/2013 16:02	7/2/2013 13:03	0.4604	0.3656	0.1961	0.3341	0.1822
GTH161	C	6/25/2013 19:24	7/2/2013 9:42	0.3541	0.1432	0.1448	0.177	0.1071
JOT403	C	7/2/2013 8:15	7/9/2013 7:44	1.4803	0.7482	0.4626	2.5658	0.5852
SAN189	C	7/2/2013 8:27	7/9/2013 8:47	2.0651	0.8675	0.4957	1.6922	0.3452
CHA467	C	7/2/2013 8:35	7/9/2013 8:14	1.0799	0.4345	0.3952	1.8975	0.2825
YOS404	C	7/2/2013 9:21	7/9/2013 9:40	0.9766	0.3865	0.4	1.0708	0.6122
GTH161	C	7/2/2013 9:47	7/9/2013 19:42	0.5264	0.1517	0.2234	0.2596	0.0971
ROM406	C	7/2/2013 10:42	7/9/2013 15:22	0.5442	0.1331	0.2323	0.5976	0.1504
SEK430	C	7/2/2013 10:47	7/9/2013 9:21	1.6676	0.7195	0.1113	2.6594	1.5938
MOR409	C	7/2/2013 11:15	7/9/2013 15:54	1.2051	0.3629	0.1647	0.48	0.1265
CNT169	C	7/2/2013 13:27	7/9/2013 12:01	0.5274	0.1565	0.2494	0.5185	0.1574

JOT403	C	7/9/2013 7:47	7/16/2013 7:48	1.8382	1.3191	0.5887	3.1634	0.6697
CHA467	C	7/9/2013 8:26	7/16/2013 8:23					
SAN189	C	7/9/2013 8:47	7/16/2013 7:42	2.2216	1.3058	0.7866	1.5781	0.4876
SEK430	C	7/9/2013 9:39	7/16/2013 8:31	1.6207	0.607	0.6561	2.5719	1.4905
YOS404	C	7/9/2013 9:50	7/16/2013 8:55	1.0255	0.2826	0.4092	1.1974	0.5767
CNT169	C	7/9/2013 12:07	7/16/2013 12:03	0.6554	0.1401	0.273	0.7053	0.1182
MOR409	C	7/9/2013 15:57	7/16/2013 17:05					
ROM406	C	7/9/2013 16:06	7/16/2013 13:42	0.7965	0.2062	0.3377	0.7821	0.1597
SAN189	C	7/16/2013 7:42	7/23/2013 9:45	0.9839	0.3988	0.3524	1.0304	0.2522
JOT403	C	7/16/2013 7:50	7/23/2013 7:42	1.9587	2.1151	0.5161	2.3866	0.7189
SEK430	C	7/16/2013 8:46	7/23/2013 9:16	1.605	0.699	0.6353	3.0719	1.6743
CHA467	C	7/16/2013 8:49	7/23/2013 8:15	1.0151	0.4113	0.3763	0.6083	0.1612
YOS404	C	7/16/2013 8:55	7/23/2013 7:26	0.9531	0.4152	0.3828	1.2391	0.8708
CNT169	C	7/16/2013 12:28	7/23/2013 10:40	0.5314	0.0915	0.2319	0.6447	0.1764
ROM406	C	7/16/2013 13:42	7/23/2013 11:59	0.6106	0.1266	0.2675	0.8112	0.1819
MOR409	C	7/16/2013 17:15	7/23/2013 8:40	1.0985	0.0498	0.283	0.5569	0.1144
GTH161	C	7/16/2013 19:13	7/24/2013 10:43	0.4049	0.0648	0.1951	0.2327	0.141
YOS404	C	7/23/2013 7:32	7/30/2013 11:14	1.1755	0.2808	0.5245	1.3471	0.4543
JOT403	C	7/23/2013 7:46	7/30/2013 13:43	1.6391	0.7487	0.5666	3.3692	0.5649
CHA467	C	7/23/2013 8:23	7/30/2013 8:20	1.5109	0.347	0.5114	1.0974	0.3981
MOR409	C	7/23/2013 8:45	7/30/2013 15:40	1.1078	0.1286	0.2253	0.5729	0.2303
SEK430	C	7/23/2013 9:33	7/30/2013 8:16	1.8976	0.4842	0.777	3.1055	1.2719
SAN189	C	7/23/2013 9:45	7/30/2013 8:03	0.7632	0.9801	0.333	0.4833	0.2591
CNT169	C	7/23/2013 10:40	7/30/2013 10:32	0.4697	0.1359	0.2344	0.4976	0.1732
ROM406	C	7/23/2013 11:59	7/30/2013 10:27	0.627	0.0714	0.17	0.806	0.1365
GTH161	C	7/24/2013 10:50	7/30/2013 19:09	0.3309	0.0763	0.1464	0.1966	0.1
SAN189	C	7/30/2013 8:10	8/6/2013 7:48	0.9382	0.4161	0.392	0.8912	0.1761
SEK430	C	7/30/2013 8:25	8/6/2013 9:27	1.239	0.8114	0.6285	2.457	1.3182
CHA467	C	7/30/2013 8:34	8/6/2013 9:36	1.3504	0.1715	0.4401	0.9247	0.3125
ROM406	C	7/30/2013 10:38	8/6/2013 14:16	0.8419	0.1168	0.3104	0.6417	0.1351
CNT169	C	7/30/2013 10:45	8/6/2013 11:57	0.8149	0.1782	0.3335	0.641	0.1646
YOS404	C	7/30/2013 11:20	8/6/2013 8:35	0.7618	0.4396	0.3851	1.031	0.4874
JOT403	C	7/30/2013 13:48	8/9/2013 15:49	1.0254	0.6076	0.3454	1.9674	0.5302
GTH161	C	7/30/2013 19:16	8/6/2013 9:05	0.8155	0.1273	0.3049	0.2077	0.0626
SAN189	C	8/6/2013 7:48	8/13/2013 7:55	1.1911	0.3045	0.3881	0.9925	0.23
YOS404	C	8/6/2013 8:53	8/13/2013 10:10	0.5468	0.1283	0.3083	0.815	0.3392
GTH161	C	8/6/2013 9:15	8/13/2013 13:28	0.4357	0.0622	0.1736	0.1483	0.0797
CHA467	C	8/6/2013 9:47	8/13/2013 8:15	1.8994	0.3031	0.5903	0.8969	0.3525
SEK430	C	8/6/2013 10:41	8/13/2013 8:07	1.0484	0.5207	0.5962	2.4545	1.1264
CNT169	C	8/6/2013 12:02	8/13/2013 13:50	0.6452	0.1086	0.2827	0.3989	0.1154
ROM406	C	8/6/2013 15:11	8/13/2013 9:37	0.667	0.1039	0.3103	0.402	0.1245
JOT403	C	8/9/2013 15:53	8/13/2013 8:18	0.7669	0.4578	0.3201	1.9766	0.6328
SAN189	C	8/13/2013 8:05	8/20/2013 7:42	3.1315	0.8882	1.2647	1.1895	0.3295
SEK430	C	8/13/2013 8:19	8/20/2013 8:29	1.2029	0.4822	0.5131	2.3941	1.315
CHA467	C	8/13/2013 8:24	8/20/2013 8:06	1.1188	0.1377	0.3981	0.7283	0.2012
JOT403	C	8/13/2013 8:25	8/20/2013 8:48	1.8553	0.7701	0.6575	2.7765	0.7875
ROM406	C	8/13/2013 9:45	8/20/2013 12:31	0.8002	0.1841	0.3749	0.6156	0.2396

YOS404	C	8/13/2013 10:14	8/20/2013 8:10	0.5941	0.1884	0.2393	0.7974	0.291
GTH161	C	8/13/2013 13:30	8/21/2013 10:29	0.72	0.1167	0.2767	0.2432	0.1031
CNT169	C	8/13/2013 14:05	8/20/2013 10:00	0.7511	0.1875	0.3834	0.6697	0.2411
SAN189	C	8/20/2013 7:42	8/27/2013 7:43	3.0304	0.6412	1.0076	1.2497	0.3499
YOS404	C	8/20/2013 8:14	8/28/2013 11:30	0.8245	0.3228	0.3798	1.2288	0.45
CHA467	C	8/20/2013 8:16	8/27/2013 8:34	1.4129	0.179	0.459	0.6201	0.1789
JOT403	C	8/20/2013 8:54	8/27/2013 8:04	1.9044	1.382	0.376	1.5439	0.4636
SEK430	C	8/20/2013 9:05	8/27/2013 9:17	1.3692	0.6515	0.6115	2.0907	1.1321
CNT169	C	8/20/2013 10:08	8/27/2013 12:45	0.5665	0.0734	0.2382	0.4923	0.1347
ROM406	C	8/20/2013 12:39	8/27/2013 7:36	0.5816	0.1045	0.2415	0.3664	0.1432
GTH161	C	8/21/2013 10:30	8/28/2013 11:28	0.6004	0.0623	0.2423	0.2128	0.1
ROM406	C	8/27/2013 7:42	9/3/2013 13:15	0.7093	0.1181	0.2762	0.4146	0.1618
SAN189	C	8/27/2013 7:43	9/3/2013 7:25	1.2136	0.6248	0.3595	0.953	0.4727
JOT403	C	8/27/2013 8:08	9/3/2013 10:26	1.421	1.0712	0.5066	1.7424	0.296
CHA467	C	8/27/2013 8:50	9/3/2013 9:10	0.7465	0.1206	0.2763	0.4181	0.1879
SEK430	C	8/27/2013 9:29	9/3/2013 8:18	1.2887	0.7405	0.5803	2.2944	1.2542
CNT169	C	8/27/2013 12:52	9/3/2013 13:08	0.6427	0.0834	0.2685	0.543	0.137
GTH161	C	8/28/2013 11:33	9/3/2013 9:38	0.529	0.0582	0.2239	0.2166	0.1092
YOS404	C	8/28/2013 11:35	9/3/2013 9:09	0.8458	1.0067	0.4987	1.3373	0.5173
SAN189	C	9/3/2013 7:36	9/10/2013 7:51	2.3676	1.2597	0.5663	1.0578	0.4292
SEK430	C	9/3/2013 9:05	9/9/2013 8:25	1.9603	1.3814	0.8751	2.7513	1.5086
YOS404	C	9/3/2013 9:19	9/10/2013 13:08	1.1885	0.4352	0.5514	1.1646	0.4549
CHA467	C	9/3/2013 9:23	9/10/2013 9:37	1.3777	0.1966	0.4895	0.407	0.1585
GTH161	C	9/3/2013 10:11	9/10/2013 9:00	0.5361	0.0891	0.2272	0.2058	0.0838
ROM406	C	9/3/2013 13:25	9/10/2013 14:46	0.5306	0.1763	0.2028	0.4284	0.1248
CNT169	C	9/3/2013 15:27	9/17/2013 12:08	0.3093	0.0185	0.0975	0.2845	0.059
SEK430	C	9/9/2013 9:34	9/17/2013 9:02	1.6784	1.2265	0.8106	2.7171	1.3935
SAN189	C	9/10/2013 7:51	9/17/2013 7:43	0.8806	0.6217	0.3264	0.3566	0.376
GTH161	C	9/10/2013 9:09	9/18/2013 8:50	0.2592	0.0352	0.107	0.09	0.0592
CHA467	C	9/10/2013 9:47	9/17/2013 9:05	0.977	0.2119	0.3438	0.5496	0.1249
YOS404	C	9/10/2013 13:22	9/17/2013 8:15	0.8205	0.4304	0.4602	1.0762	0.3839
ROM406	C	9/10/2013 14:59	9/18/2013 9:52	0.1889	0.0225	0.086	0.4306	0.0756
SAN189	C	9/17/2013 7:43	9/24/2013 8:08	1.0827	0.4448	0.409	0.7121	0.2581
JOT403	C	9/17/2013 8:46	9/24/2013 8:06	0.6901	0.5639	0.2747	1.0859	0.3961
YOS404	C	9/17/2013 8:59	9/24/2013 9:35	0.5292	0.2972	0.1158	0.7253	0.2219
SEK430	C	9/17/2013 9:07	9/24/2013 8:12	1.0745	1.2868	0.4489	1.4556	0.7673
CHA467	C	9/17/2013 9:35	9/24/2013 8:50	0.6916	0.2672	0.2604	0.275	0.3115
CNT169	C	9/17/2013 12:20	9/24/2013 9:40	0.4777	0.0963	0.1857	0.2476	0.1682
GTH161	C	9/18/2013 9:13	9/24/2013 8:34	0.4057	0.0941	0.1472	0.1082	0.1077
ROM406	C	9/18/2013 9:56	9/24/2013 10:40	0.5375	0.1051	0.2229	0.4238	0.1521
SAN189	C	9/24/2013 8:08	10/1/2013 7:47	1.5478	0.5488	0.5847	0.7088	0.3776
JOT403	C	9/24/2013 8:10	10/1/2013 7:45	0.4627	0.612	0.191	1.6059	0.2531
SEK430	C	9/24/2013 8:17	10/1/2013 8:13	0.7813	0.9154	0.3913	1.1996	0.6551
GTH161	C	9/24/2013 8:49	10/1/2013 9:10	0.2903	0.0685	0.1084	0.1124	0.1297
CHA467	C	9/24/2013 9:04	10/1/2013 8:55	0.7204	0.5009	0.2444	0.2834	0.356
CNT169	C	9/24/2013 9:50	10/1/2013 11:10	0.359	0.1465	0.1491	0.2096	0.1319
YOS404	C	9/24/2013 9:55	10/1/2013 7:40	0.3654	0.2752	0.1466	0.5951	0.1977

ROM406	C	9/24/2013 10:49	9/30/2013 8:03	0.347	0.09	0.1239	0.2987	0.1348
ROM406	C	9/30/2013 8:40	10/15/2013 10:44	0.4285	0.2437	0.166	0.3572	0.2001
YOS404	C	10/1/2013 7:45	10/17/2013 9:08	0.9356	0.5153	0.2552	0.6921	0.2612
SAN189	C	10/1/2013 7:47	10/8/2013 7:49	0.5873	0.5127	0.2033	0.3808	0.1951
JOT403	C	10/1/2013 7:48	10/22/2013 13:46	0.8654	0.7631	0.3196	0.8777	0.1938
SEK430	C	10/1/2013 8:56	10/22/2013 8:25	1.4072	1.4282	0.5639	1.415	0.5677
CHA467	C	10/1/2013 9:00	10/8/2013 13:08	0.5419	0.2834	0.2161	0.3731	0.4341
GTH161	C	10/1/2013 9:20	10/8/2013 8:51	0.3536	0.0647	0.1291	0.1114	0.1388
CNT169	C	10/1/2013 11:35	10/8/2013 10:32	0.3099	0.065	0.1113	0.2198	0.1953
SAN189	C	10/8/2013 7:49	10/15/2013 8:08	1.0334	0.5883	0.3211	0.3732	0.3921
GTH161	C	10/8/2013 9:02	10/15/2013 9:12	0.522	0.1261	0.1922	0.1122	0.1045
CNT169	C	10/8/2013 10:37	10/15/2013 12:59	0.67	0.1608	0.2372	0.2009	0.1153
CHA467	C	10/8/2013 13:08	10/15/2013 8:50	1.2244	0.4762	0.4198	0.191	0.3709
SAN189	C	10/15/2013 9:08	10/22/2013 7:54	0.8198	0.1988	0.3355	0.2168	0.1506
GTH161	C	10/15/2013 9:33	10/22/2013 9:44	0.5241	0.0394	0.2062	0.145	0.1452
CNT169	C	10/15/2013 13:04	10/22/2013 12:11	0.5734	0.0668	0.24	0.2069	0.2077
YOS404	C	10/17/2013 9:08	10/22/2013 9:45	0.904	0.1856	0.4147	0.4522	0.3663
ROM406	C	10/17/2013 10:24	10/22/2013 7:35	0.3997	0.0366	0.162	0.2438	0.1819
CHA467	C	10/18/2013 8:42	10/22/2013 9:05	0.7645	0.1139	0.3238	0.5513	0.5844
SAN189	C	10/22/2013 7:54	10/29/2013 7:42	1.048	0.5962	0.4189	0.5109	0.2061
ROM406	C	10/22/2013 8:14	10/29/2013 7:44	0.2755	0.119	0.1252	0.1678	0.1779
SEK430	C	10/22/2013 8:33	10/29/2013 8:27	1.4891	3.272	1.0929	2.0396	0.8533
CHA467	C	10/22/2013 9:30	10/29/2013 8:55	0.7902	0.1725	0.3171	0.4572	0.4925
GTH161	C	10/22/2013 9:57	10/29/2013 9:44	0.4582	0.1049	0.1988	0.1799	0.1244
YOS404	C	10/22/2013 9:58	10/29/2013 8:54	0.7348	0.4732	0.3052	0.5365	0.3242
CNT169	C	10/22/2013 12:48	10/29/2013 12:10	0.3858	0.1215	0.1693	0.2691	0.2238
JOT403	C	10/22/2013 14:02	10/29/2013 7:57	0.7981	0.2496	0.3027	1.0502	0.2974
SAN189	C	10/29/2013 7:42	11/5/2013 7:39	0.6087	0.4213	0.3222	0.5408	0.1732
ROM406	C	10/29/2013 7:54	11/5/2013 9:31	0.2868	0.1255	0.1388	0.1591	0.1232
JOT403	C	10/29/2013 8:03	11/5/2013 15:25	0.4375	0.54	0.2107	1.0447	0.2085
SEK430	C	10/29/2013 8:40	11/5/2013 10:30	0.798	2.046	0.6575	1.1198	0.3499
CHA467	C	10/29/2013 9:05	11/5/2013 9:55	0.5278	0.2529	0.2049	0.2971	0.4248
YOS404	C	10/29/2013 9:07	11/5/2013 10:19	0.3473	0.3277	0.1788	0.2793	0.127
GTH161	C	10/29/2013 10:00	11/5/2013 10:50	0.3703	0.1022	0.1416	0.1459	0.1075
CNT169	C	10/29/2013 12:16	11/5/2013 11:28	0.3805	0.0991	0.159	0.1285	0.1121
SAN189	C	11/5/2013 7:50	11/12/2013 7:45	0.5619	0.4904	0.314	0.3165	0.2273
ROM406	C	11/5/2013 9:38	11/12/2013 9:53	0.2152	0.0981	0.0997	0.1528	0.1387
CHA467	C	11/5/2013 10:05	11/12/2013 8:25	0.5288	0.2258	0.2294	0.3458	0.2909
YOS404	C	11/5/2013 10:30	11/12/2013 11:05	0.41	0.1406	0.1964	0.4868	0.1977
SEK430	C	11/5/2013 10:36	11/12/2013 9:42	0.5894	0.4874	0.3317	1.2719	0.3501
GTH161	C	11/5/2013 11:03	11/12/2013 10:18	0.2533	0.0398	0.1082	0.116	0.1037
CNT169	C	11/5/2013 12:14	11/12/2013 11:12	0.2819	0.072	0.1183	0.2716	0.1253
JOT403	C	11/5/2013 15:33	11/12/2013 9:05	0.445	0.1709	0.198	1.3897	0.2172
SAN189	C	11/12/2013 7:45	11/19/2013 9:08	0.5836	0.7694	0.3683	0.442	0.2427
CHA467	C	11/12/2013 8:40	11/19/2013 9:08	0.955	0.433	0.3441	0.1903	0.2109
JOT403	C	11/12/2013 9:09	11/19/2013 8:56	0.6969	1.6977	0.3291	0.9968	0.2158
SEK430	C	11/12/2013 9:51	11/19/2013 10:04	1.4353	7.7121	2.4713	1.1998	0.7613

GTH161	C	11/12/2013 10:28	11/19/2013 12:38	0.256	0.1205	0.1033	0.1937	0.1079
ROM406	C	11/12/2013 11:01	11/19/2013 10:01	0.1704	0.0611	0.0718	0.1439	0.0999
CNT169	C	11/12/2013 11:16	11/19/2013 12:07	0.2289	0.0746	0.0975	0.1815	0.1439
YOS404	C	11/12/2013 11:20	11/19/2013 11:59	0.6333	1.5521	0.5774	0.694	0.2339
JOT403	C	11/19/2013 9:02	11/26/2013 9:22	0.3356	0.5087	0.1592	0.89	0.1371
SAN189	C	11/19/2013 9:08	11/26/2013 9:55	0.6932	1.1284	0.4482	0.2377	0.3054
CHA467	C	11/19/2013 9:10	11/26/2013 8:30	0.4693	0.3368	0.1821	0.1406	0.2648
SEK430	C	11/19/2013 10:13	11/26/2013 9:05	0.6397	3.3604	1.104	0.8341	0.1749
ROM406	C	11/19/2013 10:20	11/26/2013 10:57	0.3073	0.1071	0.1307	0.1731	0.0729
YOS404	C	11/19/2013 12:00	11/26/2013 11:45	0.2992	0.2046	0.1148	0.4644	0.1137
GTH161	C	11/19/2013 12:46	11/26/2013 9:10	0.2107	0.0443	0.0852	0.1357	0.0732
CNT169	C	11/19/2013 12:47	11/26/2013 13:48	0.3253	0.0759	0.1186	0.1441	0.199
CHA467	C	11/26/2013 8:38	12/3/2013 9:20	0.3213	0.0729	0.1337	0.2667	0.3216
SEK430	C	11/26/2013 9:15	12/3/2013 9:10	0.4306	1.2339	0.55	1.7219	0.2171
JOT403	C	11/26/2013 9:24	12/3/2013 16:14	0.3303	0.1708	0.15	1.0598	0.1888
GTH161	C	11/26/2013 9:29	12/3/2013 12:47	0.1505	0.0391	0.0664	0.1159	0.0792
SAN189	C	11/26/2013 9:55	12/3/2013 8:50	1.3722	3.3556	0.9938	0.2032	0.61
ROM406	C	11/26/2013 11:00	12/3/2013 10:21	0.1118	0.0228	0.0536	0.155	0.067
YOS404	C	11/26/2013 12:00	12/4/2013 13:10	0.2348	0.0863	0.1085	0.3494	0.1002
CNT169	C	11/26/2013 13:54	12/3/2013 12:41	0.1766	0.0521	0.0811	0.1539	0.0811
SAN189	C	12/3/2013 8:56	12/10/2013 9:05	1.0016	1.369	0.6625	0.1225	0.486
CHA467	C	12/3/2013 9:45	12/10/2013 8:58	0.4179	0.4764	0.1475	0.1883	0.2234
SEK430	C	12/3/2013 9:59	12/10/2013 9:10	0.4639	3.6559	1.1887	0.3272	0.354
ROM406	C	12/3/2013 10:26	12/10/2013 11:00	0.4059	0.1604	0.2019	0.154	0.1532
GTH161	C	12/3/2013 12:55	12/10/2013 12:01	0.2577	0.0387	0.1058	0.1154	0.1378
CNT169	C	12/3/2013 13:19	12/10/2013 13:08	0.3522	0.1239	0.1606	0.1297	0.1619
JOT403	C	12/3/2013 16:24	12/10/2013 8:56	0.4783	1.0127	0.228	0.283	0.1818
YOS404	C	12/4/2013 13:12	12/10/2013 11:20	0.266	0.4204	0.179	0.3377	0.1485
JOT403	C	12/10/2013 9:00	12/17/2013 11:39	0.1655	0.0528	0.0806	0.6029	0.1081
CHA467	C	12/10/2013 9:05	12/17/2013 9:00	0.4706	0.2024	0.1833	0.4093	0.298
SAN189	C	12/10/2013 9:05	12/17/2013 9:17	1.2132	3.7441	1.5133	0.1436	0.2774
SEK430	C	12/10/2013 9:19	12/17/2013 9:05	0.1834	1.3978	0.4964	1.3842	0.1619
YOS404	C	12/10/2013 11:25	12/17/2013 14:00	0.0708	0.0251	0.0351	0.0934	0.0882
GTH161	C	12/10/2013 12:19	12/17/2013 12:31	0.1318	0.023	0.0565	0.1046	0.0944
ROM406	C	12/10/2013 12:20	12/17/2013 9:20	0.1073	0.0233	0.0504	0.0856	0.0736
CNT169	C	12/10/2013 13:16	12/17/2013 12:56	0.1604	0.0225	0.0677	0.1307	0.1148
CHA467	C	12/17/2013 9:05	12/24/2013 9:00	0.3089	0.2162	0.1305	0.3136	0.3296
SEK430	C	12/17/2013 9:15	12/23/2013 9:40	0.6778	3.6084	1.1407	0.9122	0.2571
SAN189	C	12/17/2013 9:17	12/24/2013 9:58	0.9763	1.5712	0.766	0.1692	0.3372
ROM406	C	12/17/2013 10:33	12/24/2013 9:35	0.1616	0.0261	0.0744	0.1399	0.0587
JOT403	C	12/17/2013 11:55	12/24/2013 8:53	0.1841	0.1868	0.0806	0.5671	0.0885
GTH161	C	12/17/2013 12:38	12/24/2013 14:54	0.1724	0.0226	0.0769	0.1175	0.0621
CNT169	C	12/17/2013 13:10	12/24/2013 12:04	0.1849	0.0225	0.0761	0.1887	0.105
YOS404	C	12/17/2013 14:15	12/24/2013 11:15	0.318	1.7492	0.6217	1.0957	0.1337
SEK430	C	12/23/2013 9:50	12/31/2013 9:18	0.3308	1.3723	0.5067	1.491	0.2067
JOT403	C	12/24/2013 8:58	12/31/2013 8:43	0.1433	0.0768	0.0671	0.3429	0.1169
CHA467	C	12/24/2013 9:15	12/31/2013 9:00	0.2666	0.1807	0.1295	0.321	0.2258

SAN189	C	12/24/2013 10:05	12/31/2013 10:18	0.7357	0.9221	0.4735	0.2392	0.2629
ROM406	C	12/24/2013 10:13	12/31/2013 9:30	0.125	0.0435	0.0562	0.0975	0.0619
YOS404	C	12/24/2013 11:20	12/31/2013 12:20	0.1282	0.0379	0.047	0.1308	0.0824
CNT169	C	12/24/2013 12:09	12/31/2013 11:29	0.1042	0.0453	0.0482	0.1133	0.0729
GTH161	C	12/24/2013 15:15	12/31/2013 18:59	0.143	0.0509	0.0637	0.1278	0.072
JOT403	C	12/31/2013 8:53	1/7/2014 8:56	0.2039	0.2092	0.0792	1.1099	0.1442
CHA467	C	12/31/2013 9:10	1/7/2014 9:00	0.2972	0.1958	0.1057	0.3947	0.3504
SEK430	C	12/31/2013 9:29	1/7/2014 9:50	0.4848	2.5966	0.9251	1.4043	0.3137
SAN189	C	12/31/2013 10:18	1/7/2014 10:39	1.2359	2.1107	0.9839	0.1233	0.5725
ROM406	C	12/31/2013 10:35	1/7/2014 10:08	0.1304	0.0496	0.0552	0.0771	0.106
CNT169	C	12/31/2013 11:43	1/7/2014 12:49	0.1349	0.0479	0.0601	0.0985	0.1256
YOS404	C	12/31/2013 12:25	1/7/2014 8:45	0.1303	0.0489	0.0442	0.1751	0.0855
GTH161	C	12/31/2013 19:10	1/7/2014 14:58	0.1071	0.0358	0.0485	0.1368	0.1031
YOS404	C	1/7/2014 8:55	1/14/2014 12:28	0.2156	0.0851	0.0971	0.2363	0.0878
JOT403	C	1/7/2014 9:00	1/14/2014 8:43	0.3126	0.406	0.164	2.0627	0.1937
CHA467	C	1/7/2014 9:10	1/14/2014 8:55	0.2428	0.149	0.0941	0.4186	0.4404
SAN189	C	1/7/2014 10:39	1/14/2014 9:55	0.8731	2.9098	1.0228	0.2171	0.3201
ROM406	C	1/7/2014 10:44	1/14/2014 11:39	0.1003	0.0231	0.0387	0.0618	0.0696
SEK430	C	1/7/2014 10:45	1/14/2014 9:37	1.1199	10.7371	3.5404	0.6793	0.4946
CNT169	C	1/7/2014 12:57	1/14/2014 13:17	0.1601	0.0397	0.0658	0.0689	0.0395
GTH161	C	1/7/2014 15:20	1/14/2014 13:22	0.192	0.0464	0.0735	0.1174	0.057
JOT403	C	1/14/2014 8:52	1/21/2014 8:45	0.4241	0.0758	0.1748	0.3788	0.1246
CHA467	C	1/14/2014 8:56	1/21/2014 8:35	0.3245	0.0522	0.1328	0.2802	0.3555
SEK430	C	1/14/2014 9:43	1/21/2014 10:08	0.3471	0.385	0.2513	0.8972	0.1721
SAN189	C	1/14/2014 9:55	1/21/2014 10:07	0.4338	0.3393	0.2065	0.1921	0.3371
ROM406	C	1/14/2014 11:40	1/21/2014 10:05	0.1252	0.0346	0.0551	0.1053	0.1281
YOS404	C	1/14/2014 12:35	1/21/2014 10:35	0.2246	0.0544	0.1085	0.1596	0.0784
GTH161	C	1/14/2014 13:32	1/21/2014 15:55	0.1936	0.031	0.0848	0.1186	0.0844
CNT169	C	1/14/2014 14:00	1/21/2014 13:30	0.2104	0.0453	0.0866	0.1502	0.1669
JOT403	C	1/21/2014 8:49	1/28/2014 10:53	0.3519	0.261	0.1523	1.1646	0.2461
CHA467	C	1/21/2014 9:30	1/28/2014 8:40	0.6725	0.7131	0.2254	0.311	0.5439
SAN189	C	1/21/2014 10:12	1/28/2014 8:59	0.5626	0.5296	0.2878	0.1686	0.2846
SEK430	C	1/21/2014 10:14	1/28/2014 9:08	0.808	3.2148	1.1305	1.7238	0.5145
YOS404	C	1/21/2014 10:40	1/28/2014 11:05	0.2609	0.1345	0.1073	0.3756	0.1719
ROM406	C	1/21/2014 10:55	1/28/2014 11:09	0.163	0.1244	0.0828	0.1757	0.1146
CNT169	C	1/21/2014 13:55	1/28/2014 12:15	0.1548	0.0503	0.0753	0.1306	0.1756
GTH161	C	1/21/2014 16:09	1/28/2014 9:02	0.097	0.044	0.0529	0.1499	0.1071
SAN189	C	1/28/2014 8:59	2/4/2014 9:00					
CHA467	C	1/28/2014 9:00	2/4/2014 8:20	0.3847	0.3838	0.1361	0.2826	0.4032
GTH161	C	1/28/2014 9:11	2/4/2014 12:40	0.135	0.035	0.0598	0.0965	0.0717
SEK430	C	1/28/2014 9:14	2/4/2014 9:29	0.7448	4.9014	1.4676	0.6404	0.4107
JOT403	C	1/28/2014 11:02	2/4/2014 8:48	0.3062	0.9919	0.2457	1.1296	0.2126
ROM406	C	1/28/2014 11:18	2/4/2014 11:01	0.2839	0.4299	0.2337	0.1427	0.0741
YOS404	C	1/28/2014 12:10	2/4/2014 11:05	0.203	0.1434	0.0732	0.2474	0.1138
CNT169	C	1/28/2014 12:55	2/4/2014 11:52	0.2259	0.1045	0.1132	0.1007	0.0832
CHA467	C	2/4/2014 8:50	2/11/2014 8:43	0.3317	0.2938	0.1391	0.3853	0.5073
JOT403	C	2/4/2014 8:52	2/11/2014 15:38	0.3865	0.9998	0.1845	2.1391	0.1522

SAN189	C	2/4/2014 9:00	2/11/2014 8:48					
SEK430	C	2/4/2014 10:15	2/11/2014 8:03	0.3479	1.7715	0.5882	0.7224	0.1539
YOS404	C	2/4/2014 11:10	2/11/2014 10:22	0.0662	0.0712	0.06	0.2573	0.053
ROM406	C	2/4/2014 11:43	2/11/2014 9:37	0.3619	0.2449	0.2118	0.3276	0.1045
CNT169	C	2/4/2014 11:56	2/11/2014 12:21	0.2036	0.0549	0.0855	0.1231	0.0869
GTH161	C	2/4/2014 12:52	2/11/2014 11:04	0.0907	0.0343	0.0787	0.1353	0.0461
SEK430	C	2/11/2014 8:10	2/18/2014 8:54	1.0833	4.1876	1.6458	1.8879	0.3393
CHA467	C	2/11/2014 8:51	2/18/2014 8:15	0.2396	0.0698	0.0979	0.3467	0.3149
ROM406	C	2/11/2014 9:45	2/18/2014 11:55	0.2558	0.0488	0.0953	0.219	0.1184
YOS404	C	2/11/2014 10:30	2/18/2014 10:30	0.2498	0.0824	0.0979	0.1889	0.0932
GTH161	C	2/11/2014 11:14	2/18/2014 12:29	0.2935	0.0701	0.103	0.2266	0.1114
CNT169	C	2/11/2014 12:46	2/18/2014 12:34	0.2539	0.0567	0.0975	0.1715	0.1254
JOT403	C	2/11/2014 15:44	2/18/2014 8:49	0.2952	0.2247	0.117	2.1121	0.2047
CHA467	C	2/18/2014 8:45	2/25/2014 8:45	0.7283	0.2137	0.2763	0.4318	0.641
JOT403	C	2/18/2014 8:53	2/25/2014 14:02	0.8196	0.9734	0.4079	2.6724	0.5738
SEK430	C	2/18/2014 9:04	2/25/2014 8:54	1.0595	4.0038	1.4549	1.4944	0.4412
SAN189	C	2/18/2014 10:05	2/25/2014 9:22	0.8819	0.8248	0.5398	0.1447	0.3087
YOS404	C	2/18/2014 11:10	2/25/2014 10:50	0.3903	0.2215	0.199	0.3766	0.1259
ROM406	C	2/18/2014 12:35	2/25/2014 11:48	0.2522	0.0613	0.1092	0.1635	0.14
GTH161	C	2/18/2014 12:44	2/25/2014 8:05	0.2267	0.0606	0.0969	0.1292	0.1235
CNT169	C	2/18/2014 12:56	2/25/2014 11:56	0.1987	0.0837	0.0937	0.1071	0.0841
GTH161	C	2/25/2014 8:12	3/4/2014 14:45	0.1399	0.0545	0.0608	0.1241	0.0906
SEK430	C	2/25/2014 9:00	3/4/2014 9:18	0.3604	0.4908	0.1414	0.6578	0.1461
CHA467	C	2/25/2014 9:10	3/4/2014 8:17	0.4739	0.2599	0.1736	0.2809	0.3641
SAN189	C	2/25/2014 9:22	3/4/2014 8:56	1.065	1.4433	0.671	0.1487	0.5632
YOS404	C	2/25/2014 10:55	3/4/2014 9:10	0.1685	0.0885	0.0317	0.4072	0.1263
ROM406	C	2/25/2014 12:09	3/4/2014 10:27	0.2925	0.0702	0.1238	0.2948	0.0874
CNT169	C	2/25/2014 12:24	3/4/2014 12:27	0.1778	0.107	0.0948	0.126	0.0587
JOT403	C	2/25/2014 14:06	3/4/2014 8:20	0.3276	0.6944	0.1416	0.6747	0.1883
JOT403	C	3/4/2014 8:22	3/11/2014 14:16	0.4777	0.4561	0.1719	1.5452	0.1689
CHA467	C	3/4/2014 8:52	3/11/2014 8:26	0.5883	0.2696	0.2395	0.6305	0.5425
SAN189	C	3/4/2014 9:11	3/11/2014 8:28	1.8245	4.8739	1.9578	0.6559	0.4349
YOS404	C	3/4/2014 9:20	3/11/2014 9:00	0.3284	0.2074	0.1047	0.1463	0.0844
SEK430	C	3/4/2014 10:09	3/11/2014 8:28	0.8479	1.0415	0.3492	1.4994	0.235
ROM406	C	3/4/2014 10:35	3/11/2014 12:30	0.261	0.1045	0.0937	0.1493	0.0866
CNT169	C	3/4/2014 12:33	3/11/2014 10:43	0.2471	0.092	0.0879	0.1479	0.1021
GTH161	C	3/4/2014 15:00	3/11/2014 10:24	0.2515	0.1018	0.0931	0.1216	0.0841
SAN189	C	3/11/2014 8:28	3/18/2014 9:00	0.6276	0.7394	0.3693	0.436	0.3784
CHA467	C	3/11/2014 8:42	3/18/2014 8:22	0.6527	0.5687	0.2223	0.105	0.2005
SEK430	C	3/11/2014 8:44	3/18/2014 9:00	0.702	0.4794	0.2748	1.128	0.3326
YOS404	C	3/11/2014 9:10	3/18/2014 13:15	0.5663	0.2455	0.1737	0.2687	0.1785
GTH161	C	3/11/2014 10:30	3/18/2014 10:29	0.3509	0.1667	0.0964	0.1445	0.1501
CNT169	C	3/11/2014 10:43	3/18/2014 11:30	0.2384	0.0778	0.089	0.1166	0.1315
ROM406	C	3/11/2014 12:49	3/18/2014 9:53	0.2754	0.1074	0.1003	0.1567	0.1284
JOT403	C	3/11/2014 14:21	3/18/2014 7:17	0.7384	0.4482	0.2649	0.753	0.2323
JOT403	C	3/18/2014 7:22	3/25/2014 15:17	0.6401	0.8372	0.2325	1.3271	0.2325
CHA467	C	3/18/2014 8:45	3/25/2014 8:22	0.5833	0.4432	0.1803	0.3196	0.3067

SAN189	C	3/18/2014 9:00	3/25/2014 9:16	1.2912	1.3844	0.8383	0.3005	0.2183
SEK430	C	3/18/2014 9:10	3/25/2014 8:21	0.8953	1.2894	0.411	1.74	0.6876
ROM406	C	3/18/2014 9:59	3/25/2014 7:35	0.6413	0.4916	0.3148	0.2442	0.1713
GTH161	C	3/18/2014 10:47	3/25/2014 14:12	0.5416	0.1384	0.2083	0.184	0.1688
CNT169	C	3/18/2014 11:54	3/25/2014 10:51	0.6479	0.3105	0.2782	0.2019	0.238
ROM406	C	3/25/2014 8:24	4/1/2014 11:06	0.5162	0.1714	0.2	0.2512	0.132
SEK430	C	3/25/2014 8:29	4/1/2014 7:06	1.0894	1.0866	0.6859	0.459	0.5763
CHA467	C	3/25/2014 8:40	4/1/2014 8:30	0.6379	0.5365	0.2294	0.2775	0.3043
SAN189	C	3/25/2014 9:38	4/1/2014 7:09	1.3515	2.0822	0.9278	0.43	0.3588
CNT169	C	3/25/2014 10:55	4/1/2014 12:20	0.3917	0.1266	0.1565	0.2006	0.1268
YOS404	C	3/25/2014 13:10	4/1/2014 11:35	0.5312	0.2559	0.145	0.1789	0.0921
GTH161	C	3/25/2014 14:25	4/1/2014 7:48	0.4109	0.1363	0.1524	0.1262	0.1258
JOT403	C	3/25/2014 15:37	4/1/2014 8:16	0.973	1.4484	0.3212	1.0979	0.2516
SAN189	C	4/1/2014 7:09	4/8/2014 7:33	1.3975	1.8273	0.9345	0.4364	0.2208
SEK430	C	4/1/2014 7:56	4/8/2014 7:38	0.7851	0.2934	0.337	0.9094	0.2242
GTH161	C	4/1/2014 8:09	4/8/2014 12:19	0.662	0.2498	0.2421	0.0909	0.1177
JOT403	C	4/1/2014 8:19	4/8/2014 6:55	0.6953	0.5534	0.2504	0.8894	0.2241
CHA467	C	4/1/2014 8:40	4/8/2014 13:36	0.6526	0.3619	0.2429	0.2072	0.2802
YOS404	C	4/1/2014 11:40	4/8/2014 13:15	0.5948	0.1238	0.2219	0.3387	0.1482
ROM406	C	4/1/2014 11:52	4/8/2014 8:35	0.6582	0.1612	0.2582	0.2003	0.128
CNT169	C	4/1/2014 12:36	4/8/2014 11:20	0.625	0.1695	0.2551	0.1448	0.1166
JOT403	C	4/8/2014 7:04	4/15/2014 7:13	0.8692	0.5332	0.3056	1.5023	0.2309
SAN189	C	4/8/2014 7:33	4/15/2014 8:05	1.1007	0.7883	0.56	0.2984	0.4357
SEK430	C	4/8/2014 7:44	4/15/2014 8:00	2.1566	1.1363	0.9	0.6065	1.2267
ROM406	C	4/8/2014 8:47	4/15/2014 8:49	0.6435	0.1696	0.24	0.3654	0.1363
CNT169	C	4/8/2014 11:36	4/15/2014 11:06	0.6106	0.1917	0.2237	0.2387	0.1858
GTH161	C	4/8/2014 12:24	4/15/2014 10:23	0.4764	0.1219	0.1667	0.2318	0.1354
YOS404	C	4/8/2014 13:20	4/15/2014 10:00	1.1296	0.4856	0.4098	0.5783	0.4631
CHA467	C	4/8/2014 13:55	4/15/2014 8:30	0.6916	0.234	0.2493	0.3997	0.3415
JOT403	C	4/15/2014 7:14	4/22/2014 14:03	1.7577	1.7236	0.5263	2.5276	0.618
SEK430	C	4/15/2014 8:08	4/22/2014 7:54	2.2956	1.3041	0.9057	1.7265	1.6651
CHA467	C	4/15/2014 8:45	4/22/2014 8:22	0.8677	0.4015	0.2828	0.4531	0.3944
SAN189	C	4/15/2014 8:45	4/22/2014 8:05	1.6888	1.2577	0.8551	1.4182	0.4346
ROM406	C	4/15/2014 9:50	4/22/2014 13:34	0.9836	0.3769	0.3549	0.4861	0.1938
YOS404	C	4/15/2014 10:10	4/22/2014 11:25	1.5181	0.5447	0.4537	0.4832	0.4429
GTH161	C	4/15/2014 10:35	4/22/2014 10:18	1.014	0.3165	0.3391	0.1646	0.1005
CNT169	C	4/15/2014 11:36	4/22/2014 11:23	1.1476	0.4195	0.4095	0.2341	0.1976
SEK430	C	4/22/2014 8:00	4/29/2014 7:50	0.9183	1.0676	0.4207	0.7257	0.4381
CHA467	C	4/22/2014 8:37	4/29/2014 8:14	0.8663	0.639	0.244	0.2808	0.4192
SAN189	C	4/22/2014 8:55	4/29/2014 6:35	1.0825	1.4099	0.4239	0.8997	0.5399
GTH161	C	4/22/2014 10:25	4/29/2014 14:40	0.5075	0.2135	0.1624	0.1182	0.111
CNT169	C	4/22/2014 11:27	4/29/2014 11:32	0.3552	0.1756	0.1172	0.1194	0.1346
YOS404	C	4/22/2014 11:30	4/29/2014 13:05	0.54	0.1474	0.1324	0.2468	0.1361
ROM406	C	4/22/2014 13:41	4/29/2014 11:34					
JOT403	C	4/22/2014 14:10	4/29/2014 9:34	0.904	1.4587	0.2656	1.0419	0.2221
SAN189	C	4/29/2014 6:55	5/6/2014 8:08	0.753	0.9966	0.4499	0.6855	0.2923
SEK430	C	4/29/2014 8:10	5/6/2014 7:50	1.7047	1.1176	0.6488	1.6347	1.3465

CHA467	C	4/29/2014 8:23	5/6/2014 8:16	0.8047	0.6738	0.3363	0.1026	0.2688
JOT403	C	4/29/2014 9:37	5/6/2014 7:10	0.7778	0.3729	0.2458	0.8432	0.221
CNT169	C	4/29/2014 11:52	5/6/2014 12:40	0.4697	0.14	0.1874	0.3114	0.1806
ROM406	C	4/29/2014 12:27	5/6/2014 11:20	0.4446	0.1238	0.1849	0.305	0.1559
YOS404	C	4/29/2014 13:10	5/6/2014 13:15	0.8589	0.4668	0.193	0.4518	0.3836
GTH161	C	4/29/2014 14:52	5/6/2014 9:18	0.4337	0.1236	0.1705	0.2344	0.1325
JOT403	C	5/6/2014 7:20	5/13/2014 7:03	1.0083	1.7387	0.287	0.956	0.1928
SAN189	C	5/6/2014 8:08	5/13/2014 8:04	1.0967	1.6274	0.493	1.1808	0.4539
CHA467	C	5/6/2014 8:32	5/13/2014 8:25	0.7536	0.5778	0.2353	0.2244	0.3515
SEK430	C	5/6/2014 8:33	5/13/2014 6:31	1.0071	0.8117	0.3654	0.7882	0.5311
GTH161	C	5/6/2014 9:20	5/13/2014 15:24	0.473	0.312	0.1133	0.0843	0.0812
ROM406	C	5/6/2014 11:27	5/13/2014 8:42	0.5019	0.3627	0.1288	0.2316	0.0883
CNT169	C	5/6/2014 12:50	5/13/2014 13:10	0.4684	0.2735	0.1704	0.0791	0.0984
YOS404	C	5/6/2014 13:20	5/13/2014 12:40	0.5913	0.4921	0.2031	0.258	0.2569
SEK430	C	5/13/2014 6:40	5/20/2014 8:30	1.313	0.6832	0.4782	1.3078	1.4738
JOT403	C	5/13/2014 7:06	5/20/2014 14:06	0.9604	0.783	0.2929	1.2088	0.3741
CHA467	C	5/13/2014 8:35	5/20/2014 8:25	0.8829	0.349	0.2774	0.4388	0.3779
SAN189	C	5/13/2014 8:49	5/20/2014 8:15	1.4281	0.9056	0.5874	1.0653	0.2675
ROM406	C	5/13/2014 9:24	5/20/2014 12:17	0.7906	0.4432	0.2812	0.4252	0.1413
YOS404	C	5/13/2014 12:45	5/20/2014 8:45	0.7304	0.3277	0.1479	0.4079	0.3865
CNT169	C	5/13/2014 13:40	5/20/2014 10:26	0.648	0.25	0.1318	0.3146	0.1902
GTH161	C	5/13/2014 15:36	5/20/2014 12:42	0.6587	0.2865	0.2198	0.2568	0.1183
CHA467	C	5/20/2014 8:40	5/27/2014 8:27	0.8153	0.4743	0.2959	0.3853	0.2846
SEK430	C	5/20/2014 8:41	5/27/2014 7:52	1.377	0.6291	0.4975	1.1858	0.9934
SAN189	C	5/20/2014 8:45	5/27/2014 8:32	1.2293	1.9147	0.5775	1.7134	0.5582
YOS404	C	5/20/2014 8:50	5/27/2014 13:58	0.6579	0.3328	0.2335	0.4187	0.2207
CNT169	C	5/20/2014 11:04	5/27/2014 10:13	0.623	0.2914	0.1754	0.4614	0.1049
ROM406	C	5/20/2014 12:22	5/28/2014 9:24	0.7426	0.2728	0.2506	0.9219	0.0786
GTH161	C	5/20/2014 12:48	5/27/2014 5:41	0.389	0.1243	0.1131	0.1608	0.0803
JOT403	C	5/20/2014 14:13	5/27/2014 7:08	1.1983	0.9666	0.4266	1.9455	0.434
GTH161	C	5/27/2014 5:59	6/3/2014 12:52	0.5072	0.1415	0.1891	0.202	0.1034
JOT403	C	5/27/2014 7:12	6/3/2014 10:59	1.0672	0.6193	0.344	1.6688	0.2243
SEK430	C	5/27/2014 8:19	6/3/2014 8:50	1.635	1.0684	0.6483	1.8485	1.9989
CHA467	C	5/27/2014 8:42	6/3/2014 8:30	0.8441	0.2361	0.3157	0.7349	0.4414
SAN189	C	5/27/2014 9:36	6/3/2014 7:47	1.4086	1.1279	0.5533	2.0377	0.4117
CNT169	C	5/27/2014 10:19	6/3/2014 14:11	0.4923	0.1926	0.1848	0.3096	0.1331
YOS404	C	5/27/2014 13:59	6/3/2014 12:40	0.9936	0.5859	0.3928	0.6455	0.7989
ROM406	C	5/28/2014 10:07	6/3/2014 14:30	0.6064	0.2416	0.221	0.5697	0.1137
SAN189	C	6/3/2014 8:15	6/10/2014 7:40	0.828	0.6316	0.3837	1.1766	0.2234
CHA467	C	6/3/2014 8:39	6/10/2014 8:23	0.9564	0.4619	0.3125	0.7593	0.5414
SEK430	C	6/3/2014 9:30	6/10/2014 7:42	2.2932	0.9544	0.8268	2.4941	2.5906
JOT403	C	6/3/2014 11:03	6/10/2014 8:49	1.3993	1.0811	0.4229	2.3207	0.6033
YOS404	C	6/3/2014 13:00	6/10/2014 9:30	1.2071	0.5832	0.4093	0.8955	0.8256
GTH161	C	6/3/2014 13:17	6/10/2014 13:18	0.5124	0.1965	0.1674	0.2005	0.1083
CNT169	C	6/3/2014 14:22	6/10/2014 10:52	0.5694	0.1425	0.1517	0.2931	0.1266
ROM406	C	6/3/2014 15:00	6/10/2014 13:48	0.6579	0.2611	0.1564	0.6611	0.1649
SAN189	C	6/10/2014 8:08	6/17/2014 8:00	1.2645	0.7797	0.4328	0.9509	0.2641

SEK430	C	6/10/2014 8:11	6/17/2014 8:10					
JOT403	C	6/10/2014 8:53	6/17/2014 14:02	1.1105	0.928	0.3543	1.6333	0.3222
CHA467	C	6/10/2014 9:00	6/17/2014 8:16	1.5491	0.6454	0.4901	0.6498	0.6342
YOS404	C	6/10/2014 9:55	6/17/2014 13:46	1.045	0.6284	0.3811	0.6865	0.7318
CNT169	C	6/10/2014 10:56	6/17/2014 10:25	0.5695	0.2366	0.1698	0.2725	0.16
GTH161	C	6/10/2014 13:29	6/17/2014 10:09	0.6548	0.3192	0.2284	0.229	0.1311
ROM406	C	6/10/2014 14:25	6/17/2014 9:58	0.7039	0.305	0.2407	0.4684	0.1395
CHA467	C	6/17/2014 8:35	6/24/2014 10:05					
SAN189	C	6/17/2014 8:41	6/24/2014 8:10	1.2174	0.6715	0.3485	0.7734	0.4185
SEK430	C	6/17/2014 9:16	6/24/2014 7:55	1.5365	1.0694	0.5499	1.8916	2.1409
ROM406	C	6/17/2014 10:08	6/24/2014 11:36	0.5225	0.4007	0.2282	0.3081	0.1622
CNT169	C	6/17/2014 10:25	6/24/2014 10:27	0.3798	0.2148	0.1439	0.2244	0.1288
GTH161	C	6/17/2014 10:37	6/24/2014 12:05	0.5115	0.3023	0.1954	0.1276	0.1052
YOS404	C	6/17/2014 13:50	6/24/2014 9:25	0.6618	0.4452	0.2279	0.5663	0.6836
JOT403	C	6/17/2014 14:12	6/24/2014 13:36	0.9501	1.1327	0.2998	1.7998	0.3527
SEK430	C	6/24/2014 8:12	7/1/2014 13:12	1.3451	0.6137	0.5396	2.1227	1.893
SAN189	C	6/24/2014 8:35	7/1/2014 7:52	0.7129	0.4328	0.291	0.6722	0.2485
YOS404	C	6/24/2014 10:10	7/1/2014 10:09	0.5641	0.2109	0.2182	0.613	0.7205
CHA467	C	6/24/2014 10:15	7/1/2014 8:45	1.0513	0.664	0.3267	0.5576	0.8155
CNT169	C	6/24/2014 10:54	7/1/2014 12:39	0.4136	0.1571	0.1678	0.3167	0.2008
ROM406	C	6/24/2014 12:14	7/1/2014 9:42	0.4992	0.226	0.2075	0.5077	0.1672
GTH161	C	6/24/2014 12:15	7/1/2014 12:34	0.3952	0.2032	0.1457	0.2258	0.1094
JOT403	C	6/24/2014 13:38	7/1/2014 7:05	1.4221	1.57	0.3879	3.165	0.6539
JOT403	C	7/1/2014 7:13	7/8/2014 7:30	1.5932	1.3458	0.4264	2.652	0.7001
SAN189	C	7/1/2014 8:08	7/8/2014 7:44	0.9216	0.5075	0.3273	0.657	0.336
CHA467	C	7/1/2014 9:10	7/8/2014 8:50	0.9358	0.7034	0.2988	0.5831	0.2105
ROM406	C	7/1/2014 9:50	7/8/2014 12:25	0.7079	0.2225	0.1952	0.6971	0.1687
YOS404	C	7/1/2014 10:25	7/8/2014 10:40	0.9347	0.3572	0.3436	1.0466	0.8851
CNT169	C	7/1/2014 12:46	7/8/2014 13:27	0.5346	0.1202	0.1375	0.4423	0.1591
GTH161	C	7/1/2014 13:13	7/8/2014 7:50	0.4821	0.1689	0.1844	0.1958	0.0898
SEK430	C	7/1/2014 13:21	7/8/2014 7:52	1.8588	0.7249	0.6965	2.6311	2.0973
JOT403	C	7/8/2014 7:32	7/15/2014 14:11	1.4266	1.2829	0.3584	2.0261	0.5465
GTH161	C	7/8/2014 8:05	7/15/2014 9:13	0.373	0.0745	0.1551	0.2248	0.0878
SAN189	C	7/8/2014 8:12	7/15/2014 8:02	0.8091	0.2435	0.3489	0.6776	0.2454
SEK430	C	7/8/2014 8:40	7/15/2014 8:32	1.6964	0.6506	0.7056	2.9165	1.7234
CHA467	C	7/8/2014 9:00	7/15/2014 9:05	1.361	0.2467	0.4466	1.2833	0.2294
YOS404	C	7/8/2014 10:45	7/15/2014 11:17	1.0062	0.2666	0.4113	1.1525	0.9035
ROM406	C	7/8/2014 13:05	7/15/2014 11:26	0.5544	0.1494	0.2487	0.6143	0.1155
CNT169	C	7/8/2014 13:43	7/15/2014 7:39	0.3959	0.0677	0.1556	0.4065	0.1122
CNT169	C	7/15/2014 7:49	7/22/2014 13:32	0.4168	0.1163	0.2209	0.4268	0.1496
SEK430	C	7/15/2014 8:42	7/22/2014 8:05	2.3638	1.3995	0.8651	3.2835	1.7208
SAN189	C	7/15/2014 9:01	7/22/2014 8:18	1.4448	0.6239	0.5565	0.9149	0.3327
CHA467	C	7/15/2014 9:25	7/22/2014 8:45	1.237	0.4436	0.4175	1.174	0.7139
GTH161	C	7/15/2014 9:32	7/22/2014 8:34	0.4569	0.0885	0.1858	0.2617	0.0829
YOS404	C	7/15/2014 11:24	7/22/2014 13:06	1.229	0.3453	0.4612	1.1872	0.5312
ROM406	C	7/15/2014 11:35	7/22/2014 11:15	0.5414	0.1164	0.2457	0.4986	0.1432
JOT403	C	7/15/2014 14:19	7/22/2014 6:30	0.9223	0.7621	0.2949	2.2586	0.4137

JOT403	C	7/22/2014 6:35	7/29/2014 9:10	1.1772	1.2708	0.3495	2.2869	0.5166
GTH161	C	7/22/2014 8:43	7/29/2014 12:21	0.5576	0.1201	0.1806	0.2296	0.0535
SAN189	C	7/22/2014 8:48	7/29/2014 7:55	1.0363	0.704	0.3208	0.5475	0.3051
SEK430	C	7/22/2014 8:53	7/29/2014 8:15	1.6434	0.7139	0.6574	2.6813	1.4346
CHA467	C	7/22/2014 8:55	7/29/2014 9:02	1.5813	0.5112	0.4695	0.9433	0.3524
ROM406	C	7/22/2014 11:15	7/29/2014 8:45	0.7741	0.2439	0.2969	0.5423	0.1028
YOS404	C	7/22/2014 13:15	7/29/2014 13:26	0.9026	0.4865	0.4058	1.2258	0.6054
CNT169	C	7/22/2014 13:36	7/29/2014 10:50	0.619	0.2321	0.2704	0.5277	0.1316
SEK430	C	7/29/2014 8:22	8/5/2014 8:24	1.2638	0.4983	0.5516	2.2487	1.1065
SAN189	C	7/29/2014 8:30	8/5/2014 8:10	1.5879	1.3457	0.4202	0.6898	0.3329
ROM406	C	7/29/2014 8:53	8/5/2014 13:17	0.4119	0.0941	0.2023	0.4718	0.0932
JOT403	C	7/29/2014 9:14	8/5/2014 9:43	1.1999	0.9567	0.4033	2.1657	0.429
CHA467	C	7/29/2014 9:18	8/5/2014 8:45	0.9532	0.1611	0.3154	0.9709	0.2171
CNT169	C	7/29/2014 10:50	8/5/2014 13:45	0.3681	0.0848	0.184	0.4848	0.0627
GTH161	C	7/29/2014 12:38	8/5/2014 12:07	0.2222	0.045	0.1057	0.1519	0.0656
YOS404	C	7/29/2014 13:30	8/5/2014 14:30	0.9066	0.326	0.4179	1.2234	0.4973
SAN189	C	8/5/2014 8:35	8/12/2014 7:50	1.8131	0.2127	0.5469	0.8294	0.8919
CHA467	C	8/5/2014 8:50	8/12/2014 8:43	1.3697	0.298	0.4386	1.0193	0.293
SEK430	C	8/5/2014 9:21	8/12/2014 8:44	1.4548	0.6492	0.635	2.4973	0.9655
JOT403	C	8/5/2014 9:47	8/12/2014 7:40	1.2046	0.8894	0.4101	2.4481	0.9423
GTH161	C	8/5/2014 12:17	8/12/2014 9:10	0.4481	0.0799	0.2041	0.2929	0.0906
CNT169	C	8/5/2014 13:45	8/12/2014 9:51	0.4038	0.0867	0.2237	0.4529	0.0948
ROM406	C	8/5/2014 14:01	8/12/2014 14:18	0.5142	0.1166	0.2617	0.4951	0.1197
YOS404	C	8/5/2014 14:43	8/12/2014 12:15	0.8346	0.4231	0.4244	1.0752	0.3168
JOT403	C	8/12/2014 7:48	8/19/2014 15:34	1.1947	0.8889	0.347	1.7884	0.355
SAN189	C	8/12/2014 8:38	8/19/2014 8:04	1.2844	0.8494	0.4012	0.6991	0.2473
CHA467	C	8/12/2014 9:00	8/19/2014 9:34	0.8376	0.1885	0.2952	0.7823	0.1383
SEK430	C	8/12/2014 9:00	8/19/2014 8:11	1.2088	0.5456	0.5015	1.8038	1.1212
GTH161	C	8/12/2014 9:30	8/19/2014 8:52	0.4285	0.0954	0.1737	0.2116	0.0458
CNT169	C	8/12/2014 11:27	8/19/2014 12:21	0.4684	0.1064	0.2194	0.4313	0.1187
YOS404	C	8/12/2014 12:20	8/19/2014 14:07	0.8577	0.408	0.3866	1.0054	0.463
ROM406	C	8/12/2014 14:26	8/19/2014 14:32	0.5013	0.1235	0.2264	0.5298	0.1731
SAN189	C	8/19/2014 8:30	8/26/2014 7:51	1.1633	0.496	0.328	0.7258	0.1712
SEK430	C	8/19/2014 8:53	8/26/2014 7:23	1.4502	1.0464	0.6561	1.8572	1.0169
GTH161	C	8/19/2014 9:03	8/26/2014 8:56	0.3676	0.0677	0.1456	0.1895	0.0343
CHA467	C	8/19/2014 9:45	8/26/2014 9:47	0.845	0.2785	0.2872	0.5344	0.1945
CNT169	C	8/19/2014 12:25	8/26/2014 13:30	0.3146	0.0815	0.1507	0.3008	0.0352
YOS404	C	8/19/2014 14:15	8/26/2014 12:50	0.9757	0.6434	0.4465	0.8829	0.4834
JOT403	C	8/19/2014 15:36	8/26/2014 12:40	0.709	0.666	0.2542	1.4724	0.3428
ROM406	C	8/19/2014 15:44	8/26/2014 8:29	0.3548	0.1408	0.1809	0.3268	0.0695
SEK430	C	8/26/2014 7:35	9/2/2014 9:23	1.2116	0.7966	0.511	1.141	1.0091
SAN189	C	8/26/2014 8:11	9/2/2014 8:34	0.7469	0.2564	0.2633	0.355	0.2083
ROM406	C	8/26/2014 8:34	9/2/2014 13:15	0.3467	0.0709	0.1788	0.2467	0.0719
GTH161	C	8/26/2014 9:20	9/2/2014 15:23	0.3194	0.0945	0.1534	0.1839	0.0585
CHA467	C	8/26/2014 10:03	9/2/2014 8:27	0.7734	0.21	0.2916	0.5833	0.2335
JOT403	C	8/26/2014 12:51	9/2/2014 7:06	0.5651	0.6236	0.2028	1.9473	0.1884
YOS404	C	8/26/2014 13:00	9/2/2014 9:41	0.8161	0.4663	0.3329	0.8361	0.397

CNT169	C	8/26/2014 14:00	9/2/2014 13:45	0.2917	0.0769	0.1574	0.2613	0.098
JOT403	C	9/2/2014 7:09	9/9/2014 16:23	1.3383	1.5677	0.3113	0.9238	0.3442
CHA467	C	9/2/2014 8:35	9/9/2014 8:42	0.7151	0.1909	0.257	0.4321	0.1541
SAN189	C	9/2/2014 9:00	9/9/2014 8:01	0.7724	0.4484	0.2333	0.3119	0.1347
SEK430	C	9/2/2014 9:35	9/9/2014 7:26	1.49	1.2255	0.5327	2.0875	1.1539
YOS404	C	9/2/2014 9:48	9/9/2014 8:33	0.8892	0.9269	0.4106	0.9468	0.5186
ROM406	C	9/2/2014 13:29	9/9/2014 8:15	0.4154	0.1265	0.1376	0.3624	0.0786
CNT169	C	9/2/2014 13:54	9/9/2014 12:03	0.3849	0.1608	0.1371	0.3136	0.1005
GTH161	C	9/2/2014 15:31	9/9/2014 10:05	0.3515	0.1328	0.1235	0.1415	0.0455
SEK430	C	9/9/2014 7:48	9/16/2014 8:56	1.4967	0.7943	0.5957	1.9661	0.9432
SAN189	C	9/9/2014 8:22	9/16/2014 7:56	0.6668	0.2534	0.2964	0.2532	0.1265
ROM406	C	9/9/2014 8:27	9/16/2014 9:27	0.3309	0.0935	0.1576	0.2604	0.0903
YOS404	C	9/9/2014 8:50	9/16/2014 13:35	0.935	0.4387	0.4204	1.1259	0.3327
CHA467	C	9/9/2014 8:57	9/16/2014 8:30	0.7121	0.1939	0.2582	0.4064	0.2116
GTH161	C	9/9/2014 10:19	9/16/2014 12:04	0.3648	0.1022	0.1591	0.1477	0.0668
CNT169	C	9/9/2014 12:13	9/16/2014 10:31	0.3425	0.0891	0.1718	0.3428	0.1271
JOT403	C	9/9/2014 16:31	9/16/2014 8:40	1.0495	0.6575	0.3525	2.0677	0.3403
SAN189	C	9/16/2014 8:13	9/23/2014 8:04	1.0742	0.518	0.4041	0.502	0.2122
CHA467	C	9/16/2014 8:40	9/23/2014 13:35	0.5998	0.0598	0.2457	0.2683	0.0673
JOT403	C	9/16/2014 8:42	9/23/2014 13:42	0.8068	0.8454	0.2663	1.2719	0.6463
SEK430	C	9/16/2014 9:00	9/23/2014 8:12	1.6176	1.3196	0.6869	1.8123	1.1388
ROM406	C	9/16/2014 10:12	9/23/2014 10:04	0.4879	0.1916	0.2179	0.4302	0.1014
CNT169	C	9/16/2014 10:54	9/23/2014 10:41	0.4655	0.1726	0.2158	0.3414	0.0898
GTH161	C	9/16/2014 12:13	9/23/2014 9:00	0.4029	0.0914	0.1507	0.1466	0.0414
YOS404	C	9/16/2014 13:48	9/23/2014 12:00	0.8277	0.4424	0.4162	0.903	0.2751
SEK430	C	9/23/2014 8:25	9/30/2014 8:00	1.0554	1.3397	0.4648	1.1927	0.6141
SAN189	C	9/23/2014 8:34	9/30/2014 8:19	2.308	0.8777	0.6901	0.9135	0.204
GTH161	C	9/23/2014 9:17	9/30/2014 9:48	0.3148	0.0971	0.1245	0.1069	0.044
ROM406	C	9/23/2014 10:11	9/30/2014 10:16	0.4305	0.1007	0.1094	0.5313	0.1977
CNT169	C	9/23/2014 10:44	9/30/2014 10:36	0.4381	0.2385	0.1528	0.293	0.1006
YOS404	C	9/23/2014 12:08	9/30/2014 10:36	0.5623	0.3139	0.1635	0.8573	0.2344
JOT403	C	9/23/2014 13:52	9/30/2014 9:55	0.8759	1.0394	0.2835	1.1647	0.3762
CHA467	C	9/23/2014 13:55	9/30/2014 8:55	1.11	0.17	0.4089	0.3519	0.215
SEK430	C	9/30/2014 8:10	10/7/2014 7:50	1.0377	0.5441	0.4585	2.1173	0.7393
SAN189	C	9/30/2014 8:37	10/7/2014 8:20	0.7914	0.1587	0.3007	0.3107	0.2377
CHA467	C	9/30/2014 9:05	10/7/2014 8:54	0.6037	0.2224	0.2174	0.4566	0.35
GTH161	C	9/30/2014 9:55	10/7/2014 10:12	0.377	0.0893	0.1307	0.1134	0.1391
JOT403	C	9/30/2014 9:57	10/7/2014 12:54	0.4806	0.2896	0.1876	1.2368	0.2786
YOS404	C	9/30/2014 10:38	10/7/2014 9:50	0.5854	0.2297	0.2657	0.6551	0.3007
CNT169	C	9/30/2014 11:02	10/7/2014 17:48	0.4101	0.0899	0.1562	0.2453	0.2496
ROM406	C	9/30/2014 11:10	10/7/2014 12:10	0.4125	0.0771	0.1425	0.1982	0.1695
SAN189	C	10/7/2014 8:57	10/14/2014 8:33	0.5622	0.7818	0.2282	0.2498	0.3739
CHA467	C	10/7/2014 9:00	10/14/2014 15:25	0.6662	0.1327	0.254	0.3987	0.184
SEK430	C	10/7/2014 9:37	10/14/2014 8:36	1.2731	0.9848	0.5991	2.3491	1.0326
YOS404	C	10/7/2014 10:04	10/14/2014 7:49	0.5429	0.2811	0.2381	0.6203	0.3702
GTH161	C	10/7/2014 10:28	10/14/2014 9:21	0.2219	0.0485	0.0889	0.1131	0.0986
ROM406	C	10/7/2014 12:18	10/14/2014 10:07	0.3842	0.1233	0.1563	0.3688	0.1974

JOT403	C	10/7/2014 13:08	10/14/2014 6:54	1.076	1.0091	0.3883	1.9803	0.5117
CNT169	C	10/7/2014 17:51	10/14/2014 10:21	0.3492	0.1438	0.1503	0.2711	0.1303
JOT403	C	10/14/2014 6:57	10/21/2014 14:59	1.2049	1.1264	0.387	2.1386	0.431
YOS404	C	10/14/2014 7:58	10/21/2014 12:35	1.2512	1.7281	0.2539	0.423	0.3817
SEK430	C	10/14/2014 8:50	10/21/2014 7:51	2.3158	4.111	0.8844	0.5387	0.7142
SAN189	C	10/14/2014 9:24	10/21/2014 8:08	0.5947	0.4964	0.2674	0.3228	0.3276
GTH161	C	10/14/2014 9:50	10/21/2014 10:38	0.3601	0.0693	0.1373	0.1416	0.0751
ROM406	C	10/14/2014 10:47	10/21/2014 9:14	0.4656	0.2783	0.1864	0.4026	0.2506
CNT169	C	10/14/2014 10:59	10/21/2014 10:56	0.5681	0.3577	0.2029	0.2875	0.2915
CHA467	C	10/14/2014 15:43	10/21/2014 8:40	0.7669	0.1883	0.2865	0.3356	0.341
SEK430	C	10/21/2014 8:00	10/28/2014 7:24	0.9769	1.918	0.5165	1.1896	0.374
SAN189	C	10/21/2014 8:34	10/28/2014 8:36	0.7253	0.6663	0.2923	0.4671	0.3124
CHA467	C	10/21/2014 9:05	10/28/2014 8:55	1.0486	0.1085	0.3982	0.2934	0.3156
ROM406	C	10/21/2014 9:19	10/28/2014 10:35	0.3368	0.073	0.1345	0.1756	0.054
GTH161	C	10/21/2014 10:39	10/28/2014 8:56	0.455	0.1294	0.1765	0.1513	0.0678
CNT169	C	10/21/2014 11:01	10/28/2014 11:26	0.3385	0.0855	0.1296	0.2154	0.2004
YOS404	C	10/21/2014 12:42	10/28/2014 8:50	0.4084	0.658	0.1098	0.4429	0.2702
JOT403	C	10/21/2014 15:08	10/28/2014 7:15	1.0363	0.6449	0.3734	1.5416	0.5711
JOT403	C	10/28/2014 7:18	11/4/2014 14:24	0.4936	0.6043	0.1759	0.7376	0.3312
SEK430	C	10/28/2014 7:37	11/4/2014 8:17	0.5565	0.9997	0.2778	0.8242	0.3257
SAN189	C	10/28/2014 8:53	11/4/2014 9:10	0.602	0.6837	0.2408	0.278	0.4323
GTH161	C	10/28/2014 8:56	11/4/2014 9:12	0.3275	0.0644	0.1161	0.0772	0.3266
YOS404	C	10/28/2014 9:00	11/4/2014 10:20	0.3237	0.2799	0.0986	0.4724	0.2626
CHA467	C	10/28/2014 9:30	11/4/2014 8:51	1.356	0.4795	0.3973	0.2571	0.5713
ROM406	C	10/28/2014 11:29	11/11/2014 9:26	0.3944	0.1172	0.1469	0.235	0.1819
CNT169	C	10/28/2014 12:29	11/4/2014 17:54	0.3791	0.0998	0.1416	0.1729	0.2843
SEK430	C	11/4/2014 9:03	11/12/2014 16:32	1.2888	7.4486	2.6361	2.4365	0.3885
CHA467	C	11/4/2014 9:15	11/11/2014 8:55	0.3018	0.1444	0.1265	0.2912	0.2708
GTH161	C	11/4/2014 9:20	11/11/2014 14:46	0.2381	0.0666	0.0844	0.0814	0.2046
SAN189	C	11/4/2014 9:50	11/12/2014 9:33	0.9049	0.7463	0.4301	0.2566	0.4198
YOS404	C	11/4/2014 10:25	11/12/2014 9:30	0.3942	0.8814	0.409	0.4647	0.2173
JOT403	C	11/4/2014 14:36	11/12/2014 9:31	0.3932	0.224	0.167	1.4826	0.1899
CNT169	C	11/4/2014 17:58	11/11/2014 14:09	0.2277	0.0477	0.0913	0.1204	0.2358
CHA467	C	11/11/2014 9:14	11/18/2014 10:01	0.6227	0.3222	0.2126	0.2193	0.499
ROM406	C	11/11/2014 10:15	11/18/2014 9:08	0.5809	0.1924	0.2393	0.2816	0.4428
CNT169	C	11/11/2014 14:31	11/18/2014 15:03	0.3557	0.0233	0.1221	0.1103	0.3876
GTH161	C	11/11/2014 15:05	11/18/2014 10:38	0.302	0.0982	0.1116	0.1468	0.2529
JOT403	C	11/12/2014 9:34	11/19/2014 9:33	0.5719	0.7594	0.2555	1.6946	0.257
YOS404	C	11/12/2014 9:40	11/18/2014 11:05	0.4957	0.2347	0.1571	0.8402	0.267
SAN189	C	11/12/2014 9:59	11/18/2014 9:38	0.0419	0.0371	0.0269	0.0377	0.218
SEK430	C	11/12/2014 16:44	11/18/2014 8:56	1.034	2.0608	0.8311	1.684	0.417
ROM406	C	11/18/2014 9:16	11/25/2014 10:20	0.0959	0.0313	0.0401	0.0975	0.1781
SEK430	C	11/18/2014 9:27	11/25/2014 9:03	0.5152	1.4755	0.5591	0.724	0.3819
SAN189	C	11/18/2014 9:50	11/25/2014 8:58	2.1051	3.6122	1.3442	0.2759	0.7032
CHA467	C	11/18/2014 10:09	11/25/2014 8:54	0.4141	0.2187	0.1216	0.2109	0.523
GTH161	C	11/18/2014 10:46	11/25/2014 9:32	0.1207	0.0426	0.0501	0.0658	0.194
YOS404	C	11/18/2014 11:15	11/25/2014 10:05	0.1864	0.042	0.0682	0.1115	0.2522

CNT169	C	11/18/2014 15:07	11/25/2014 13:55	0.1081	0.0409	0.0464	0.1647	0.1721
JOT403	C	11/19/2014 9:40	11/25/2014 9:43	0.308	0.4267	0.1273	1.3759	0.3406
SEK430	C	11/25/2014 9:10	12/2/2014 8:58	0.2876	0.1704	0.1145	0.5667	0.2018
CHA467	C	11/25/2014 9:23	12/2/2014 8:30	0.2057	0.0776	0.0901	0.1943	0.3267
SAN189	C	11/25/2014 9:25	12/2/2014 9:07	0.9709	1.1323	0.6275	0.3576	0.5689
JOT403	C	11/25/2014 9:46	12/1/2014 15:03	0.2833	0.3009	0.0991	0.9952	0.2964
GTH161	C	11/25/2014 9:50	12/2/2014 14:56	0.1736	0.0888	0.0652	0.1536	0.1861
YOS404	C	11/25/2014 10:25	12/3/2014 11:15	0.1616	0.0639	0.0562	0.2186	0.1205
ROM406	C	11/25/2014 10:54	12/2/2014 10:26	0.2156	0.118	0.0963	0.2715	0.1759
CNT169	C	11/25/2014 14:16	12/2/2014 14:13	0.1672	0.1134	0.0688	0.2074	0.2323
JOT403	C	12/1/2014 15:12	12/9/2014 7:50	0.4142	0.8777	0.3638	1.0693	0.2243
CHA467	C	12/2/2014 8:40	12/9/2014 8:40	0.3545	0.1855	0.1475	0.2585	0.3545
SAN189	C	12/2/2014 9:21	12/9/2014 9:24	1.656	3.8275	1.268	0.2375	0.5716
SEK430	C	12/2/2014 9:40	12/9/2014 8:39	0.1794	0.3605	0.099	0.2662	0.1653
ROM406	C	12/2/2014 10:38	12/9/2014 10:19	0.1607	0.0366	0.069	0.1571	0.1808
CNT169	C	12/2/2014 14:21	12/9/2014 13:56	0.1926	0.0435	0.0838	0.2272	0.1772
GTH161	C	12/2/2014 15:00	12/9/2014 12:19	0.145	0.0343	0.059	0.117	0.1832
YOS404	C	12/3/2014 11:25	12/9/2014 11:03	0.1307	0.1181	0.0567	0.2155	0.2775
JOT403	C	12/9/2014 7:52	12/16/2014 7:07	0.319	0.5183	0.1788	0.8787	0.5604
SEK430	C	12/9/2014 8:48	12/16/2014 8:58	0.1908	0.101	0.0853	0.7121	0.2314
CHA467	C	12/9/2014 9:30	12/16/2014 9:10	0.8593	0.2166	0.3096	0.2702	0.5766
SAN189	C	12/9/2014 9:50	12/17/2014 11:05	2.3225	4.039	1.8255	0.0947	0.1266
ROM406	C	12/9/2014 11:13	12/16/2014 11:00	0.1738	0.0506	0.0698	0.0996	0.254
YOS404	C	12/9/2014 11:15	12/16/2014 13:00	0.1063	0.0821	0.0335	0.1594	0.1915
GTH161	C	12/9/2014 12:35	12/16/2014 15:40	0.2302	0.0628	0.0828	0.0698	0.1967
CNT169	C	12/9/2014 14:09	12/16/2014 12:06	0.2016	0.0407	0.0783	0.1192	0.26
JOT403	C	12/16/2014 7:22	12/23/2014 12:51	0.2295	0.4755	0.0924	1.4705	0.27
SEK430	C	12/16/2014 9:08	12/23/2014 9:32	0.2274	0.3867	0.1458	0.2898	0.262
CHA467	C	12/16/2014 9:30	12/23/2014 8:40	0.3101	0.1614	0.1332	0.2248	0.3487
ROM406	C	12/16/2014 11:19	12/23/2014 11:20	0.2676	0.107	0.1048	0.179	0.309
CNT169	C	12/16/2014 12:16	12/23/2014 14:20	0.1503	0.0235	0.0598	0.1474	0.142
YOS404	C	12/16/2014 13:15	12/23/2014 12:20	0.0681	0.026	0.0279	0.0595	0.1778
GTH161	C	12/16/2014 15:56	12/23/2014 18:00	0.1684	0.0308	0.0633	0.0725	0.1846
SAN189	C	12/17/2014 11:22	12/23/2014 9:17	1.4112	3.8936	1.5853	0.0575	0.1365
CHA467	C	12/23/2014 8:47	12/30/2014 8:41	0.2198	0.1292	0.0803	0.1193	0.4129
SAN189	C	12/23/2014 9:37	12/30/2014 9:33	1.0767	1.7175	0.8878	0.0695	0.3288
SEK430	C	12/23/2014 9:48	12/30/2014 9:27	0.4427	0.7866	0.3646	0.4662	0.5692
ROM406	C	12/23/2014 12:10	12/30/2014 11:54					
YOS404	C	12/23/2014 12:30	12/30/2014 13:00	0.1805	0.1885	0.1098	0.138	0.2608
JOT403	C	12/23/2014 12:55	12/30/2014 8:34	0.3242	0.4798	0.1202	0.6292	0.3541
CNT169	C	12/23/2014 14:50	12/30/2014 14:51	0.3167	0.0575	0.1301	0.1028	0.1996
GTH161	C	12/23/2014 18:16	12/30/2014 13:10	0.2099	0.0285	0.0872	0.0962	0.1521
JOT403	C	12/30/2014 8:53	1/6/2015 8:08	0.4782	0.5022	0.1813	0.7613	0.3084
CHA467	C	12/30/2014 9:03	1/6/2015 8:40	0.4914	0.2256	0.1919	0.3867	0.4532
SEK430	C	12/30/2014 9:41	1/6/2015 9:08	0.3846	0.7699	0.3367	0.9964	0.3017
SAN189	C	12/30/2014 9:50	1/6/2015 9:45	0.8135	2.1793	0.8521	0.1345	0.6792
ROM406	C	12/30/2014 12:03	1/6/2015 11:00	0.1623	0.0304	0.069	0.174	0.2053

YOS404	C	12/30/2014 13:10	1/6/2015 12:50	0.1738	0.0459	0.0647	0.0917	0.208
GTH161	C	12/30/2014 13:17	1/6/2015 11:34	0.2125	0.0405	0.081	0.2055	0.1501
CNT169	C	12/30/2014 15:00	1/6/2015 13:09	0.1328	0.0227	0.0524	0.1003	0.1086
JOT403	C	1/6/2015 8:28	1/13/2015 14:22	0.6819	1.1509	0.4046	1.0232	0.3364
CHA467	C	1/6/2015 8:50	1/13/2015 8:45	0.8826	0.4729	0.29	0.3844	0.4998
SEK430	C	1/6/2015 9:57	1/13/2015 9:01	1.4198	8.9656	3.3224	0.5964	0.1833
SAN189	C	1/6/2015 9:58	1/13/2015 9:15	0.9348	1.7734	0.7686	0.1805	0.841
ROM406	C	1/6/2015 11:03	1/13/2015 11:14	0.221	0.0949	0.1045	0.2821	0.1532
GTH161	C	1/6/2015 11:34	1/13/2015 14:12	0.1244	0.0237	0.0565	0.1148	0.1328
CNT169	C	1/6/2015 13:15	1/13/2015 13:46	0.2413	0.0286	0.0953	0.2169	0.2014
YOS404	C	1/6/2015 13:40	1/13/2015 11:15	0.2813	0.4023	0.2397	0.4774	0.2062
CHA467	C	1/13/2015 9:02	1/20/2015 8:30	0.3091	0.0609	0.1344	0.3819	0.1561
SEK430	C	1/13/2015 9:23	1/20/2015 9:17	0.7448	1.7429	0.8379	1.1654	0.1008
SAN189	C	1/13/2015 9:26	1/20/2015 8:56	0.3954	0.9861	0.396	0.2921	0.2848
YOS404	C	1/13/2015 11:25	1/20/2015 16:20	0.1701	0.0266	0.0687	0.1876	0.2635
ROM406	C	1/13/2015 11:47	1/20/2015 11:36	0.1664	0.0372	0.0684	0.2228	0.1674
CNT169	C	1/13/2015 14:10	1/20/2015 11:24	0.1427	0.0279	0.0595	0.1337	0.2609
GTH161	C	1/13/2015 14:23	1/20/2015 9:44	0.1123	0.0237	0.0478	0.1173	0.1142
JOT403	C	1/13/2015 14:28	1/20/2015 11:00	0.1925	0.0641	0.083	0.5716	0.2853
CHA467	C	1/20/2015 8:40	1/27/2015 9:10	0.2283	0.0705	0.0978	0.3078	0.3355
SAN189	C	1/20/2015 9:22	1/27/2015 9:05	0.5364	0.8534	0.4301	0.2142	0.3089
SEK430	C	1/20/2015 9:30	1/27/2015 8:47	0.3681	0.2077	0.1922	1.3826	0.277
GTH161	C	1/20/2015 9:58	1/27/2015 15:37	0.1596	0.0362	0.0646	0.2149	0.1914
JOT403	C	1/20/2015 11:02	1/27/2015 14:49	0.2475	0.1465	0.0437	0.4108	0.1984
CNT169	C	1/20/2015 11:29	1/27/2015 12:15	0.1029	0.0221	0.0428	0.1277	0.2042
ROM406	C	1/20/2015 11:46	1/27/2015 9:40	0.1267	0.0528	0.0518	0.2674	0.1851
YOS404	C	1/20/2015 16:25	1/27/2015 12:05	0.1293	0.0465	0.0511	0.1007	0.1748
SEK430	C	1/27/2015 9:06	2/3/2015 8:32	0.7331	2.2445	0.961	1.2348	0.3547
SAN189	C	1/27/2015 9:19	2/3/2015 9:04	1.2254	1.7785	0.7825	0.1906	0.5189
CHA467	C	1/27/2015 9:25	2/3/2015 8:35	0.2237	0.0875	0.0976	0.1756	0.2392
ROM406	C	1/27/2015 11:23	2/3/2015 10:47	0.331	0.286	0.187	0.3815	0.2468
CNT169	C	1/27/2015 12:24	2/3/2015 14:05	0.1923	0.0563	0.0827	0.1488	0.1563
YOS404	C	1/27/2015 12:30	2/3/2015 14:30	0.1953	0.0378	0.0828	0.2815	0.2454
JOT403	C	1/27/2015 14:56	2/3/2015 14:41	0.2856	0.1028	0.1176	0.8075	0.2179
GTH161	C	1/27/2015 15:40	2/3/2015 14:17	0.1948	0.0458	0.0763	0.131	0.17
CHA467	C	2/3/2015 8:45	2/10/2015 8:40	0.3016	0.0485	0.1142	0.2794	0.3592
SEK430	C	2/3/2015 9:15	2/10/2015 9:12	0.7905	0.2174	0.1256	0.746	0.2293
SAN189	C	2/3/2015 9:35	2/10/2015 8:59	1.2665	3.2506	1.2954	0.2944	0.4318
ROM406	C	2/3/2015 11:05	2/10/2015 11:38	0.1882	0.0516	0.0671	0.1813	0.179
GTH161	C	2/3/2015 14:17	2/10/2015 11:30	0.1916	0.0688	0.0707	0.1523	0.1873
CNT169	C	2/3/2015 14:21	2/10/2015 13:37	0.2038	0.082	0.0642	0.1336	0.1874
YOS404	C	2/3/2015 14:40	2/10/2015 15:35	0.3124	0.0613	0.0462	0.1308	0.2152
JOT403	C	2/3/2015 14:44	2/9/2015 15:29	0.4463	0.2241	0.1623	1.6245	0.2899
JOT403	C	2/9/2015 15:57	2/17/2015 15:26	0.3214	0.2618	0.1288	0.7438	0.1117
CHA467	C	2/10/2015 9:00	2/17/2015 8:25	0.8528	0.2297	0.3168	0.4257	0.1596
SAN189	C	2/10/2015 9:10	2/17/2015 8:50	1.4274	1.2952	0.7843	0.1802	0.6611
SEK430	C	2/10/2015 9:23	2/17/2015 8:50	0.5785	0.7735	0.3333	0.8755	0.1201

GTH161	C	2/10/2015 11:36	2/17/2015 11:11	0.2661	0.0621	0.1038	0.125	0.0574
ROM406	C	2/10/2015 12:13	2/17/2015 11:51	0.2315	0.062	0.0941	0.2619	0.0843
CNT169	C	2/10/2015 13:43	2/17/2015 12:28	0.1922	0.0453	0.0781	0.167	0.2743
YOS404	C	2/10/2015 15:45	2/17/2015 14:45	0.1933	0.0657	0.086	0.1423	0.2259
SEK430	C	2/17/2015 9:05	2/24/2015 8:56	1.5131	3.8201	1.6536	0.9495	0.3198
SAN189	C	2/17/2015 9:20	2/24/2015 14:57	1.6958	1.0048	0.8177	0.1952	0.5862
GTH161	C	2/17/2015 11:15	2/24/2015 11:49	0.2352	0.0783	0.0894	0.1354	0.0783
ROM406	C	2/17/2015 12:07	2/24/2015 10:38	0.3482	0.2137	0.1872	0.2238	0.1363
CNT169	C	2/17/2015 12:52	2/24/2015 14:58	0.2853	0.0772	0.1039	0.1672	0.1177
YOS404	C	2/17/2015 15:00	2/24/2015 10:30	0.6111	0.2906	0.2168	0.281	0.2553
JOT403	C	2/17/2015 15:28	2/24/2015 15:26	0.7097	0.6979	0.2661	1.8778	0.1906
SEK430	C	2/24/2015 9:13	3/3/2015 15:10	0.7053	1.4544	0.5688	0.5698	0.3401
CHA467	C	2/24/2015 9:20	3/3/2015 8:33	0.4925	0.3816	0.1426	0.1901	0.2524
YOS404	C	2/24/2015 10:45	3/3/2015 11:58	0.2884	0.3776	0.1269	0.2958	0.2171
ROM406	C	2/24/2015 11:18	3/3/2015 10:04	0.5651	1.0405	0.5088	0.3765	0.2488
GTH161	C	2/24/2015 12:01	3/3/2015 10:50	0.196	0.0451	0.078	0.1028	0.1285
SAN189	C	2/24/2015 15:06	3/3/2015 9:28	1.2144	1.7111	0.8551	0.1793	0.5277
CNT169	C	2/24/2015 15:19	3/3/2015 15:06	0.3003	0.1294	0.1443	0.1249	0.1792
JOT403	C	2/24/2015 15:35	3/3/2015 9:43	0.3335	0.7791	0.1455	0.6682	0.2802
CHA467	C	3/3/2015 8:45	3/10/2015 8:10	0.5378	0.1912	0.1845	0.3371	0.35
JOT403	C	3/3/2015 9:45	3/10/2015 13:18	0.5421	0.182	0.1652	0.7017	0.249
ROM406	C	3/3/2015 10:13	3/10/2015 10:49	0.583	0.3175	0.233	0.4276	0.3402
SAN189	C	3/3/2015 10:17	3/10/2015 8:06	0.8573	0.7431	0.4043	0.4245	0.502
GTH161	C	3/3/2015 11:09	3/10/2015 12:04	0.376	0.1467	0.1187	0.1062	0.2035
YOS404	C	3/3/2015 12:10	3/10/2015 13:10	0.3971	0.171	0.1514	0.2842	0.2466
CNT169	C	3/3/2015 15:11	3/10/2015 12:00	0.4707	0.2256	0.1836	0.237	0.302
SEK430	C	3/3/2015 15:59	3/10/2015 8:48	0.5583	0.2405	0.2471	1.0319	0.4078
CHA467	C	3/10/2015 8:15	3/17/2015 8:55	0.9905	0.3106	0.3333	0.4343	0.2998
SAN189	C	3/10/2015 8:25	3/17/2015 8:16	0.488	0.3108	0.2062	0.5333	0.6573
SEK430	C	3/10/2015 8:59	3/17/2015 9:48	0.8564	0.5591	0.3666	1.0959	0.4358
ROM406	C	3/10/2015 11:49	3/17/2015 9:45	0.2999	0.2009	0.0928	0.3895	0.1614
GTH161	C	3/10/2015 12:18	3/17/2015 10:45	0.3054	0.0991	0.1262	0.2386	0.1789
CNT169	C	3/10/2015 12:26	3/24/2015 9:38	0.3524	0.1314	0.0875	0.3213	0.1994
YOS404	C	3/10/2015 13:20	3/17/2015 13:25	0.4749	0.2365	0.2051	0.4394	0.3181
JOT403	C	3/10/2015 13:25	3/17/2015 12:15	0.613	0.2596	0.2148	1.0819	0.2554
SAN189	C	3/17/2015 9:06	3/24/2015 8:08	1.0477	2.0302	0.4812	0.6059	0.637
CHA467	C	3/17/2015 9:10	3/24/2015 8:57	0.6695	0.1574	0.2692	0.4087	0.2795
ROM406	C	3/17/2015 9:54	3/24/2015 9:54	0.4607	0.1849	0.1557	0.5054	0.2288
SEK430	C	3/17/2015 10:00	3/24/2015 7:28	1.3613	1.5008	0.636	1.8584	0.667
GTH161	C	3/17/2015 10:45	3/24/2015 11:04	0.3051	0.0956	0.1136	0.1739	0.1888
JOT403	C	3/17/2015 12:17	3/24/2015 15:15	0.7788	0.7188	0.2851	1.5145	0.4034
YOS404	C	3/17/2015 14:45	3/24/2015 14:15	0.4379	0.1972	0.118	0.5001	0.3151
SEK430	C	3/24/2015 7:54	3/31/2015 8:28	1.0304	0.8401	0.5682	1.3522	0.8825
SAN189	C	3/24/2015 8:24	3/31/2015 7:54	1.1859	0.9425	0.6525	0.7849	0.384
CHA467	C	3/24/2015 9:05	3/31/2015 8:50	0.4925	0.1686	0.1636	0.4655	0.2989
ROM406	C	3/24/2015 10:00	3/31/2015 10:20	0.2565	0.0941	0.1008	0.2273	0.2603
CNT169	C	3/24/2015 10:09	3/31/2015 11:25	0.2427	0.0979	0.0971	0.2066	0.2489

GTH161	C	3/24/2015 11:15	3/31/2015 7:11	0.23	0.0984	0.0784	0.1405	0.186
YOS404	C	3/24/2015 14:20	3/31/2015 13:30	0.3818	0.2155	0.1715	0.3433	0.3424
JOT403	C	3/24/2015 15:22	3/31/2015 9:09	0.4332	0.3637	0.1532	1.2043	0.2849
GTH161	C	3/31/2015 7:31	4/7/2015 16:58	0.6662	0.3139	0.2142	0.1686	0.1967
SAN189	C	3/31/2015 8:33	4/7/2015 12:37	1.1334	1.1014	0.684	0.4845	0.3932
SEK430	C	3/31/2015 8:50	4/7/2015 7:54	1.2406	1.3002	0.5633	0.9765	0.8711
CHA467	C	3/31/2015 9:07	4/7/2015 9:00	0.7473	0.4184	0.2558	0.3607	0.4387
JOT403	C	3/31/2015 9:11	4/7/2015 13:19	1.3442	1.0949	0.3842	1.0516	0.3742
ROM406	C	3/31/2015 10:27	4/7/2015 12:05	0.6635	0.4019	0.2306	0.2977	0.1863
CNT169	C	3/31/2015 11:32	4/7/2015 14:01	0.5916	0.285	0.1849	0.1472	0.2279
YOS404	C	3/31/2015 13:40	4/8/2015 17:00	0.9226	0.3502	0.2347	0.265	0.3416
SEK430	C	4/7/2015 8:50	4/14/2015 7:45	0.814	0.7005	0.3841	1.4331	0.6637
CHA467	C	4/7/2015 9:05	4/14/2015 8:43	0.698	0.4378	0.1946	0.2629	0.3836
ROM406	C	4/7/2015 12:15	4/14/2015 11:02					
SAN189	C	4/7/2015 12:46	4/15/2015 9:36	0.9259	0.6889	0.4812	1.1882	0.4229
JOT403	C	4/7/2015 13:27	4/14/2015 10:01	0.6917	1.0095	0.2452	1.7626	0.3949
CNT169	C	4/7/2015 14:16	4/14/2015 12:58	0.4228	0.3031	0.1306	0.1065	0.2487
GTH161	C	4/7/2015 17:11	4/14/2015 7:30	0.3687	0.2469	0.1091	0.1143	0.2116
YOS404	C	4/8/2015 17:10	4/14/2015 13:05	0.4987	0.4227	0.193	0.3449	0.4358
GTH161	C	4/14/2015 7:40	4/21/2015 9:20	0.4259	0.2233	0.1503	0.0846	0.17
SEK430	C	4/14/2015 7:58	4/21/2015 10:26	1.3429	0.7847	0.5278	1.3624	1.2473
CHA467	C	4/14/2015 8:55	4/21/2015 9:17	0.6199	0.3231	0.2207	0.3882	0.2082
JOT403	C	4/14/2015 10:07	4/21/2015 16:03	0.9635	1.0901	0.3053	1.1217	0.4404
ROM406	C	4/14/2015 11:08	4/21/2015 15:21					
CNT169	C	4/14/2015 13:03	4/21/2015 11:07	0.3664	0.1642	0.1025	0.0677	0.1487
YOS404	C	4/14/2015 13:10	4/21/2015 11:00	0.72	0.262	0.2791	0.3956	0.517
SAN189	C	4/15/2015 10:14	4/21/2015 8:05	1.4686	2.1502	0.7609	0.7191	0.4944
SAN189	C	4/21/2015 8:15	4/28/2015 8:13	1.3547	2.3513	0.8589	1.1145	0.3455
GTH161	C	4/21/2015 9:23	4/28/2015 6:48	0.5025	0.2145	0.1767	0.1663	0.0953
CHA467	C	4/21/2015 9:25	4/28/2015 8:30	0.705	0.4996	0.2235	0.2533	0.2003
SEK430	C	4/21/2015 10:34	4/27/2015 12:07	1.8331	1.5454	0.5746	0.7646	0.3202
YOS404	C	4/21/2015 11:10	4/28/2015 8:41	0.9108	0.2587	0.2045	0.7337	0.2384
CNT169	C	4/21/2015 11:43	4/28/2015 14:13	0.4225	0.2138	0.1106	0.2204	0.0998
ROM406	C	4/21/2015 15:29	4/28/2015 8:50	0.5123	0.3428	0.1681	0.2459	0.0677
JOT403	C	4/21/2015 16:13	4/28/2015 13:11	0.9879	1.1103	0.3572	1.2156	0.2195
SEK430	C	4/27/2015 15:49	5/5/2015 8:26	1.2992	0.9082	0.5154	1.3845	0.9716
GTH161	C	4/28/2015 7:05	5/5/2015 7:28	0.3449	0.1262	0.1358	0.189	0.0744
CHA467	C	4/28/2015 8:43	5/5/2015 9:10	0.6558	0.2752	0.2241	0.5725	0.2456
YOS404	C	4/28/2015 8:54	5/5/2015 7:42	0.9114	0.5473	0.3408	0.8132	0.7054
SAN189	C	4/28/2015 9:05	5/5/2015 8:01	1.1724	1.6857	0.6596	1.6335	0.6208
ROM406	C	4/28/2015 9:31	5/5/2015 8:08	0.4944	0.2281	0.2008	0.3714	0.0852
JOT403	C	4/28/2015 13:15	5/5/2015 10:11	0.8026	0.8911	0.2612	1.5671	0.3751
CNT169	C	4/28/2015 14:23	5/5/2015 15:10	0.4497	0.1892	0.141	0.3008	0.155
GTH161	C	5/5/2015 7:31	5/12/2015 7:52	0.3633	0.1351	0.1269	0.1031	0.1335
YOS404	C	5/5/2015 7:55	5/12/2015 9:45	1.1033	0.9762	0.33	0.6168	0.3973
SAN189	C	5/5/2015 8:10	5/12/2015 7:57	1.069	1.8541	0.8448	0.7342	0.2088
ROM406	C	5/5/2015 8:28	5/12/2015 10:55	0.2633	0.12	0.1292	0.4179	0.1267

CHA467	C	5/5/2015 9:20	5/12/2015 9:50	0.812	0.6477	0.2504	0.2352	0.2229
JOT403	C	5/5/2015 10:18	5/12/2015 13:48	0.9053	1.3491	0.2969	1.0787	0.2451
SEK430	C	5/5/2015 10:28	5/12/2015 8:22	2.0351	1.952	0.56	0.8244	0.9914
CNT169	C	5/5/2015 15:10	5/12/2015 12:50	0.3544	0.0636	0.1241	0.2722	0.1318
GTH161	C	5/12/2015 8:07	5/19/2015 9:48	0.3703	0.1981	0.1149	0.1279	0.1097
SAN189	C	5/12/2015 8:24	5/19/2015 7:54	0.9736	0.48	0.3662	0.9932	0.2304
SEK430	C	5/12/2015 9:20	5/19/2015 8:31	1.6598	1.5714	0.6833	0.9222	0.7045
YOS404	C	5/12/2015 9:55	5/19/2015 10:20	1.1716	0.8172	0.3855	0.4354	0.2214
CHA467	C	5/12/2015 10:07	5/19/2015 8:40	0.8858	0.437	0.2772	0.3332	0.2712
ROM406	C	5/12/2015 11:26	5/19/2015 10:35	0.3403	0.2012	0.1129	0.2024	0.1126
CNT169	C	5/12/2015 13:00	5/19/2015 11:25	0.0905	0.0384	0.0243	0.1579	0.0925
JOT403	C	5/12/2015 13:51	5/19/2015 12:50	1.2185	1.3644	0.4399	1.0972	0.2213
SAN189	C	5/19/2015 8:04	5/26/2015 7:57	0.8768	0.8203	0.4587	0.6534	
CHA467	C	5/19/2015 8:45	5/26/2015 8:31	0.7585	0.4922	0.2604	0.2819	0.332
SEK430	C	5/19/2015 9:48	5/26/2015 8:19	2.48	1.2142	0.9942	1.6979	
GTH161	C	5/19/2015 9:48	5/26/2015 8:32	0.418	0.0779	0.1089	0.1922	
YOS404	C	5/19/2015 10:25	5/26/2015 13:33	1.4852	0.5796	0.5222	0.875	
ROM406	C	5/19/2015 10:41	5/26/2015 13:57	0.2924	0.0422	0.1026	0.4087	
CNT169	C	5/19/2015 11:32	5/26/2015 14:21	0.3613	0.0757	0.1183	0.1344	
JOT403	C	5/19/2015 13:01	5/26/2015 9:00	1.0319	0.936	0.391	1.4618	
SAN189	C	5/26/2015 8:17	6/2/2015 7:51	1.022	0.5477	0.4367	0.8949	
SEK430	C	5/26/2015 8:32	6/2/2015 8:11	2.3139	0.8316	0.9408	2.4103	
GTH161	C	5/26/2015 8:32	6/2/2015 8:23	0.4038	0.1062	0.1507	0.1909	
CHA467	C	5/26/2015 8:42	6/2/2015 8:40	0.7552	0.271	0.2728	0.5166	
JOT403	C	5/26/2015 9:07	6/3/2015 12:27	1.2567	0.8069	0.4449	2.6146	
YOS404	C	5/26/2015 13:52	6/2/2015 10:26	0.3951	0.1546	0.1531	0.4255	
CNT169	C	5/26/2015 14:31	6/2/2015 12:58	0.3214	0.0797	0.1374	0.2601	
ROM406	C	5/26/2015 14:45	6/2/2015 12:22	0.3757	0.1243	0.1482	0.3264	
SAN189	C	6/2/2015 8:04	6/9/2015 7:43	1.1727	0.7811	0.4598	1.5132	
GTH161	C	6/2/2015 8:33	6/9/2015 9:03	0.4745	0.1058	0.1643	0.1919	
CHA467	C	6/2/2015 8:48	6/9/2015 8:30	1.1938	0.2889	0.3964	0.5649	
SEK430	C	6/2/2015 9:25	6/9/2015 7:53	1.3186	0.7607	0.4956	1.4148	
YOS404	C	6/2/2015 11:09	6/9/2015 10:45	0.779	0.2993	0.2884	0.6049	
ROM406	C	6/2/2015 12:30	6/9/2015 11:50	0.7161	0.1424	0.2771	0.4825	
CNT169	C	6/2/2015 13:03	6/9/2015 14:01	0.6383	0.1447	0.2289	0.3847	
JOT403	C	6/3/2015 12:37	6/9/2015 8:37	1.1457	1.0568	0.3955	1.7597	
SEK430	C	6/9/2015 8:09	6/16/2015 10:38	1.6034	0.6003	0.6122	1.6275	
SAN189	C	6/9/2015 8:20	6/16/2015 7:55	0.8588	0.4141	0.3809	1.2012	
JOT403	C	6/9/2015 8:39	6/16/2015 13:28	1.1546	0.4789	0.4093	2.1923	
CHA467	C	6/9/2015 8:46	6/16/2015 8:37	0.9063	0.2442	0.3235	0.8351	
GTH161	C	6/9/2015 9:15	6/16/2015 5:17	0.3195	0.0571	0.113	0.1533	
YOS404	C	6/9/2015 10:45	6/16/2015 14:35	0.8247	0.311	0.3272	0.8286	
ROM406	C	6/9/2015 11:57	6/16/2015 9:17	0.5671	0.3065	0.2823	0.3906	
CNT169	C	6/9/2015 14:08	6/16/2015 12:27	0.4568	0.097	0.1892	0.3096	
GTH161	C	6/16/2015 5:24	6/23/2015 9:56	0.5222	0.1166	0.2134	0.335	
SAN189	C	6/16/2015 8:06	6/23/2015 7:48	0.8522	0.573	0.3458	1.1433	
CHA467	C	6/16/2015 8:47	6/23/2015 9:00	1.1901	0.409	0.4065	0.9872	

ROM406	C	6/16/2015 9:25	6/23/2015 9:14	0.6327	0.2443	0.2737	0.6274
SEK430	C	6/16/2015 10:48	6/23/2015 9:15	1.784	0.9692	0.6727	2.4393
CNT169	C	6/16/2015 12:31	6/23/2015 13:11	0.4735	0.1667	0.211	0.4558
JOT403	C	6/16/2015 13:40	6/22/2015 10:48	1.1115	0.8227	0.3908	2.4009
YOS404	C	6/16/2015 14:52	6/23/2015 9:05	0.677	0.3094	0.259	0.6795
JOT403	C	6/22/2015 10:53	6/30/2015 11:49	1.04	0.8484	0.3326	2.2355
SAN189	C	6/23/2015 8:23	6/30/2015 8:17	1.069	0.6793	0.485	1.1201
YOS404	C	6/23/2015 9:05	6/30/2015 11:00	1.207	0.4988	0.4284	1.1551
CHA467	C	6/23/2015 9:15	6/30/2015 8:45	1.0083	0.3521	0.3266	0.8624
ROM406	C	6/23/2015 9:28	6/30/2015 9:52	0.6186	0.1798	0.2616	0.6462
SEK430	C	6/23/2015 9:30	6/30/2015 8:34	2.1244	1.0053	0.8448	2.7104
GTH161	C	6/23/2015 10:10	6/30/2015 9:13	0.4647	0.107	0.1875	0.3138
CNT169	C	6/23/2015 13:21	6/30/2015 12:01	0.4334	0.1112	0.2054	0.4338
SAN189	C	6/30/2015 8:31	7/7/2015 7:54	1.866	0.7206	0.8523	1.5671
CHA467	C	6/30/2015 8:55	7/7/2015 8:32	0.8998	0.4038	0.3092	0.9322
GTH161	C	6/30/2015 9:25	7/7/2015 9:35	0.3358	0.0763	0.1378	0.2009
SEK430	C	6/30/2015 9:38	7/7/2015 7:54	1.7047	0.5148	0.7021	2.3511
ROM406	C	6/30/2015 10:00	7/7/2015 8:27	0.429	0.098	0.1969	0.3655
YOS404	C	6/30/2015 11:00	7/7/2015 10:00	1.1453	0.2096	0.4437	1.148
JOT403	C	6/30/2015 11:54	7/7/2015 11:33				
CNT169	C	6/30/2015 12:05	7/7/2015 10:18	0.3784	0.0715	0.1574	0.2934
SEK430	C	7/7/2015 8:06	7/14/2015 7:48	1.8908	1.229	0.7102	2.1999
SAN189	C	7/7/2015 8:37	7/14/2015 7:52	1.0888	0.3738	0.4032	1.2979
CHA467	C	7/7/2015 8:40	7/14/2015 9:35	1.3818	0.507	0.4148	0.7075
ROM406	C	7/7/2015 9:10	7/14/2015 10:35	0.3515	0.0868	0.1392	0.3402
GTH161	C	7/7/2015 9:50	7/14/2015 12:15	0.2903	0.0928	0.107	0.1371
YOS404	C	7/7/2015 10:12	7/14/2015 13:35	0.9606	0.3306	0.3603	0.8588
CNT169	C	7/7/2015 10:27	7/14/2015 15:28	0.332	0.0881	0.1434	0.3287
JOT403	C	7/7/2015 11:38	7/14/2015 7:57	0.8614	1.0106	0.2716	1.7352
SAN189	C	7/14/2015 8:05	7/21/2015 7:50	0.8505	0.3015	0.3068	0.8734
JOT403	C	7/14/2015 8:07	7/21/2015 13:44	1.1986	1.0796	0.3832	0.997
SEK430	C	7/14/2015 8:56	7/21/2015 8:00	1.5303	0.6674	0.5093	2.1689
CHA467	C	7/14/2015 9:45	7/21/2015 8:35	1.3044	0.1915	0.4441	0.8895
ROM406	C	7/14/2015 10:44	7/21/2015 9:30	0.5152	0.1603	0.2068	0.349
GTH161	C	7/14/2015 12:25	7/21/2015 17:30	0.5216	0.1105	0.1662	0.1367
YOS404	C	7/14/2015 13:40	7/21/2015 9:00	1.0203	0.5156	0.3572	0.9547
CNT169	C	7/14/2015 15:33	7/21/2015 13:10	0.4445	0.1409	0.1929	0.3078
SAN189	C	7/21/2015 8:11	7/28/2015 8:37	1.5079	0.8977	0.3833	0.7336
SEK430	C	7/21/2015 8:43	7/28/2015 7:05	1.5044	0.8988	0.5594	1.9801
CHA467	C	7/21/2015 8:45	7/28/2015 9:25	0.9642	0.2699	0.3293	0.8785
YOS404	C	7/21/2015 9:10	7/28/2015 9:50	0.8455	0.44	0.3184	0.7098
ROM406	C	7/21/2015 9:35	7/28/2015 12:10	0.3922	0.1543	0.165	0.359
CNT169	C	7/21/2015 13:20	7/28/2015 14:12	0.3465	0.1124	0.1468	0.3256
JOT403	C	7/21/2015 13:47	7/28/2015 11:00	1.0475	0.6032	0.3793	2.7114
GTH161	C	7/21/2015 17:40	7/28/2015 9:59	0.4141	0.1081	0.1463	0.1377
SAN189	C	7/28/2015 8:56	8/5/2015 8:03	0.613	0.5412	0.2418	0.5733
CHA467	C	7/28/2015 9:50	8/4/2015 9:05	0.8143	0.1619	0.2997	0.7374

YOS404	C	7/28/2015 10:00	8/4/2015 12:08	0.7889	0.5044	0.3205	1.0301
GTH161	C	7/28/2015 10:10	8/4/2015 15:19	0.3483	0.0989	0.1103	0.1752
JOT403	C	7/28/2015 11:15	8/4/2015 15:15	1.2424	1.0745	0.3947	2.0093
ROM406	C	7/28/2015 12:20	8/4/2015 8:00	0.5057	0.2472	0.2387	0.6465
CNT169	C	7/28/2015 14:28	8/4/2015 11:42	0.385	0.1661	0.192	0.4802
SEK430	C	7/30/2015 9:30	8/4/2015 9:28	1.5342	1.1708	0.6088	2.2356
CHA467	C	8/4/2015 9:13	8/10/2015 8:51	1.1561	0.3557	0.3851	0.8962
SEK430	C	8/4/2015 9:37	8/11/2015 7:16	1.9607	1.668	0.7257	2.9586
ROM406	C	8/4/2015 9:50	8/11/2015 10:51	0.4473	0.1706	0.1886	0.3569
CNT169	C	8/4/2015 12:05	8/11/2015 14:15	0.4318	0.1231	0.1916	0.3706
YOS404	C	8/4/2015 12:10	8/11/2015 13:26	0.8877	0.6719	0.3524	0.9902
GTH161	C	8/4/2015 15:19	8/11/2015 9:25	0.4247	0.1272	0.1451	0.1863
JOT403	C	8/4/2015 15:20	8/13/2015 14:06	1.3056	0.9741	0.3794	1.726
SAN189	C	8/5/2015 8:24	8/11/2015 8:12	1.4906	0.2045	0.4549	1.1503
CHA467	C	8/10/2015 9:06	8/18/2015 8:45	1.386	0.3505	0.4339	0.6614
SEK430	C	8/11/2015 8:18	8/18/2015 7:58	1.6602	1.0977	0.7244	2.4916
SAN189	C	8/11/2015 8:20	8/18/2015 8:03	1.4351	0.8429	0.5141	0.6706
GTH161	C	8/11/2015 9:30	8/18/2015 9:36	0.7316	0.1253	0.2757	0.2801
ROM406	C	8/11/2015 11:01	8/18/2015 9:38	0.7159	0.19	0.3307	0.5069
YOS404	C	8/11/2015 13:30	8/18/2015 11:10	0.8274	0.3192	0.3303	0.9867
CNT169	C	8/11/2015 14:21	8/18/2015 10:36	0.6013	0.1085	0.2674	0.4465
JOT403	C	8/13/2015 14:15	8/18/2015 13:00	1.568	0.7954	0.5525	2.3793
SEK430	C	8/18/2015 8:08	8/25/2015 7:52	2.1569	1.8397	0.9153	2.7843
SAN189	C	8/18/2015 8:40	8/25/2015 8:02	0.7237	0.2796	0.2929	0.3812
CHA467	C	8/18/2015 8:57	8/25/2015 8:59	1.4125	0.5984	0.4159	0.7292
GTH161	C	8/18/2015 9:50	8/25/2015 9:25	0.5373	0.1672	0.319	0.2987
ROM406	C	8/18/2015 9:51	8/25/2015 12:04	0.6085	0.3345	0.4238	0.728
CNT169	C	8/18/2015 10:47	8/25/2015 13:03	0.4782	0.2975	0.4088	0.3862
YOS404	C	8/18/2015 11:20	8/25/2015 10:11	0.9416	0.7158	0.4124	1.0586
JOT403	C	8/18/2015 13:03	8/25/2015 13:12	1.3182	1.3141	0.3786	2.7214
SAN189	C	8/25/2015 8:17	9/1/2015 8:07	1.3538	0.8758	0.4171	0.4848
SEK430	C	8/25/2015 8:50	9/1/2015 8:30	1.3592	1.0942	0.5229	2.2208
CHA467	C	8/25/2015 9:15	9/1/2015 8:43	0.9151	0.1367	0.3037	0.6617
GTH161	C	8/25/2015 9:30	9/1/2015 8:45	0.4236	0.0621	0.1752	0.2085
YOS404	C	8/25/2015 10:23	9/1/2015 9:05	0.6096	0.3492	0.2325	0.7695
ROM406	C	8/25/2015 12:13	9/1/2015 8:44	0.503	0.1036	0.2502	0.503
CNT169	C	8/25/2015 13:08	9/1/2015 12:02	0.4757	0.1133	0.2318	0.3819
JOT403	C	8/25/2015 13:31	9/1/2015 14:49	1.4758	0.9067	0.4284	2.3475
SAN189	C	9/1/2015 8:37	9/8/2015 7:58	1.7874	0.9126	0.2032	0.757
SEK430	C	9/1/2015 8:43	9/8/2015 8:43	1.3551	1.9992	0.5198	1.5022
CHA467	C	9/1/2015 8:53	9/8/2015 8:35	0.8997	0.0781	0.3193	0.4522
GTH161	C	9/1/2015 8:58	9/8/2015 12:15	0.4528	0.0885	0.1579	0.1449
YOS404	C	9/1/2015 9:15	9/8/2015 12:50	0.8774	1.2521	0.4034	0.824
ROM406	C	9/1/2015 9:15	9/8/2015 12:47	0.5292	0.1667	0.2007	0.2993
CNT169	C	9/1/2015 12:13	9/8/2015 12:11	0.527	0.1786	0.1988	0.2486
JOT403	C	9/1/2015 14:51	9/8/2015 13:21	1.0568	1.1567	0.3066	0.9392
SAN189	C	9/8/2015 8:10	9/15/2015 7:47	0.9244	0.5483	0.374	0.5488

CHA467	C	9/8/2015 9:00	9/15/2015 8:45	1.1963	0.1622	0.4348	0.6145
SEK430	C	9/8/2015 9:27	9/15/2015 7:59	1.6107	1.1186	0.5643	2.2563
CNT169	C	9/8/2015 12:16	9/15/2015 12:02	0.3204	0.1354	0.1582	0.3214
GTH161	C	9/8/2015 12:20	9/15/2015 13:13	0.3157	0.0938	0.1319	0.1606
ROM406	C	9/8/2015 12:57	9/15/2015 9:07	0.3695	0.1565	0.1838	0.3743
YOS404	C	9/8/2015 13:00	9/15/2015 8:53	1.1472	1.0382	0.6251	1.2521
JOT403	C	9/8/2015 13:31	9/15/2015 9:52	1.7187	1.1306	0.5208	1.1713
SAN189	C	9/15/2015 8:04	9/22/2015 8:34	1.4835	0.623	0.4239	0.5528
SEK430	C	9/15/2015 8:39	9/22/2015 8:31	1.1566	1.2492	0.4736	1.6009
CHA467	C	9/15/2015 8:55	9/22/2015 8:35	0.6932	0.1363	0.2348	0.2971
YOS404	C	9/15/2015 9:02	9/22/2015 11:51	0.6487	0.4852	0.251	0.7738
ROM406	C	9/15/2015 9:22	9/22/2015 13:39	0.3128	0.1378	0.1433	0.313
JOT403	C	9/15/2015 9:57	9/22/2015 11:48	0.757	0.7551	0.2767	1.5963
CNT169	C	9/15/2015 12:18	9/22/2015 14:32	0.2519	0.056	0.1079	0.2363
GTH161	C	9/15/2015 13:36	9/22/2015 10:00	0.3377	0.0971	0.1273	0.1533
CHA467	C	9/22/2015 8:40	9/29/2015 8:55	0.8684	0.1572	0.3401	0.4122
SAN189	C	9/22/2015 8:54	9/29/2015 8:09	2.1497	0.921	0.743	0.8793
SEK430	C	9/22/2015 9:12	9/29/2015 7:52	1.328	1.2662	0.5607	1.9351
GTH161	C	9/22/2015 10:05	9/29/2015 9:40	0.4265	0.1215	0.1761	0.1933
JOT403	C	9/22/2015 11:52	9/29/2015 13:40	1.046	0.7705	0.3339	2.1117
YOS404	C	9/22/2015 12:00	9/29/2015 9:26	0.7441	0.639	0.3297	0.9065
ROM406	C	9/22/2015 13:55	9/29/2015 9:22	0.4919	0.2428	0.2279	0.4703
CNT169	C	9/22/2015 14:45	9/29/2015 11:31	0.3932	0.1409	0.1778	0.4081
SEK430	C	9/29/2015 8:11	10/6/2015 8:23	1.339	2.7922	0.5192	1.8799
SAN189	C	9/29/2015 8:41	10/7/2015 8:44	0.6782	1.1669	0.2579	0.3044
CHA467	C	9/29/2015 9:10	10/6/2015 9:20	1.4154	0.2912	0.4856	0.5418
YOS404	C	9/29/2015 9:32	10/6/2015 8:46	0.6717	1.0906	0.2296	0.8556
GTH161	C	9/29/2015 9:50	10/6/2015 9:16	0.4461	0.1461	0.1539	0.1706
ROM406	C	9/29/2015 10:08	10/6/2015 11:46	0.6065	0.118	0.1894	0.6776
CNT169	C	9/29/2015 11:43	10/6/2015 11:53	0.4817	0.1772	0.145	0.3347
JOT403	C	9/29/2015 13:43	10/6/2015 14:00	0.5062	0.8718	0.1549	1.19
YOS404	C	10/6/2015 8:53	10/13/2015 12:33	0.7559	0.6965	0.2838	1.1722
SEK430	C	10/6/2015 8:59	10/13/2015 7:58	1.2009	1.0774	0.5069	2.9801
CHA467	C	10/6/2015 9:30	10/13/2015 8:40	1.0974	0.1349	0.4071	0.4549
GTH161	C	10/6/2015 9:33	10/13/2015 9:01	0.2816	0.0596	0.1169	0.1331
CNT169	C	10/6/2015 11:58	10/13/2015 10:24	0.2115	0.0567	0.0952	0.2118
ROM406	C	10/6/2015 12:04	10/13/2015 10:33	0.2771	0.0739	0.1284	0.3246
JOT403	C	10/6/2015 14:09	10/13/2015 13:40	0.8558	0.2008	0.2971	1.2609
SAN189	C	10/7/2015 8:58	10/13/2015 8:06	1.0798	0.4842	0.367	0.5532
SEK430	C	10/13/2015 8:19	10/20/2015 8:20	1.1645	1.941	0.78	2.1352
SAN189	C	10/13/2015 8:46	10/20/2015 8:19	0.7132	0.8212	0.2475	0.3644
CHA467	C	10/13/2015 8:55	10/20/2015 8:55	1.6167	0.2769	0.549	0.4688
GTH161	C	10/13/2015 9:34	10/20/2015 10:37	0.3146	0.1076	0.1114	0.1204
ROM406	C	10/13/2015 10:53	10/20/2015 10:25	0.3273	0.1649	0.1421	0.3834
CNT169	C	10/13/2015 10:56	10/20/2015 13:16	0.3847	0.2055	0.1521	0.2396
YOS404	C	10/13/2015 12:38	10/20/2015 8:22	0.5951	0.3629	0.2346	0.8183
JOT403	C	10/13/2015 13:43	10/20/2015 9:45	0.7943	0.5449	0.3036	1.0352

SAN189	C	10/20/2015 8:30	10/28/2015 8:40	0.8154	1.2584	0.3069	0.3014
YOS404	C	10/20/2015 8:35	10/27/2015 10:45	0.4536	0.1594	0.2059	0.6249
SEK430	C	10/20/2015 9:00	10/27/2015 8:09	0.7203	0.4326	0.3416	2.1
CHA467	C	10/20/2015 9:04	10/27/2015 8:50	0.9825	0.3262	0.347	0.2522
JOT403	C	10/20/2015 9:50	10/27/2015 8:37	0.4377	0.2505	0.1873	1.0048
ROM406	C	10/20/2015 10:33	10/27/2015 9:25	0.2749	0.0434	0.1142	0.1687
GTH161	C	10/20/2015 10:58	10/27/2015 11:26	0.2804	0.0225	0.1063	0.0948
CNT169	C	10/20/2015 13:22	10/27/2015 12:04	0.2825	0.0757	0.117	0.2124
SEK430	C	10/27/2015 8:26	11/3/2015 9:17	0.6232	0.6092	0.3222	1.3401
JOT403	C	10/27/2015 8:40	11/3/2015 15:04	0.3894	0.3798	0.1307	1.2419
CHA467	C	10/27/2015 9:18	11/3/2015 9:41	0.4358	0.1033	0.1741	0.3128
ROM406	C	10/27/2015 10:23	11/3/2015 10:52	0.2186	0.0599	0.0865	0.2123
YOS404	C	10/27/2015 10:53	11/3/2015 13:16	0.2308	0.1391	0.1028	0.3371
GTH161	C	10/27/2015 11:41	11/3/2015 10:01	0.2254	0.0455	0.0803	0.1216
CNT169	C	10/27/2015 12:15	11/3/2015 13:12	0.2002	0.0636	0.0749	0.1878
SAN189	C	10/28/2015 10:30	11/2/2015 9:18	0.4824	0.29	0.1949	0.3832
SAN189	C	11/2/2015 12:28	11/10/2015 9:15	1.6175	1.4328	1.04	1.4557
SEK430	C	11/3/2015 9:45	11/10/2015 10:19	0.3159	0.5543	0.2494	1.1283
CHA467	C	11/3/2015 9:50	11/10/2015 8:55	0.4415	0.3782	0.1434	0.198
GTH161	C	11/3/2015 10:34	11/10/2015 9:32	0.1339	0.0307	0.0548	0.1004
ROM406	C	11/3/2015 11:04	11/10/2015 11:35	0.1394	0.0318	0.065	0.1177
CNT169	C	11/3/2015 13:19	11/10/2015 12:39				
YOS404	C	11/3/2015 13:25	11/10/2015 12:17	0.1735	0.206	0.1205	0.376
JOT403	C	11/3/2015 15:13	11/10/2015 14:11	0.2969	0.3609	0.1147	0.6087
CHA467	C	11/10/2015 9:10	11/17/2015 9:20	0.5194	0.2566	0.1649	0.231
SAN189	C	11/10/2015 9:30	11/17/2015 8:54	0.7744	0.7332	0.3717	0.4599
GTH161	C	11/10/2015 9:47	11/17/2015 9:48	0.153	0.0297	0.0538	0.08
SEK430	C	11/10/2015 10:31	11/17/2015 9:56	0.264	0.3884	0.17	0.6515
ROM406	C	11/10/2015 11:50	11/17/2015 10:15	0.158	0.046	0.0711	0.195
YOS404	C	11/10/2015 12:26	11/17/2015 12:37	0.1122	0.0477	0.0389	0.2016
CNT169	C	11/10/2015 12:48	11/17/2015 13:59				
JOT403	C	11/10/2015 14:14	11/17/2015 14:54	0.317	0.2643	0.0934	0.4228
CHA467	C	11/17/2015 9:27	11/24/2015 9:05	0.3019	0.2176	0.1159	0.2193
SAN189	C	11/17/2015 9:56	11/24/2015 8:53	0.3997	0.4314	0.2232	0.2799
GTH161	C	11/17/2015 10:07	11/24/2015 9:41	0.1429	0.0306	0.0524	0.0878
SEK430	C	11/17/2015 10:39	11/24/2015 9:59	0.1861	0.2048	0.1075	0.9155
ROM406	C	11/17/2015 10:42	11/24/2015 10:22	0.1489	0.0446	0.0599	0.0837
YOS404	C	11/17/2015 12:45	11/24/2015 10:40	0.1342	0.169	0.0932	0.2217
CNT169	C	11/17/2015 14:04	11/24/2015 13:46	0.179	0.0466	0.068	0.0938
JOT403	C	11/17/2015 15:03	11/24/2015 14:17	0.1811	0.1031	0.0703	0.5116
SAN189	C	11/24/2015 9:03	12/2/2015 9:44	0.7912	1.7196	0.6927	0.1425
CHA467	C	11/24/2015 9:25	12/1/2015 9:15	0.374	0.1453	0.1392	0.1654
GTH161	C	11/24/2015 9:51	12/1/2015 9:43	0.3204	0.1822	0.1313	0.1234
SEK430	C	11/24/2015 10:34	12/1/2015 10:22	0.4846	1.3282	0.5085	0.8986
YOS404	C	11/24/2015 10:45	12/1/2015 15:06				
ROM406	C	11/24/2015 11:43	12/1/2015 10:34	0.4254	0.5642	0.3032	0.1676
CNT169	C	11/24/2015 13:55	12/1/2015 11:33	0.3145	0.1627	0.1356	0.1542

JOT403	C	11/24/2015 14:17	12/1/2015 14:10	0.3121	0.5857	0.1166	0.411
CHA467	C	12/1/2015 9:23	12/8/2015 8:41	0.2873	0.0751	0.1285	0.1896
GTH161	C	12/1/2015 10:03	12/8/2015 10:34	0.1389	0.0491	0.0531	0.1034
CNT169	C	12/1/2015 11:40	12/8/2015 11:42	0.1109	0.0364	0.0455	0.1394
ROM406	C	12/1/2015 11:52	12/8/2015 9:57				
JOT403	C	12/1/2015 14:20	12/8/2015 10:21	0.2257	0.2129	0.091	0.6739
YOS404	C	12/1/2015 15:13	12/8/2015 10:37	0.1593	0.0768	0.0627	0.3011
SAN189	C	12/2/2015 10:40	12/8/2015 9:13	0.4374	1.4324	0.5526	0.4743
SEK430	C	12/3/2015 10:52	12/8/2015 9:54	0.3584	0.4542	0.1663	0.5089
CHA467	C	12/8/2015 9:05	12/15/2015 9:20	0.3576	0.2205	0.1083	0.2165
SAN189	C	12/8/2015 9:25	12/15/2015 8:54	0.4054	0.7726	0.3069	0.101
SEK430	C	12/8/2015 10:05	12/15/2015 8:53	0.4772	1.9414	0.6573	0.5328
ROM406	C	12/8/2015 10:08	12/15/2015 11:03				
JOT403	C	12/8/2015 10:29	12/15/2015 14:25	0.2239	0.5982	0.0947	0.8899
GTH161	C	12/8/2015 10:43	12/15/2015 11:30	0.1578	0.1137	0.0497	0.1654
YOS404	C	12/8/2015 10:45	12/15/2015 12:58	0.0909	0.0413	0.0208	0.0705
CNT169	C	12/8/2015 11:59	12/15/2015 12:42	0.1169	0.084	0.0429	0.1074
SEK430	C	12/15/2015 9:04	12/22/2015 10:11	0.2148	0.619	0.2324	0.4718
CHA467	C	12/15/2015 9:26	12/22/2015 9:25	0.3055	0.261	0.105	0.1613
SAN189	C	12/15/2015 10:09	12/22/2015 9:03	0.7902	2.293	0.9403	0.1014
GTH161	C	12/15/2015 11:51	12/22/2015 10:46	0.1934	0.0289	0.0711	0.1173
ROM406	C	12/15/2015 12:19	12/22/2015 10:00				
CNT169	C	12/15/2015 12:47	12/22/2015 13:26	0.1384	0.0225	0.0538	0.1176
YOS404	C	12/15/2015 13:05	12/22/2015 11:12	0.0662	0.0266	0.0242	0.0524
JOT403	C	12/15/2015 14:34	12/22/2015 9:43	0.2726	0.8021	0.2101	0.3928
SAN189	C	12/22/2015 9:18	12/29/2015 9:14	1.1886	2.6477	1.2117	0.1171
CHA467	C	12/22/2015 9:45	12/29/2015 10:00	1.065	0.329	0.1144	0.0455
JOT403	C	12/22/2015 10:04	12/29/2015 14:21	0.3811	0.8384	0.1659	0.5105
SEK430	C	12/22/2015 10:23	12/29/2015 11:00	0.2622	1.0143	0.2766	0.166
ROM406	C	12/22/2015 10:26	12/29/2015 10:24				
GTH161	C	12/22/2015 10:57	12/29/2015 10:07	0.1216	0.0237	0.0543	0.0781
YOS404	C	12/22/2015 11:15	12/29/2015 9:54	0.0883	0.0641	0.021	0.073
CNT169	C	12/22/2015 13:42	12/29/2015 13:24				
YOS404	C	12/29/2015 10:00	1/5/2016 11:29	0.1804	0.0945	0.0782	0.1718
CHA467	C	12/29/2015 10:05	1/5/2016 9:30	0.5559	0.2814	0.2576	0.2857
GTH161	C	12/29/2015 10:25	1/5/2016 10:28	0.1502	0.0275	0.074	0.0861
SAN189	C	12/29/2015 10:42	1/5/2016 8:59	0.9601	2.1764	0.9456	0.1109
SEK430	C	12/29/2015 11:09	1/5/2016 13:23	0.2528	0.1719	0.1332	0.8747
ROM406	C	12/29/2015 11:43	1/5/2016 10:09				
CNT169	C	12/29/2015 13:29	1/5/2016 13:02	0.1213	0.0302	0.0592	0.1101
JOT403	C	12/29/2015 14:39	1/5/2016 9:39	0.5264	0.7418	0.3045	0.5408

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Exhibit AI - Support Documents

AI1 Primary PM2.5 and Secondary Precursor Emissions Inventories for 2008 and 2010

Primary $PM_{2.5}$ and Secondary Precursor Emissions Inventories for 2008 and 2010

Nogales
Non-Attainment Area
Santa Cruz County, Arizona

Arizona Department of Environmental Quality

July 26, 2013

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1 Introduction

1.1 Purpose

This document provides a $PM_{2.5}$ emission inventory for all sources within the Nogales Nonattainment Area (NA) and a detailed description of the derivation of those emissions estimates. The Arizona Department of Environmental Quality (ADEQ) has created this $PM_{2.5}$ emissions inventory to support a $PM_{2.5}$ State Implementation Plan (SIP) for the Nogales NA, located in Santa Cruz County, Arizona. Since the Nogales NA met the $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS) based on ambient monitoring data from 2009 – 2011, ADEQ selected 2010 to serve as a representative emission inventory for the 2009 – 2011 period.

1.2 Sources of $PM_{2.5}$

$PM_{2.5}$ refers to fine particulate matter of 2.5 microns or less in aerodynamic diameter. Fine particles originate mostly from combustion sources and secondary aerosol generation processes, while coarse particles (PM_{10} – $PM_{2.5}$) usually originate from mechanical activities and fugitive source categories. Typical sources of $PM_{2.5}$ include fugitive dust, open burning (including wild fires), and, to a greater extent, fuel combustion sources and mobile source exhaust.

There are two types of $PM_{2.5}$, namely primary and secondary particulates. Both the primary and secondary particles are listed in this emission inventory. Primary particles are directly emitted by various sources. Secondary particles are derived from the oxidation of primary gases such as nitrogen and sulfur oxides into nitric acid and sulfuric acid. The precursors for these aerosols (i.e. the gases from which they originate) are included in the current inventory. In the presence of ammonia, secondary aerosols often take the form of ammonium salts; i.e. ammonium sulfate and ammonium nitrate (both salts can be dry or in aqueous solution). In the absence of ammonia, secondary compounds take the acidic forms of sulfuric acid (liquid aerosol droplets) and nitric acid (atmospheric gas). In addition, organic matter (OM) can be primary or secondary particulate. As a secondary particulate, OM is derived from the oxidation of volatile organic compounds (VOCs).

To meet the PM2.5 NAAQS, ADEQ regulates primary particulate emissions and precursors to secondary particulate emissions (NO_x, SO_x VOCs, and NH_3).

1.3 Emissions Inventory Overview

Data for this emissions inventory primarily came from versions 1.5 and 2.0 of the Environmental Protection Agency's (EPA) 2008 National Emissions Inventory (NEI) for Santa Cruz County, Arizona; with the exception of the Nonpoint sector. Nonpoint sector emissions reported in this emission inventory were the same as those reported to EPA for the development of the 2008 NEI and derive from the Arizona Emission Inventory System (AEIS). Any use of data not originating from the 2008 NEI or AEIS is noted later in this document. The 2011 NEI was not used as a basis for this Nogales NA EI as the 2011 NEI had not yet been released, or was released subsequent to the development of this document. The NEI is a comprehensive and detailed estimate of air emissions of both criteria and hazardous air pollutants from all air emission sources and is based partially on emission estimates and emission model inputs provided by state, local, and tribal air agencies for sources in their respective jurisdictions, and supplemented by data developed by the EPA. More information about the 2008 NEI, including methodologies and

assumptions used in producing this emissions inventory, may be found at the following URL: http://www.epa.gov/ttn/chief/net/2008inventory.html.

The NEI estimates emissions at the county-level. To develop an inventory for the nonattainment area from the NEI, the county-level emissions estimates must be allocated to the nonattainment area. The methods used for allocating county-level emission estimates to the nonattainment area are described in Section 3 of this document.

2 The Nogales Nonattainment Area

2.1 Overview of the Area

The southern boundary of the Nogales NA and Santa Cruz County is the U.S./Mexico border. The city of Nogales, Arizona is sixty miles south of Tucson, Arizona in the south-central portion of Santa Cruz County. Nogales, Arizona is the largest city in the nonattainment area. See Figure 1 below.

The Nogales NA is located within the Sonoran Desert. This desert covers 120,000 square miles with a minimum elevation of 2,500 feet and is in the Basin and Range topographic province. This topography is characterized by north-south elongated valleys surrounded by mountain ranges. Nogales is located in such a north-south valley created by the Nogales Wash running north to the Santa Cruz River. The mean elevation in Nogales, Arizona is 3,865 feet. Mountain ranges near Nogales include the Patagonia Mountains to the east and the Tumacacori, Atascosa, and Pajarito mountains to the west. Approximately 25 miles to the north are the Santa Rita Mountains and Madera Canyon in the Coronado National Forest, where Mount Wrightson rises to an elevation of 9,432 feet. Northwest of Interstate 19 are the Cerro Colorado, Las Guijas, and Sierrita Mountain Ranges.

Major highways in the Nogales, Arizona area are Arizona State Route 82, which connects Nogales, Arizona with Patagonia, Arizona (19 miles) and Sonoita (31 miles) to the northeast, and U.S. Interstate 19 which connects Tucson, Arizona to Nogales, Arizona and continues south into México, where it becomes Federal Highway 15.

Nogales, Sonora, México lies directly south of Nogales, Arizona across the international border, and the two areas are collectively referred to as Ambos Nogales. The communities comprise the largest international border community in Arizona, with a combined population of 233,411 inhabitants in 2010.[1] The mean elevation in Nogales, Sonora is 4,265 feet (Instituto Nacional de Estadistica Geografia e Informatica, 2005).[2] At 5,380 feet, the highest elevation in Nogales, Sonora is the Cerro de los Nogales (Nogales Hill).

[1] Nogales, Arizona had 20,878 inhabitants and Nogales, Sonora, Mexico had 212,533 inhabitants. U.S. Census Bureau 2010 and Instituto Nacional de Estadistica Geografia e Informatica, (INEGI) 2010.

[2] "Statistical Municipal Workbook for Nogales, Sonora," 2005 edition, INEGI.

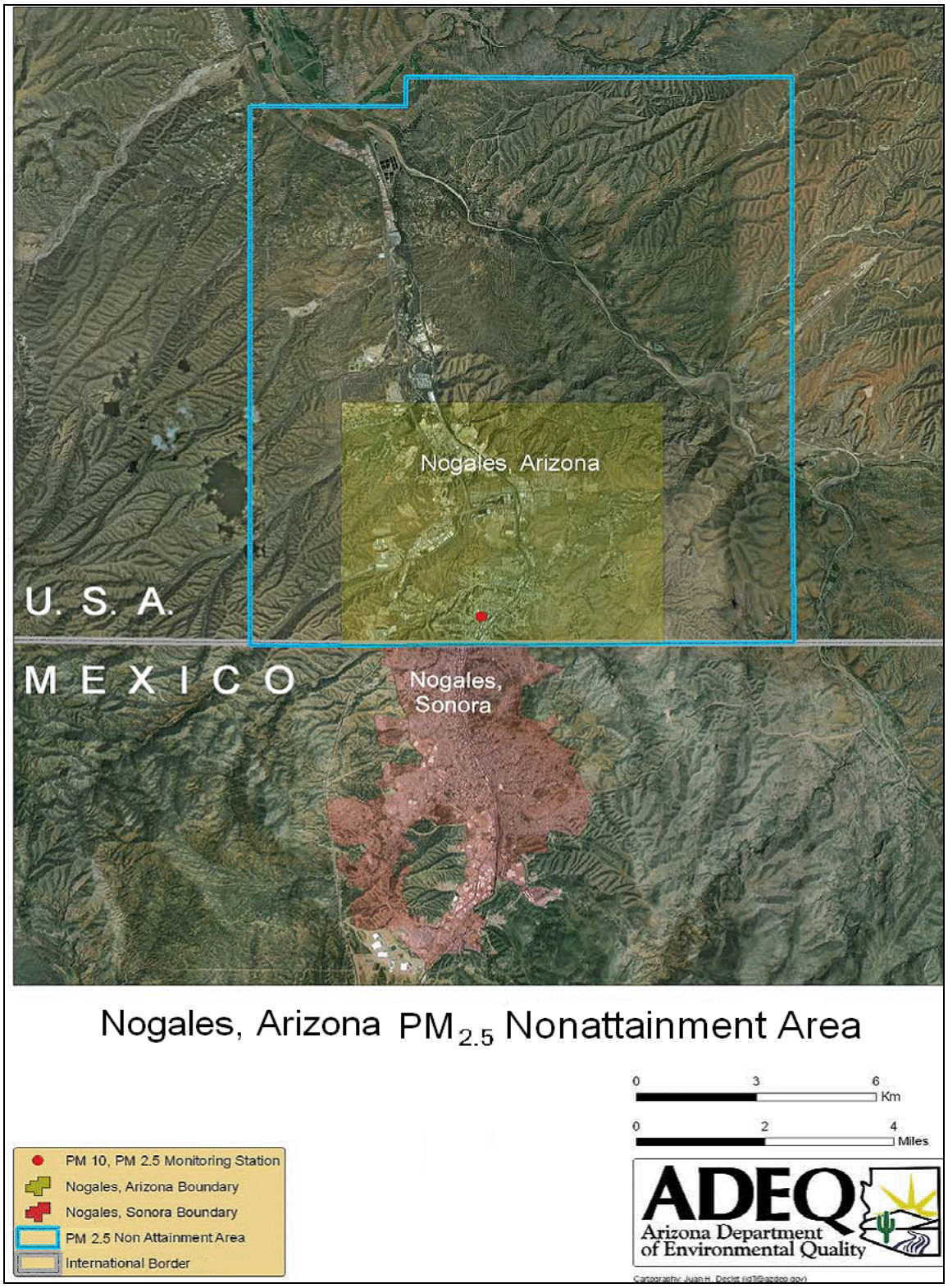

Figure 1: Map showing the boundaries of Nogales, AZ, Nogales, Sonora, and the Nogales $PM_{2.5}$ Nonattainment Area

2.2 Population and Urbanization

This section presents the population information for Santa Cruz County and the Nogales NA as determined by the Arizona Department of Administration (ADOA). There are two population centers in Santa Cruz County: the City of Nogales and Rio Rico. While the entirety of the City of Nogales lies within the Nogales NA, only a portion of Rio Rico is contained within the boundary. ADOA utilizes decennial U.S. Census population data to determine State, County, and block level population data. These data are projected intra-decennially based on economic criteria[3] and projected to future years using ADOA's population projection methodology taking into account local survival, fertility, and migration rates[4].

2.2.1 Santa Cruz County

ADOA estimated the 2010 Santa Cruz County population to be 47,539; up by 1.1 percent from 47,016 in 2008.[5]

2.2.2 Nogales Non Attainment Area

ADOA used a Geographic Information System (GIS) to estimate the population of the Nogales NA. The estimated 2010 population (as of July 1, 2010) was 31,413, up by 1.1 percent from their estimate of 31,067 for 2008. The ADOA estimated population for the city of Nogales was 21,107 and 20,880 for the years of 2008 and 2010, respectively (Appendix A).[6] This indicates that all population growth within the Nogales Nonattainment Area occurred outside of the Nogales, AZ city boundary. For Nonattainment Area population estimation, ADOA apportioned census block population information via a Geographic Information System (GIS) map (Appendix A). The populations of all census blocks that are entirely or partially within the boundary of the Nogales NA are identified and included in population estimates of the NA. Census 2010 population (as of April 1, 2010) of the blocks was summed up to obtain the Census 2010 population of Nogales NA, which was found to be 31,334[7] (Note: The 31,334 Census population given here does not match the 31,413 ADOA population estimate given earlier due to a 3 month variation in the dates of the estimations.). At the time of the development of this document, ADOA only provided population estimates at the county and incorporated place level (including unincorporated balance of county in its entirety). Population estimates are not available for census block or specific, unincorporated communities (e.g. Rio Rico) in the years between decennial censuses. Therefore a ratio of Nogales NA population to Santa Cruz County population was calculated using 2010 Census data in order to estimate a "constant share" ratio which could be applied to the county population estimates for other years in order to determine the NA population for those years. The 2010 U.S. Census figures implied that the population of Nogales NA is 66.1% of the population of Santa Cruz County. Using the "constant share" method, this percentage was applied to the estimated county population for July 1, 2008 (47,016) for a 2008 Nogales NA population estimation of 31,067 as mentioned above.

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[3] ADOA http://www.workforce.az.gov/population-estimates.aspx
[4] ADOA http://www.workforce.az.gov/pubs/demography/ArizonaPopulationProjections2012.pdf
[5] email from John Fan, Arizona Department of Administration
[6] ibid
[7] Based on ADOA apportionment of Nogales NA, City of Nogales population was 20,837; Rio Rico CDP population was 8,707; and balance of Nogales NA population was 1,790.

2.3 Land-Areas of Santa Cruz County and the Nogales NA

Santa Cruz County comprises 1,237.6 square miles of land, or approximately 791,632 acres.[8] Using GIS and 2012 digital land maps obtained from the Arizona State Land Department, Arizona Land Resource Information System, ADEQ determined that the majority of land ownership in Santa Cruz County is distributed between the U.S. Forest Service (52.8%), private land-owners (35.8%), State of Arizona Trust Land (7.8%), and the U.S. Bureau of Land Management (1.9%).

The Nogales NA covers a land area of 76.1 square miles. In contrast with the County, the majority of the land in the NA is privately owned (84.1%) with the U.S. Forest Service owning 13.0%, and State of Arizona Trust owned land comprising 2.8% of the NA. The codified boundaries of the Nogales NA can be found in 40 CFR Part 81.303. The Nogales $PM_{2.5}$ nonattainment area is delineated by the following townships and ranges within the State of Arizona which lies east of 111 degrees longitude: T23S, R13E; T23S, R14E; T24S, R13E; and, T24S, R14E.

3 Emissions Inventory Methodology

ADEQ employed a top-down methodology for the estimation of $PM_{2.5}$ and related pollutants emissions within the Nogales NA by utilizing information from EPA's NEI and ADEQ's AEIS. Point and Non-Road emissions were obtained from EPA's NEI, while non-point emissions were obtained from the AEIS. On-Road emissions were obtained by running the EPA approved Motor Vehicle Emissions Simulator (MOVES) model. 2010 was the chosen year for the Nogales NA emission inventory development to represent the 2009 – 2011 period for which ambient monitoring data showed attainment of the $PM_{2.5}$ NAAQS. At the time of the development of this document, the 2011 NEI was not yet available, therefore, emissions data from the 2008 NEI and AEIS served as a base for estimating 2010 emissions. For this reason, the 2010 Nogales NA emission inventory is primarily based on versions 1.5 and 2.0 of EPA's 2008 NEI and the AEIS. Since the NEI and AEIS produce county level emissions, these county level data were allocated to the Nogales NA by a combination of population and area scaling, as well as identifying the exact location of point sources. ADEQ examined each of the reported emission source categories for $PM_{2.5}$, NH_3, NO_x, SO_2, and VOCs. Each source category was allocated from county-level emissions to NA level emissions in accordance with one of three main source type characteristics: whether the emission source was believed to be driven by 1) human-induced activities (resulting in population allocation), 2) land-use activities (resulting in area allocation), or 3) if the activity was specific to a certain location (resulting in either no allocation or full allocation). Additionally, in order to produce a 2010 emission inventory, 2008 NEI and AEIS data were grown by population change (2008 to 2010) where human-induced activities were identified. The sections below go into detail describing the methodologies used for allocating the 2008 Santa Cruz County emission inventory to the Nogales NA and the development of the 2010 Nogales NA emission inventory. Additionally, for instances where ADEQ did not use the NEI or AEIS to estimate emissions, a discussion of the estimation technique is included.

[8] U.S. Census, Santa Cruz County Quickfacts, http://quickfacts.census.gov/qfd/states/04/04023.html

3.1 EPA's 2008 National Emissions Inventory

EPA's NEI database contains information about sources that emit criteria air pollutants and their precursors, and hazardous air pollutants. The database includes estimates of annual air pollutant emissions from point, nonpoint, and mobile sources in the fifty states, the District of Columbia, Puerto Rico, and the Virgin Islands available at the county level. Collaborating with the states, EPA develops the emissions inventory and releases an updated version of the NEI database every three years.

Five of the six criteria air pollutants are included in the NEI database. Emissions of carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO_2), lead (Pb), and particulate matter (PM_{10} and $PM_{2.5}$) are specifically reported in the NEI. Ozone, the sixth criteria air pollutant, arises from photochemical reactions in the atmosphere rather than direct emissions from sources.

EPA compiled the NEI database from the primary data sources listed below:

- emissions inventories compiled by state and local environmental agencies;
- databases related to EPA's Maximum Achievable Control Technology (MACT) programs to reduce emissions of hazardous air pollutants;
- Toxic Release Inventory (TRI) data;
- for electric generating units, EPA's Emission Tracking System / Continuous Emissions Monitoring data (ETS/CEM) and Department of Energy fuel use data;
- for on-road sources, the Federal Highway Administration's estimate of vehicle miles traveled and emission factors from EPA's MOVES2010a computer model;
- for non-road sources, EPA's NONROAD2008a computer model; and,
- previous emissions inventories, if states do not submit current data.

A complete description of the development of the 2008 NEI may be found at the following URL: http://www.epa.gov/ttn/chief/net/2008inventory.html.

3.2 On-Road Mobile Source Emissions

In the 2008 NEI version 1, on-road mobile source emissions were calculated using EPA's MOBILE6.2 model. Since the 2008 NEI was developed, EPA's Motor Vehicle Emission Simulator (MOVES) model has replaced MOBILE6.2 as the accepted model for estimating emissions from cars, trucks, and motorcycles.[9] On March 2, 2010, EPA approved the availability of the Motor Vehicle Emissions Simulator model MOVES2010 in official SIP submissions to EPA regarding air quality and for certain transportation conformity analyses outside the state of California.[10] MOVES2010a replaced MOVES2010 in August 2010 and was subsequently revised and released as MOVES2010b in March 2012. MOVES2010b is now the state-of-the-art upgrade to EPA's modeling tools for estimating air emissions from cars, trucks, motorcycles, and buses, and is based on analyses of millions of emission test results and considerable advances in the Agency's understanding of vehicle emissions. In April 2012, EPA recomputed the on-road mobile source emissions using MOVES and populated the 2008 NEI Version 2 with the updated values.

[9] http://www.epa.gov/otaq/models/moves/index.htm
[10] See 75 FR 9411 (March 2, 2010)

3.2.1 Calculating Santa Cruz County Emissions Using MOVES

ADEQ used MOVES2010a with an EPA supplied 2008 Santa Cruz County local MOVES database to obtain the most current on-road mobile source emissions for Santa Cruz County (see Appendix B). Use of MOVES to calculate mobile source emissions is required by EPA for SIP development. The above mentioned database calculated reasonable values of all analyzed pollutants for the year of 2008 except SO_2 (0 tons calculated) and VOC's (40,000 tons estimated). Due to these discrepancies, EPA and ADEQ agreed the most appropriate course of action for calculating SO_2 and VOC emissions would be to rerun MOVES for these pollutants using the national, default database Appendix D).[11] A population ratio of Santa Cruz County to the Nogales NA (Table 3.1) was used to allocate county emissions to the nonattainment area where applicable (Table 4.3).

$PM_{2.5}$ emissions from on-road mobile sources fall into four categories: brake and tire wear, vehicle exhaust, paved road dust, and unpaved road dust. As older on-road vehicles are replaced with newer, cleaner vehicles, exhaust emissions are expected to decrease. Also, changes to cleaner fuel specifications lead to lower exhaust emissions. The overall changes in vehicle exhaust emissions are captured in the EPA MOVES emission model. MOVES also produces emissions estimates for brake and tire wear. ADEQ ran the MOVES model for 2008 and 2010 using the national (default) EPA database. ADEQ also ran the MOVES model for 2008 using the county (local) database supplied by EPA. Since a specific (local) database was not available for the 2010 MOVES run, ADEQ used the outputs from the 2008 (local) database and the 2008 national default run to create a ratio that was utilized for the 2010 MOVES run. This ratio, or correction factor, was then multiplied by the outputs for the 2010 national default MOVES run. This correction factor was applied to all pollutant emissions except SO_2 and VOCs. This method was recommended by ADEQ and agreed upon by EPA[12]. See details below for a mathematical example of the methodology used for on-road brake, tire-wear, and exhaust emissions using MOVES. Detailed breakdowns of the estimated emissions generated from this methodology are included in Appendix E.

The following is an example of the steps which were followed to allocate/convert the MOVES (default) data for year 2010 to the NA data. An example calculation is at the end of Appendix E.

A = MOVES (county) PM2.5 ORG_URA data for 2008 (local)
B = MOVES (county) PM2.5 ORG_URA data for 2008 (default)

where URA = Urban Restricted Access, ORG = On-Road Gasoline

C = A/B = adjustment ratio to go from 2008 (default) to 2008 (local)

D = C * MOVES (county) PM2.5 ORG_URA data for 2010 (default)
= adjusted MOVES (county) PM2.5 ORG_URA data for 2010 (local)

E = D * 2010 NA population (est.) / 2010 county population (est.)
= final adjusted MOVES (NA) PM2.5 ORG_URA data for 2010 (local)

[11] Direct contact with Jeffrey Buss at EPA Region 9 on 4/30/2012, confirmed in his email dated May 31, 2012 to Ryan Templeton, ADEQ and included in Appendix C.
[12] Direct contact with Jeffrey Buss at EPA Region 9 on 1/8/13.

These steps are followed for each pollutant and for each roadway type. An example calculation is included at the end of Appendix E.

3.3 Allocating the Santa Cruz County $PM_{2.5}$ Emissions to the Nogales NA

EPA has not issued formal guidance on assigning emission sources from a county level of analysis to a smaller subject area within that county. For the Nogales NA emissions inventory, ADEQ used a combination of population ratios, land area ratios, and source locations within the Nogales NA to determine the appropriate allocation of county-wide emissions to the Nogales NA. A summary of the allocation ratios is presented in Table 3.1 below. More detailed discussions of the allocation methods are provided in the subsequent Sections.

Table 3.1
Summary of Santa Cruz County & Nogales NA Population Data

	Santa Cruz County	Nogales NA	Allocation Ratio
Area (square miles)	1,237.6[13]	76.1[14]	6.15%
2008 Population	47,016[15]	31,067[16]	66.1%

3.3.1 Emissions Allocation Based on Population

One method of allocating emissions from a county-level to a NA is to scale those emissions by a population ratio. In some cases, it is logical to scale source categories by population, since the rate of activities causing the emissions is more closely related to the number of people within a given area than to other factors, such as a specific land area relationship.

As described in Section 2.2.2, ADEQ used ADOA population estimates of the Nogales NA and Santa Cruz County to calculate a population ratio. The premise that underlies these calculations is: the City of Nogales and the allocated population of Rio Rico comprise nearly all of the population within the nonattainment area (this was determined by analysis of aerial photography of the region).

When allocating emissions based on population, the county-level emissions for a given source category were multiplied by a factor of 66.1% or 0.661 for the year of 2008 to give the respective source category emissions for the Nogales NA. If the likely magnitude of source category emissions varied with the activities of the population, it was allocated based on this population ratio.

3.3.2 Emissions Allocation Based on Land Area

A land area weighted emission ratio was developed using U.S. Census geographic data and/or Arizona Commerce Authority data.[17] The land area for Santa Cruz County is 1,237.6 square

[13] U.S. Census, Quickfacts, Santa Cruz County, Arizona.
[14] EPA Geographic Information System estimate.
[15] email from John Fan, Arizona Department of Administration 11/14/2012
[16] Ibid
[17] Arizona Department of Commerce Profile: Santa Cruz County Arizona, May 10, 2010. <http://www.azcommerce.com/doclib/commune/Santa Cruz%20county.pdf>

miles. The land area for the Nogales NA is 76.1 square miles. The ratio of Nogales NA land area to the Santa Cruz County land area is calculated by dividing 76.1 by 1,237.6, which equals .061490 or 6.15 percent.

For a spatial allocation of county-level emissions to the Nogales NA based on weighting by land area, the county-level emissions were multiplied by 6.15 percent to calculate the emissions for the Nogales NA. Some source categories, such as agricultural emissions, are likely to be proportional to land area; consequently, they are logically allocated by the land area ratio.

3.3.3 Point Source Emissions Identification Within the Nogales NA

To confirm whether specific point sources in the Santa Cruz County emissions inventory should be included in the Nogales NA inventory, ADEQ used facility supplied location information which was verified by visual inspection through aerial images, such as satellite photography within ArcGIS. These source categories are discussed below.

- Fuel Combustion - Electric Generation - Natural Gas. A power plant, Valencia Power, is located within the nonattainment area (Table 4.4).

- Aircraft - The only airport in the County, Nogales International Airport, is within the nonattainment area (Table 4.4).

- Waste Disposal - Institutional Incineration. A medical waste incinerator is located within the nonattainment area (Table 4.2).

3.4 Methodology for Projecting the 2010 Emissions Inventories

Nonattainment Area and County population estimates were covered in detail in *Section 2.2 Population and Urbanization*. These values were used to estimate population growth rates within the NA between the year of the most recent National Emission Inventory, 2008, and the chosen year for the currently presented emission inventories, 2010 (1.1% growth rate). Where appropriate, this growth rate was used to estimate emission growth between 2008 and 2010 within the NA.

For the 2010 base year emission inventories, ADEQ utilized the following assumptions:

- Source categories tied to economic activity were not grown between 2008 and 2010 due to the continued economic recession during this period;
- Source categories that track with population growth will be estimated at the same growth rate of 1.1 percent from 2008 to 2010; and,
- Major point sources were found to contribute less than 1.3% of total nonattainment area emissions for all pollutants for 2008. Considering this information along with the sustained economic downturn between 2008 and 2010, ADEQ felt it safe to assume no emissions growth between 2008 and 2010.

Emissions from On-road mobile sources were projected from 2008 to 2010 as presented in Section 3.2.1.

4 2008 Emissions Inventory and Discussion

The County emissions inventory and Nogales NA allocation results are shown in Tables 4.1, 4.2, 4.3 and 4.4.

4.1 Review and Evaluation of Emissions Estimates

The 2008 estimated rate of $PM_{2.5}$ emissions from road and other construction may be high because the emissions estimate does not reflect the full magnitude of the downturn in the real estate sector of the economy. It is likely that this downturn is a temporary situation and it may be expected that these emissions would resume at a higher rate once the real estate economy improves. As a result, this emission rate is conservative and is based on the best estimates of construction activity available at this time.

Neither ADEQ nor EPA could identify exact locations of agricultural activities and prescribed forest burning. While it is appropriate to apply a land ratio method for assigning County-level agricultural emissions to the NA, this may underestimate emissions given that intensive agricultural activity is likely to occur on private land, located primarily in the nonattainment area, as opposed to the public lands composing a large proportion of the remaining County. The ratio of the NA area to the area of the county was found to be 6.15 percent (See Table 3.2). Thus, the NA agricultural activity emissions were estimated as only 6.15 percent of countywide emissions. While ADEQ recognizes the area allocation used may result in an underestimation of emissions from agricultural sources, ADEQ was unable to identify a more accurate method for allocation.

An error was discovered in the 2008 NEI Area (non-point) data. The entry for "Misc. Area Sources, Ag. Production - Livestock, Swine" reported total NH_3 (Ammonia) Emissions of 209.88 tons per year. ADEQ reviewed the total for Hogs and Pigs for Santa Cruz County from the USDA[18] and found a total of only 18 reported hogs and pigs in the county for the year of 2007. In the absence of more recent agricultural census data, ADEQ assumes this number, and thus agricultural emissions from Swine will not change substantially between 2008 and 2010. Doorn *et al.* (2002) determined a NH_3 emission factor for North Carolina swine of 7 kg/animal/yr[19]. This emission factor was compared by Doorn *et al*. to emission factors developed by Battye *et al.* (1994)[20], Bouwman and Van Der Hoek (1997)[21], and EMEP/CORINAIR (AEIG, 1998)[22] which ranged between 2.5 and 6.0 kg/animal/yr. For comparison, while EPA does not list emission factors for livestock in AP-42, EPA used emission factors for swine when developing the 2002

[18] USDA Ag Census http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_County_Level/Arizona/st04_2_012_012.pdf

[19] Doorn, MRJ; Natschke, DF; Thorneloe, SA; Southerland, J. Development of an emission factor for ammonia emissions from US swine farms based on field tests and application of a mass balance method. 2002, **Atmospheric Environment**, 36: 5619-5625.

[20] Battye, R., Battye, W., Overcash, C., Fudge, S., 1994. Development and selection of ammonia emission factors. Prepared for W.G. Benjey, U.S. Environmental Protection Agency, AREAL, Research Triangle Park, NC, EC/R, Inc., Durham, NC. Website: http://www.epa.gov//ttn/chief/efdocs/ammonia.pdf.

[21] Bouwman, A.F., Van Der Hoek, K.W., 1997. Scenarios of animal waste production and fertilizer use and associated ammonia emission for the developing countries. Atmospheric Environment 31 (24), 4095–4102.

[22] AEIG, 1998. Atmospheric Emission Inventory Guidebook. 1st Edition. Chapter: ''Agriculture and Forestry, Manure Management''. McInnes ed. EMEP/CORINAIR. European Environment Agency, Copenhagen, Denmark.

NEI of 2.7 – 3.3 kg/animal/yr. Assuming a conservative emission factor of 7 kg/animal/yr, this would yield emissions of 0.14 tons annually, a negligible amount. Therefore the entry of 209.88 tons per year for swine was removed from Table 4.2.

Another error was found when running the MOVES model for on-road vehicle emissions. NH_3 emissions for "On-Road Gasoline Off-Network" and "On-Road Diesel Off-Network" source categories resulted in totals of 0 tons per year in both cases when using the EPA provided local database and the EPA national default database (Table 4.3). This is assumed to be a potential error within the calculation of NH_3 emissions within the MOVES model since the same value was found to be reported in the 2008 NEI for Santa Cruz County.

An error was previously found in the 2008 NEI for Cochise County which was also applicable to Santa Cruz County. The error was for surface mining, which showed a value of 761.11 tons per year for PM_{10}. The 2008 NEI for Santa Cruz County showed an identical value of 761.11 tons per year for PM_{10}. It was also found that all 15 Arizona counties had a surface mining value of 761.11 tons per year for PM_{10}. ADEQ assumes that EPA divided the total surface mining emission value for the state by 15 and apportioned the results (761.11 tons per year for PM_{10}) to each county. ADEQ will work with EPA to correct the 2008 NEI data. Upon further investigation, ADEQ was unable to identify mining activities located within Santa Cruz County. Consequently, the related $PM_{2.5}$ emissions for this source were not included in the non-attainment area estimates.

4.2 Overall Assessment

The 2008 NEI and the AEIS, along with emission estimates generated from MOVES, provide a comprehensive emission inventory for Santa Cruz County based on the best methodology and source data available at the time the inventory was developed. In allocating these County-wide emissions to the Nogales NA, ADEQ has used reasonable and conservative assumptions to produce a current, accurate, and comprehensive Nogales NA 2008 $PM_{2.5}$ emissions inventory. Tables 4.1 through 4.4 provide emissions allocations from the County level to the NA. "Pop" allocations are based on population allocations as outlined in Section 3.3.1, "Area" allocations are based on the methodology outlined in Section 3.3.2, and "Loc" allocations are emissions determined to originate from sources found within the nonattainment area.

Table 4.1: Santa Cruz County & Nogales NA 2008 PM-2.5 Non-Road Mobile Sources Emissions Inventory			
Non-Road Mobile Emissions Source Category	Santa Cruz County (tpy)	Nogales NA (tpy)	Allocation Method
NH3 - Ammonia			
OHV (OHV) Diesel, Construction and Mining Equipment (Equip.)	0.12	0.08	Pop
Total	**0.12**	**0.08**	
NOX - Nitrogen Oxides			
OHV Diesel, Construction and Mining Equipment	134.84	89.13	Pop
OHV Diesel, Commercial Equipment	34.62	22.88	Pop
OHV Gasoline, 4-Stroke, Commercial Equipment	15.45	10.21	Pop
OHV Diesel, Industrial Equipment	8.55	5.65	Pop
LPG, Industrial Equipment	6.72	4.44	Pop
LPG, Commercial Equipment	5.93	3.92	Pop
OHV Gasoline, 4-Stroke, Lawn and Garden Equipment	2.27	1.50	Pop
OHV Gasoline, 4-Stroke, Recreational Equipment	2.03	1.34	Pop
CNG, Commercial Equipment	1.49	0.98	Pop
Mobile Sources OHV Gasoline, 4-Stroke, Construction and Mining Equip.	0.94	0.62	Pop
OHV Diesel, Lawn and Garden Equipment	0.76	0.50	Pop
OHV Diesel, Agricultural Equipment	0.49	0.03	Area
CNG, Industrial Equipment	0.47	0.31	Pop
OHV Gasoline, 2-Stroke, Recreational Equipment	0.41	0.27	Pop
LPG, Construction and Mining Equipment	0.40	0.26	Pop
OHV Diesel, Recreational Equipment	0.38	0.25	Pop
OHV Gasoline, 4-Stroke, Industrial Equipment	0.27	0.18	Pop
OHV Gasoline, 2-Stroke, Lawn and Garden Equipment	0.16	0.11	Pop
OHV Gasoline, 2-Stroke, Commercial Equipment	0.13	0.09	Pop
Total	**216.31**	**142.69**	
PM25-PRI - PM2.5 Primary (Filter + Condensable)			
OHV Diesel, Construction and Mining Equipment	10.75	7.11	Pop
OHV Diesel, Commercial Equipment	3.43	2.27	Pop
OHV Gasoline, 2-Stroke, Recreational Equipment	2.42	1.60	Pop
OHV Gasoline, 2-Stroke, Lawn and Garden Equipment	0.73	0.48	Pop
OHV Diesel, Industrial Equipment	0.66	0.44	Pop
OHV Gasoline, 4-Stroke, Commercial Equipment	0.60	0.40	Pop
Mobile Sources, OHV Gasoline, 2-Stroke, Commercial Equipment	0.53	0.35	Pop
OHV Gasoline, 2-Stroke, Construction and Mining Equipment	0.38	0.25	Pop
OHV Gasoline, 4-Stroke, Recreational Equipment	0.21	0.14	Pop

Table 4.1: Santa Cruz County & Nogales NA 2008 PM-2.5 Non-Road Mobile Sources Emissions Inventory			
Non-Road Mobile Emissions Source Category	Santa Cruz County (tpy)	Nogales NA (tpy)	Allocation Method
OHV Gasoline, 4-Stroke, Lawn and Garden Equipment	0.17	0.11	Pop
Total	**19.88**	**13.14**	
SO2 - Sulfur Dioxide			
OHV Diesel, Construction and Mining Equipment	3.18	2.10	Pop
OHV Diesel, Commercial Equipment	0.73	0.48	Pop
OHV Diesel, Industrial Equipment	0.22	0.15	Pop
OHV Gasoline, 4-Stroke, Commercial Equipment	0.11	0.07	Pop
Total	**4.24**	**2.80**	
VOC - Volatile Organic Compounds			
OHV Gasoline, 2-Stroke, Recreational Equipment	74.25	49.08	Pop
OHV Gasoline, 4-Stroke, Commercial Equipment	71.98	47.58	Pop
OHV Gasoline, 4-Stroke, Lawn and Garden Equipment	30.34	20.05	Pop
OHV Gasoline, 4-Stroke, Recreational Equipment	20.49	13.54	Pop
OHV Diesel, Construction and Mining Equipment	13.86	9.16	Pop
OHV Gasoline, 2-Stroke, Lawn and Garden Equipment	8.62	5.70	Pop
OHV Diesel, Commercial Equipment	5.09	3.36	Pop
OHV Gasoline, 2-Stroke, Commercial Equipment	4.88	3.23	Pop
OHV Gasoline, 4-Stroke, Construction and Mining Equipment	3.05	2.02	Pop
OHV Gasoline, 2-Stroke, Construction and Mining Equipment	2.87	1.90	Pop
LPG, Industrial Equipment	1.90	1.26	Pop
LPG, Commercial Equipment	1.29	0.85	Pop
OHV Diesel, Industrial Equipment	0.79	0.52	Pop
OHV Gasoline, 4-Stroke, Industrial Equipment	0.33	0.22	Pop
LPG, Construction and Mining Equipment	0.11	0.07	Pop
OHV Diesel, Recreational Equipment	0.10	0.07	Pop
Total	**239.95**	**158.61**	

Allocation method: Area = Land area ratio; Loc = Location; Pop = Population ratio.

Table 4.2: Santa Cruz County & Nogales NA 2008 PM2.5 Non-Point Source Emissions Inventories (tons)			
Non-Point Sources Emissions Source Category	Santa Cruz County	Nogales NA	Allocation Method
NH3 - Ammonia			
Misc. Area Sources, Ag. Production - Livestock, Beef cattle	67.72	4.15	Area
Misc. Area Sources, Ag. Production - Livestock, Goats	50.03	3.07	Area
Misc. Area Sources, Ag. Production - Livestock, Dairy cattle	19.14	1.17	Area
Waste Disposal, Treatment, and Recovery, Wastewater Treatment, Public Own	17.17	11.35	Pop
Misc. Area Sources, Ag. Production - Livestock, Horses and Ponies	13.33	0.82	Area
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	2.74	0.17	Area
Misc. Area Sources, Other Combustion, Residential Wood Burning	2.54	1.68	Pop
Stationary Source Fuel Combustion, Industrial, Distillate Oil	0.34	0.22	Pop
Misc. Area Sources, Ag. Production - Livestock, Sheep and Lambs Waste Emissions	0.27	0.02	Area
Stationary Source Fuel Combustion, Industrial, Natural Gas	0.26	0.17	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Distillate Oil	0.10	0.07	Pop
Total	**173.64**	**22.89**	
NOX - Nitrogen Oxides			
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	19.08	1.17	Area
Stationary Source Fuel Combustion, Residential, Natural Gas	13.04	8.62	Pop
Stationary Source Fuel Combustion, Coal	9.85	6.51	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Natural Gas	9.49	6.27	Pop
Stationary Source Fuel Combustion, Industrial, Distillate Oil	8.53	5.64	Pop
Waste Disposal (Disp), Treatment, and Recovery, Open Burning, All Categories	7.13	4.71	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, Residential	6.60	4.36	Pop
Stationary Source Fuel Combustion, Residential, Liquefied Petroleum Gas (LPG)	5.60	3.70	Pop
Misc. Area Sources, Other Combustion, Residential Wood Burning	5.12	3.38	Pop
Stationary Source Fuel Combustion, Industrial, Natural Gas	3.31	2.19	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Distillate Oil	2.40	1.59	Pop
Waste Disposal, Treatment, and Recovery, On-site Incineration, Comm./Instit.	0.37	0.37	Loc
Stationary Source Fuel Combustion, Comm./Institutional, LPG	0.28	0.19	Pop
Stationary Source Fuel Combustion, Industrial, Residual Oil	0.15	0.10	Pop
Total	**90.95**	**48.80**	
PM25-PRI - PM2.5 Primary (Filter + Condensable)			
Mobile Sources, Unpaved Roads, All Unpaved Roads	234.41	154.89	Pop
Industrial Processes, Construction: Road Construction	96.91	64.04	Pop
Mobile Sources, Paved Roads, All Paved Roads	75.00	49.56	Pop
Industrial Processes, Construction: Industrial/Commercial/Institutional	51.75	34.20	Pop

Table 4.2: Santa Cruz County & Nogales NA 2008 PM2.5 Non-Point Source Emissions Inventories (tons)			
Non-Point Sources Emissions Source Category	Santa Cruz County	Nogales NA	Allocation Method
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	48.90	3.00	Area
Misc. Area Sources, Other Combustion, Residential Wood Burning	43.49	28.74	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, Residential	38.26	25.28	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, All Categories	25.44	16.81	Pop
Misc. Area Sources, Ag. Production - Crops, Ag. - Crops	14.10	0.86	Area
Industrial Processes, Food and Kindred Products: Comm. Cooking - Charbroiling	10.98	7.26	Pop
Industrial Processes, Construction: SIC 15 - 17, Residential	8.69	5.74	Pop
Stationary Source Fuel Combustion, Industrial, Bituminous/Subbituminous Coal	2.19	1.45	Pop
Industrial Processes, Food and Kindred Products: Commercial Cooking - Frying	2.16	1.43	Pop
Stationary Source Fuel Combustion, Residential, Natural Gas	1.05	0.69	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Natural Gas	0.72	0.48	Pop
Stationary Source Fuel Combustion, Industrial, Distillate Oil	0.66	0.44	Pop
Stationary Source Fuel Combustion, Residential, Liquefied Petroleum Gas	0.45	0.30	Pop
Misc. Area Sources, Other Combustion, Structure Fires	0.40	0.26	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Distillate Oil	0.26	0.17	Pop
Stationary Source Fuel Combustion, Industrial, Natural Gas	0.25	0.17	Pop
Waste Disposal, Treatment, and Recovery, On-site Incineration, Comm. /Instit.	0.20	0.20	Loc
Total	**656.27**	**395.97**	
SO2 - Sulfur Dioxide			
Stationary Source Fuel Combustion (Comb.), Industrial, Distillate Oil	18.17	12.01	Pop
Stationary Source Fuel Comb. Industrial, Bituminous/Subbituminous Coal	16.00	10.57	Pop
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	5.23	0.32	Area
Stationary Source Fuel Combustion, Commercial/Institutional, Distillate Oil	5.12	3.38	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, Residential	1.10	0.73	Pop
Stationary Source Fuel Combustion, Industrial, Residual Oil	0.96	0.63	Pop
Misc. Area Sources, Other Combustion, Residential Wood Burning	0.84	0.56	Pop
Waste Disp., Treatment, and Recovery, On-site Incineration, Comm./Institutional	0.12	0.12	Loc
Total	**47.54**	**28.32**	
VOC - Volatile Organic Compounds			
Waste Disposal, Treatment, and Recovery	921.90	609.17	Pop
Storage and Transport (S&T), Petrol and Petrol Product Storage, Gas Service Stations	173.43	114.60	Pop
Misc. Area Sources, Other Combustion, Residential Wood Burning	53.84	35.58	Pop
Solvent Utilization, Misc. Non-industrial: Consumer, Household Products	37.01	24.46	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, Residential	32.98	21.79	Pop

Table 4.2: Santa Cruz County & Nogales NA 2008 PM2.5 Non-Point Source Emissions Inventories (tons)			
Non-Point Sources Emissions Source Category	Santa Cruz County	Nogales NA	Allocation Method
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	30.39	1.87	Area
Solvent Utilization, Misc. Non-industrial: Comm. Pesticide Application: Ag.	29.37	1.81	Area
S&T, Petroleum and Petroleum Product Storage, Bulk Terminals: All Evap. Losses	22.87	15.11	Pop
Solvent Utilization, Degreasing, All Industries: Cold Cleaning	22.24	14.70	Pop
Solvent Utilization, Misc. Non-industrial: Consumer, Personal Care Products	20.62	13.63	Pop
Solvent Utilization, Surface Coating, Misc. Manufacturing	19.98	13.20	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, All Categories	17.57	11.61	Pop
Waste Disposal, Treatment, and Recovery, Wastewater Treatment, Public Owned	8.94	5.91	Pop
Solvent Utilization, Misc. Industrial, Adhesive (Industrial) Application	6.86	4.53	Pop
Solvent Utilization, Graphic Arts, All Processes	5.68	3.75	Pop
Solvent Utilization, Surface Coating, Metal Furniture	5.05	3.34	Pop
Solvent Utilization, Surface Coating, Auto Refinishing	4.03	2.66	Pop
Industrial Processes, Food and Kindred Products: Comm. Cooking - Charbroiling	1.52	1.00	Pop
Solvent Utilization, Misc. Non-industrial: Consumer	1.07	0.71	Pop
Stationary Source Fuel Combustion, Residential, Natural Gas	0.76	0.50	Pop
Solvent Utilization, Surface Coating, Factory Finished Wood	0.65	0.43	Pop
Solvent Utilization, Surface Coating, Wood Furniture: SIC 25	0.56	0.37	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Natural Gas	0.52	0.34	Pop
Misc. Area Sources, Other Combustion, Structure Fires	0.45	0.30	Pop
Solvent Utilization, Surface Coating, Other Special Purpose Coatings	0.43	0.28	Pop
Industrial Processes, Food and Kindred Products: Commercial Cooking - Frying	0.33	0.22	Pop
Stationary Source Fuel Combustion, Residential, Liquefied Petroleum Gas (LPG)	0.33	0.22	Pop
Solvent Utilization, Surface Coating, Electronic and Other Electrical	0.25	0.17	Pop
Solvent Utilization, Surface Coating, Industrial Maintenance Coatings	0.23	0.15	Pop
Solvent Utilization, Surface Coating, Misc. Finished Metals	0.21	0.14	Pop
Stationary Source Fuel Combustion, Industrial, Natural Gas	0.18	0.12	Pop
Total	**1420.25**	**902.67**	

Allocation method: Area = Land area ratio; Loc = Location; Pop = Population ratio.

Table 4.3: Santa Cruz County & Nogales NA 2008 PM2.5 On-Road Mobile Sources Emissions Inventories (tons)			
On-Road Mobile Source Emissions Categories	Santa Cruz County	Nogales NA	Allocation Method
NH3 - Ammonia			
On-Road Gasoline Off-Network	0.00	0.00	Pop
On-Road Gasoline Rural Restricted Access	4.71	3.11	Pop
On-Road Gasoline Rural Unrestricted Access	4.73	3.13	Pop
On-Road Gasoline Urban Restricted Access	2.18	1.44	Pop
On-Road Gasoline Urban Unrestricted Access	8.88	5.87	Pop
On-Road Diesel Off-Network	0.00	0.00	Pop
On-Road Diesel Rural Restricted Access	0.60	0.40	Pop
On-Road Diesel Rural Unrestricted Access	0.24	0.16	Pop
On-Road Diesel Urban Restricted Access	0.13	0.09	Pop
On-Road Diesel Urban Unrestricted Access	0.35	0.23	Pop
Total	**21.82**	**14.42**	
NOX - Nitrogen Oxides			
On-Road Gasoline Off-Network	138.93	91.80	Pop
On-Road Gasoline Rural Restricted Access	113.37	74.91	Pop
On-Road Gasoline Rural Unrestricted Access	113.27	74.85	Pop
On-Road Gasoline Urban Restricted Access	51.57	34.08	Pop
On-Road Gasoline Urban Unrestricted Access	215.64	142.49	Pop
On-Road Diesel Off-Network	72.17	47.69	Pop
On-Road Diesel Rural Restricted Access	326.14	215.51	Pop
On-Road Diesel Rural Unrestricted Access	106.38	70.29	Pop
On-Road Diesel Urban Restricted Access	62.30	41.17	Pop
On-Road Diesel Urban Unrestricted Access	181.80	120.13	Pop
Total	**1381.57**	**912.91**	
PM25-PRI - PM2.5 Primary (Filter + Condensable)			
On-Road Gasoline Off-Network	1.77	1.17	Pop
On-Road Gasoline Rural Restricted Access	1.44	0.95	Pop
On-Road Gasoline Rural Unrestricted Access	1.04	0.69	Pop
On-Road Gasoline Urban Restricted Access	0.70	0.46	Pop
On-Road Gasoline Urban Unrestricted Access	2.03	1.34	Pop
On-Road Diesel Off-Network	1.07	0.71	Pop
On-Road Diesel Rural Restricted Access	12.27	8.11	Pop
On-Road Diesel Rural Unrestricted Access	4.88	3.22	Pop
On-Road Diesel Urban Restricted Access	2.84	1.88	Pop
On-Road Diesel Urban Unrestricted Access	9.98	6.59	Pop

Table 4.3: Santa Cruz County & Nogales NA 2008 PM2.5 On-Road Mobile Sources Emissions Inventories (tons)			
On-Road Mobile Source Emissions Categories	Santa Cruz County	Nogales NA	Allocation Method
Total	**38.02**	**25.12**	
SO2 - Sulfur Dioxide			
On-Road Gasoline Off-Network	0.29	0.19	Pop
On-Road Gasoline Rural Restricted Access	1.91	1.26	Pop
On-Road Gasoline Rural Unrestricted Access	2.41	1.59	Pop
On-Road Gasoline Urban Restricted Access	0.45	0.30	Pop
On-Road Gasoline Urban Unrestricted Access	2.17	1.43	Pop
On-Road Diesel Off-Network	0.13	0.09	Pop
On-Road Diesel Rural Restricted Access	2.35	1.55	Pop
On-Road Diesel Rural Unrestricted Access	0.99	0.65	Pop
On-Road Diesel Urban Restricted Access	0.17	0.11	Pop
On-Road Diesel Urban Unrestricted Access	0.47	0.31	Pop
Total	**11.34**	**7.49**	
VOC - Volatile Organic Compounds			
On-Road Gasoline Off-Network	413.29	273.09	Pop
On-Road Gasoline Rural Restricted Access	38.17	25.22	Pop
On-Road Gasoline Rural Unrestricted Access	54.64	36.10	Pop
On-Road Gasoline Urban Restricted Access	10.79	7.13	Pop
On-Road Gasoline Urban Unrestricted Access	61.98	40.95	Pop
On-Road Diesel Off-Network	25.41	16.79	Pop
On-Road Diesel Rural Restricted Access	18.45	12.19	Pop
On-Road Diesel Rural Unrestricted Access	12.35	8.16	Pop
On-Road Diesel Urban Restricted Access	2.15	1.42	Pop
On-Road Diesel Urban Unrestricted Access	7.74	5.11	Pop
Total	**644.97**	**426.18**	

Allocation method: Area = Land area ratio; Loc = Location; Pop = Population ratio.

Table 4.4: Santa Cruz County & Nogales NA 2008 PM2.5 Point Source Emissions Inventory			
Emissions Source Category	Santa Cruz County	Nogales NA	Allocation Method
Valencia Power Plant			
PM2.5-PRI - PM2.5 Primary (Filter + Condensable)	N/A	1.09	Loc
NOX - Nitrogen Oxides	N/A	9.65	Loc
SO2 - Sulfur Dioxide	N/A	0.21	Loc
VOC - Volatile Organic Compounds	N/A	0.19	Loc
Nogales International Airport			
PM25-PRI - PM2.5 Primary (Filter + Condensable)	N/A	0.3	Loc
NOX - Nitrogen Oxides	N/A	1.38	Loc
SO2 - Sulfur Dioxide	N/A	0.27	Loc
VOC - Volatile Organic Compounds	N/A	3.12	Loc

Allocation method: Area = Land area ratio; Loc = Location; Pop = Population ratio.

5 2010 Emissions Inventories

5.1 Overview

Since the Nogales NA met the $PM_{2.5}$ NAAQS based on ambient monitoring data from 2009-2011, ADEQ selected 2010 to serve as a representative emissions inventory for the purpose of the State's required PM2.5 plan submittal. The current SIP characterizes emissions levels for $PM_{2.5}$, NH_3, NO_x, SO_2, and VOCs. Because 2008 is the year of the most current and complete national emissions inventory, ADEQ chose it as the base year for estimating the Nogales $PM_{2.5}$ SIP 2010 emissions inventories. Tables 5.1 through 5.4 provide NA emissions projections between the years of 2008 and 2010. "NG" refers to those sectors which are expected to experience no growth between 2008 and 2010; "Pop" projections are based on the population projection methods outlined in Section 3.4; "MOVES" projections are based on the methodology outlined in Section 3.2.1, and "Loc" projections are projections for identifiable source locations expected to maintain constant emissions between 2008 and 2010.

The 2010 emissions inventories results are shown in the tables below. An emissions inventory for 2008 was also included as it served as the starting point for the 2010 inventories.

Table 5.1: Santa Cruz County & Nogales NA 2008 and 2010 $PM_{2.5}$ Non-Road Mobile Source Emissions Inventories (tons per year)			
Non-road Mobile Source Emissions Categories	2008 NNA (tpy)	2010 NNA (tpy)	Projection Method
NH3 - Ammonia			
OHV Diesel, Construction and Mining Equipment (Equip.)	0.08	0.08	NG
Total	**0.08**	**0.08**	
NOx - Nitrogen Oxides			
OHV Diesel, Construction and Mining Equipment	89.13	89.13	NG
OHV Diesel, Commercial (Comm.) Equipment	22.88	22.88	NG
OHV Gasoline, 4-Stroke, Commercial Equipment	10.21	10.21	NG
OHV Diesel, Industrial Equipment	5.65	5.65	NG
LPG, Industrial Equipment	4.44	4.44	NG
LPG, Commercial Equipment	3.92	3.92	NG
OHV Gasoline, 4-Stroke, Lawn and Garden Equipment	1.50	1.52	Pop
OHV Gasoline, 4-Stroke, Recreational Equipment	1.34	1.36	Pop
CNG, Commercial Equipment	0.98	0.98	NG
Mobile Sources, OHV Gas, 4-Stroke, Construction and Mining	0.62	0.62	NG
OHV Diesel, Lawn and Garden Equipment	0.50	0.51	Pop
OHV Diesel, Agricultural Equipment	0.03	0.03	NG
CNG, Industrial Equipment	0.31	0.31	NG
OHV Gasoline, 2-Stroke, Recreational Equipment	0.27	0.27	Pop
LPG, Construction and Mining Equipment	0.26	0.26	NG
OHV Diesel, Recreational Equipment	0.25	0.25	Pop
OHV Gasoline, 4-Stroke, Industrial Equipment	0.18	0.18	NG
OHV Gasoline, 2-Stroke, Lawn and Garden Equipment	0.11	0.11	Pop
OHV Gasoline, 2-Stroke, Commercial Equipment	0.09	0.09	NG
Total	**142.69**	**142.73**	
PM25-PRI - PM2.5 Primary (Filter + Condensable)			
OHV Diesel, Construction and Mining Equipment	7.11	7.11	NG
OHV Diesel, Commercial Equipment	2.27	2.27	NG
OHV Gasoline, 2-Stroke, Recreational Equipment	1.60	1.62	Pop
OHV Gasoline, 2-Stroke, Lawn and Garden Equipment	0.48	0.49	Pop
OHV Diesel, Industrial Equipment	0.44	0.44	NG
OHV Gasoline, 4-Stroke, Commercial Equipment	0.40	0.40	NG
Mobile Sources, OHV Gas, 2-Stroke, Commercial Equipment	0.35	0.35	NG
OHV Gasoline, 2-Stroke, Construction and Mining Equipment	0.25	0.25	NG
OHV Gasoline, 4-Stroke, Recreational Equipment	0.14	0.14	Pop
OHV Gasoline, 4-Stroke, Lawn and Garden Equipment	0.11	0.11	Pop

Table 5.1: Santa Cruz County & Nogales NA 2008 and 2010 $PM_{2.5}$ Non-Road Mobile Source Emissions Inventories (tons per year)			
Non-road Mobile Source Emissions Categories	2008 NNA (tpy)	2010 NNA (tpy)	Projection Method
Total	**13.14**	**13.17**	
SO2 - Sulfur Dioxide			
OHV Diesel, Construction and Mining Equipment	2.10	2.10	NG
OHV Diesel, Commercial Equipment	0.48	0.48	NG
OHV Diesel, Industrial Equipment	0.15	0.15	NG
OHV Gasoline, 4-Stroke, Commercial Equipment	0.07	0.07	NG
Total	**2.80**	**2.80**	
VOC - Volatile Organic Compounds			
OHV Gasoline, 2-Stroke, Recreational Equipment	49.08	49.62	Pop
OHV Gasoline, 4-Stroke, Commercial Equipment	47.58	47.58	NG
OHV Gasoline, 4-Stroke, Lawn and Garden Equipment	20.05	20.28	Pop
OHV Gasoline, 4-Stroke, Recreational Equipment	13.54	13.69	Pop
OHV Diesel, Construction and Mining Equipment	9.16	9.16	NG
OHV Gasoline, 2-Stroke, Lawn and Garden Equipment	5.70	5.76	Pop
OHV Diesel, Commercial Equipment	3.36	3.36	NG
OHV Gasoline, 2-Stroke, Commercial Equipment	3.23	3.23	NG
OHV Gasoline, 4-Stroke, Construction and Mining Equipment	2.02	2.02	NG
OHV Gasoline, 2-Stroke, Construction and Mining Equipment	1.90	1.90	NG
LPG, Industrial Equipment	1.26	1.26	NG
LPG, Commercial Equipment	0.85	0.85	NG
OHV Diesel, Industrial Equipment	0.52	0.52	NG
OHV Gasoline, 4-Stroke, Industrial Equipment	0.22	0.22	NG
LPG, Construction and Mining Equipment	0.07	0.07	NG
OHV Diesel, Recreational Equipment	0.07	0.07	Pop
Total	**158.61**	**159.58**	

Allocation method: Pop = Population ratio, NG = No Growth.

Table 5.2: Santa Cruz County & Nogales NA 2008 and 2010 Non-Point Source Emissions Inventories			
Non-point Source Emissions Categories	2008 NNA (tpy)	2010 NNA (tpy)	Projection Method
NH3 - Ammonia			
Misc. Area Sources, Ag. Production - Livestock, Beef Cattle	4.15	4.15	NG
Misc. Area Sources, Ag. Production - Livestock, Goats	3.07	3.07	NG
Misc. Area Sources, Ag. Production - Livestock, Dairy Cattle	1.17	1.17	NG
Waste Disposal, Treatment, and Recovery, Wastewater Treatment, Public Owned	11.35	11.47	Pop
Misc. Area Sources, Ag. Production - Livestock, Horses, Ponies	0.82	0.82	NG
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	0.17	0.17	NG
Misc. Area Sources, Other Combustion, Residential Wood Burning	1.68	1.70	Pop
Stationary Source Fuel Combustion, Industrial, Distillate Oil	0.22	0.22	NG
Misc. Area Sources, Ag. Production - Livestock, Sheep and Lambs Waste	0.02	0.02	NG
Stationary Source Fuel Combustion, Industrial, Natural Gas	0.17	0.17	NG
Stationary Source Fuel Combustion, Commercial/Institutional, Distillate Oil	0.07	0.07	Pop
Total	**22.89**	**23.03**	
NOx - Nitrogen Oxides			
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	1.17	1.17	NG
Stationary Source Fuel Combustion, Residential, Natural Gas	8.62	8.71	Pop
Stationary Source Fuel Combustion, Coal	6.51	6.58	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Natural Gas	6.27	6.34	Pop
Stationary Source Fuel Combustion, Industrial, Distillate Oil	5.64	5.70	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, All Categories	4.71	4.76	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, Residential	4.36	4.41	Pop
Stationary Source Fuel Combustion, Residential, Liquefied Petroleum Gas (LPG)	3.70	3.74	Pop
Misc. Area Sources, Other Combustion, Residential Wood Burning	3.38	3.42	Pop
Stationary Source Fuel Combustion, Industrial, Natural Gas	2.19	2.21	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Distillate Oil	1.59	1.61	Pop
Waste Disposal, Treatment, and Recovery, On-site Incineration, Commercial	0.37	0.37	Loc
Stationary Source Fuel Combustion, Comm./Institutional, LPG	0.19	0.19	Pop
Stationary Source Fuel Combustion, Industrial, Residual Oil	0.10	0.10	Pop
Total	**48.80**	**49.32**	
PM25-PRI - PM2.5 Primary (Filter + Condensable)			
Mobile Sources, Unpaved Roads, All Unpaved Roads	154.89	156.59	Pop
Industrial Processes, Construction: Road Construction	64.04	64.04	NG
Mobile Sources, Paved Roads, All Paved Roads	49.56	50.11	Pop
Industrial Processes, Construction: Industrial/Commercial/Institutional	34.20	34.20	NG
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	3.00	3.00	NG

Table 5.2: Santa Cruz County & Nogales NA 2008 and 2010 Non-Point Source Emissions Inventories			
Non-point Source Emissions Categories	2008 NNA (tpy)	2010 NNA (tpy)	Projection Method
Misc. Area Sources, Other Combustion, Residential Wood Burning	28.74	29.06	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, Residential	25.28	25.56	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, All Categories	16.81	16.99	Pop
Misc. Area Sources, Ag. Production - Crops, Ag. - Crops	0.86	0.86	NG
Industrial Processes, Food and Kindred Products: Comm. Cooking - Charbroiling	7.26	7.34	Pop
Industrial Processes, Construction: SIC 15 - 17, Residential	5.74	5.80	Pop
Stationary Source Fuel Combustion, Industrial, Bituminous/Subbituminous Coal	1.45	1.45	NG
Industrial Processes, Food and Kindred Products: Commercial Cooking - Frying	1.43	1.45	Pop
Stationary Source Fuel Combustion, Residential, Natural Gas	0.69	0.70	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Natural Gas	0.48	0.48	NG
Stationary Source Fuel Combustion, Industrial, Distillate Oil	0.44	0.44	NG
Stationary Source Fuel Combustion, Residential, Liquefied Petroleum Gas (LPG)	0.30	0.30	Pop
Misc. Area Sources, Other Combustion, Structure Fires	0.26	0.26	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Distillate Oil	0.17	0.17	NG
Stationary Source Fuel Combustion, Industrial, Natural Gas	0.17	0.17	NG
Waste Disposal, Treatment, On-site Incineration, Comm. Institutional	0.20	0.20	Loc
Total	**395.97**	**399.17**	
SO2 - Sulfur Dioxide			
Stationary Source Fuel Combustion, Industrial, Distillate Oil	12.01	12.01	NG
Stationary Source Fuel Combustion, Industrial, Bituminous/Subbituminous Coal	10.57	10.57	NG
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	0.32	0.32	NG
Stationary Source Fuel Combustion, Commercial/Institutional, Distillate Oil	3.38	3.38	NG
Waste Disposal, Treatment, and Recovery, Open Burning, Residential	0.73	0.74	Pop
Stationary Source Fuel Combustion, Industrial, Residual Oil	0.63	0.63	NG
Misc. Area Sources, Other Combustion, Residential Wood Burning	0.56	0.57	Pop
Waste Disposal, Treatment, On-site Incineration, Comm./Institutional	0.12	0.12	Loc
Total	**28.32**	**28.33**	
VOC - Volatile Organic Compounds			
Waste Disposal, Treatment, and Recovery	609.17	615.87	Pop
Storage and Transport (S&T), Petrol and Petrol Product Storage, Gas Service Stations	114.60	115.86	Pop
Misc. Area Sources, Other Combustion, Residential Wood Burning	35.58	35.97	Pop
Solvent Utilization, Misc. Non-industrial: Consumer, Household Products	24.46	24.73	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, Residential	21.79	22.03	Pop

Table 5.2: Santa Cruz County & Nogales NA 2008 and 2010 Non-Point Source Emissions Inventories			
Non-point Source Emissions Categories	2008 NNA (tpy)	2010 NNA (tpy)	Projection Method
Misc. Area Sources, Other Combustion, Prescribed Forest Burning	1.87	1.87	NG
Solvent Utilization, Misc. Non-industrial: Comm., Pesticide Application: Agricultural	1.81	1.81	NG
S&T, Petroleum and Petroleum Product Storage, Bulk Terminals: All Evap. Losses	15.11	15.28	Pop
Solvent Utilization, Degreasing, All Industries: Cold Cleaning	14.70	14.86	Pop
Solvent Utilization, Misc. Non-industrial: Consumer, Personal Care Products	13.63	13.78	Pop
Solvent Utilization, Surface Coating, Misc. Manufacturing	13.20	13.35	Pop
Waste Disposal, Treatment, and Recovery, Open Burning, All Categories	11.61	11.74	Pop
Waste Disposal, Treatment, and Recovery, Wastewater Treatment, Public Owned	5.91	5.98	Pop
Solvent Utilization, Misc. Industrial, Adhesive (Industrial) Application	4.53	4.58	Pop
Solvent Utilization, Graphic Arts, All Processes	3.75	3.79	Pop
Solvent Utilization, Surface Coating, Metal Furniture	3.34	3.38	Pop
Solvent Utilization, Surface Coating, Auto Refinishing	2.66	2.69	Pop
Industrial Processes, Food and Kindred Products: Commercial Cooking - Charbroiling	1.00	1.01	Pop
Solvent Utilization, Misc. Non-industrial: Consumer	0.71	0.72	Pop
Stationary Source Fuel Combustion, Residential, Natural Gas	0.50	0.51	Pop
Solvent Utilization, Surface Coating, Factory Finished Wood	0.43	0.43	Pop
Solvent Utilization, Surface Coating, Wood Furniture: SIC 25	0.37	0.37	Pop
Stationary Source Fuel Combustion, Commercial/Institutional, Natural Gas	0.34	0.34	Pop
Misc. Area Sources, Other Combustion, Structure Fires	0.30	0.30	Pop
Solvent Utilization, Surface Coating, Other Special Purpose Coatings	0.28	0.28	Pop
Industrial Processes, Food and Kindred Products: Commercial Cooking - Frying	0.22	0.22	Pop
Stationary Source Fuel Combustion, Residential, Liquefied Petroleum Gas (LPG)	0.22	0.22	Pop
Solvent Utilization, Surface Coating, Electronic and Other Electrical	0.17	0.17	Pop
Solvent Utilization, Surface Coating, Industrial Maintenance Coatings	0.15	0.15	Pop
Solvent Utilization, Surface Coating, Misc. Finished Metals	0.14	0.14	Pop
Stationary Source Fuel Combustion, Industrial, Natural Gas	0.12	0.12	Pop
Total	**902.67**	**912.56**	

Allocation method: Pop = Population ratio, NG = No Growth.

Table 5.3: Santa Cruz County & Nogales NA 2008 and 2010 $PM_{2.5}$ On-Road Mobile Sources Emissions Inventories			
On-road Mobile Emissions Source Categories	2008 NNA (tpy)	2010 NNA (tpy)	Projection Method
NH3 - Ammonia			
On-Road Gasoline Off-Network	0.00	0.00	MOVES
On-Road Gasoline Rural Restricted Access	3.11	2.79	MOVES
On-Road Gasoline Rural Unrestricted Access	3.13	2.81	MOVES
On-Road Gasoline Urban Restricted Access	1.44	1.29	MOVES
On-Road Gasoline Urban Unrestricted Access	5.87	5.26	MOVES
On-Road Diesel Off-Network	0.00	0.00	MOVES
On-Road Diesel Rural Restricted Access	0.40	0.36	MOVES
On-Road Diesel Rural Unrestricted Access	0.16	0.15	MOVES
On-Road Diesel Urban Restricted Access	0.09	0.08	MOVES
On-Road Diesel Urban Unrestricted Access	0.23	0.22	MOVES
Total	**14.42**	**12.96**	
NOX - Nitrogen Oxides			
On-Road Gasoline Off-Network	91.80	83.97	MOVES
On-Road Gasoline Rural Restricted Access	74.91	63.79	MOVES
On-Road Gasoline Rural Unrestricted Access	74.85	63.85	MOVES
On-Road Gasoline Urban Restricted Access	34.08	28.91	MOVES
On-Road Gasoline Urban Unrestricted Access	142.49	120.72	MOVES
On-Road Diesel Off-Network	47.69	42.55	MOVES
On-Road Diesel Rural Restricted Access	215.51	161.45	MOVES
On-Road Diesel Rural Unrestricted Access	70.29	53.62	MOVES
On-Road Diesel Urban Restricted Access	41.17	31.36	MOVES
On-Road Diesel Urban Unrestricted Access	120.13	93.48	MOVES
Total	**912.91**	**743.72**	
PM25-PRI PM2.5 Primary (Filter + Condensable)			
On-Road Gasoline Off-Network	1.17	1.05	MOVES
On-Road Gasoline Rural Restricted Access	0.95	0.86	MOVES
On-Road Gasoline Rural Unrestricted Access	0.69	0.62	MOVES
On-Road Gasoline Urban Restricted Access	0.46	0.42	MOVES
On-Road Gasoline Urban Unrestricted Access	1.34	1.23	MOVES
On-Road Diesel Off-Network	0.71	0.54	MOVES
On-Road Diesel Rural Restricted Access	8.11	6.25	MOVES
On-Road Diesel Rural Unrestricted Access	3.22	2.52	MOVES

Table 5.3: Santa Cruz County & Nogales NA 2008 and 2010 $PM_{2.5}$ On-Road Mobile Sources Emissions Inventories			
On-road Mobile Emissions Source Categories	2008 NNA (tpy)	2010 NNA (tpy)	Projection Method
On-Road Diesel Urban Restricted Access	1.88	1.46	MOVES
On-Road Diesel Urban Unrestricted Access	6.59	5.19	MOVES
Total	**25.12**	**20.12**	
SO2 - Sulfur Dioxide			
On-Road Gasoline Off-Network	0.19	0.13	MOVES
On-Road Gasoline Rural Restricted Access	1.26	0.87	MOVES
On-Road Gasoline Rural Unrestricted Access	1.59	1.10	MOVES
On-Road Gasoline Urban Restricted Access	0.30	0.21	MOVES
On-Road Gasoline Urban Unrestricted Access	1.43	0.99	MOVES
On-Road Diesel Off-Network	0.09	0.04	MOVES
On-Road Diesel Rural Restricted Access	1.55	0.74	MOVES
On-Road Diesel Rural Unrestricted Access	0.65	0.32	MOVES
On-Road Diesel Urban Restricted Access	0.11	0.05	MOVES
On-Road Diesel Urban Unrestricted Access	0.31	0.15	MOVES
Total	**7.49**	**4.60**	
VOC - Volatile Organic Compounds			
On-Road Gasoline Off-Network	273.09	246.19	MOVES
On-Road Gasoline Rural Restricted Access	25.22	20.28	MOVES
On-Road Gasoline Rural Unrestricted Access	36.10	28.65	MOVES
On-Road Gasoline Urban Restricted Access	7.13	5.63	MOVES
On-Road Gasoline Urban Unrestricted Access	40.95	32.21	MOVES
On-Road Diesel Off-Network	16.79	13.95	MOVES
On-Road Diesel Rural Restricted Access	12.19	10.00	MOVES
On-Road Diesel Rural Unrestricted Access	8.16	6.95	MOVES
On-Road Diesel Urban Restricted Access	1.42	1.21	MOVES
On-Road Diesel Urban Unrestricted Access	5.11	4.47	MOVES
Total	**426.18**	**369.54**	

Table 5.4: Santa Cruz County & Nogales NA 2008 and 2010 $PM_{2.5}$ Emission Inventories (tons per year)			
Point Sources	2008 (tpy)	2010 (tpy)	Projection Method
Valencia Power Plant			
PM2.5-PRI - PM2.5 Primary (Filter + Condensable)	1.09	1.09	NG
NOX - Nitrogen Oxides	9.65	9.65	NG
SO2 - Sulfur Dioxide	0.21	0.21	NG
VOC - Volatile Organic Compounds	0.19	0.19	NG
Nogales International Airport			
PM2.5-PRI - PM2.5 Primary (Filter + Condensable)	0.30	0.30	NG
NOX - Nitrogen Oxides	1.38	1.38	NG
SO2 - Sulfur Dioxide	0.27	0.27	NG
VOC - Volatile Organic Compounds	3.12	3.12	NG

6 Discussion and Conclusion

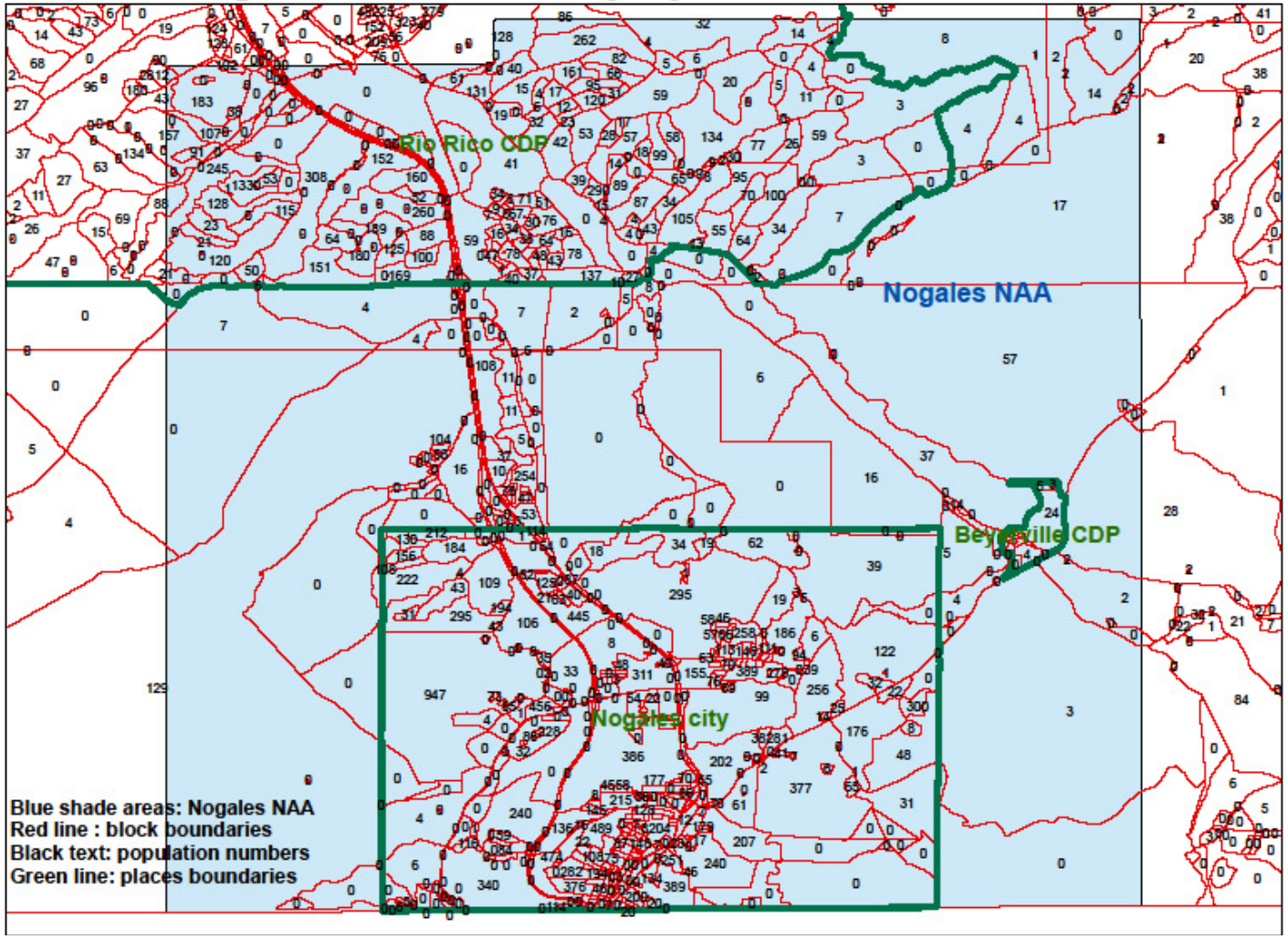
The previous sections outlined the assumptions utilized to estimate emissions of NH_3, NO_x, $PM_{2.5}$, SO_2, and VOCs for all source categories identified within the Nogales NA for the years 2008 and 2010. A projected NA population growth of 1.1% between the years of 2008 and 2010 has resulted in stagnant or slightly increasing estimated emissions for all pollutants in all sectors except On-road Mobile Emissions (Table 6.1). In particular, population increases have resulted in increased emissions in the following sectors: construction; mobile brake wear, tire wear, and dust re-entrainment; waste disposal; and fuel burning. Despite these population based increases in emissions, a decrease in Mobile emissions between 2008 and 2010 resulted in a net decrease in total emissions for all pollutants. The On-road Mobile Emission decreases are primarily attributable to advances in motor vehicle control technologies and fuel efficiency.

Table 6.1: Nogales NA Emissions Totals by Major Source Category for 2008 and 2010				
Pollutant	**Source Category**	**2008 NNA (tpy)**	**2010 NNA (tpy)**	**% Change 2008-2010**
NH3 - Ammonia	Non-road Mobile Source Emissions Categories	0.08	0.08	0%
	Non-point Source Emissions Categories	22.89	23.03	1%
	On-road Mobile Emissions Source Categories	14.42	12.96	-10%
	Total	**37.39**	**36.07**	**-4%**
NOx - Nitrogen Oxides	Non-road Mobile Source Emissions Categories	142.69	142.73	0%
	Non-point Source Emissions Categories	48.80	49.32	1%
	On-road Mobile Emissions Source Categories	912.91	743.72	-19%
	Point Sources	11.03	11.03	0%
	Total	**1,115.42**	**946.80**	**-15%**
PM25-PRI - PM2.5 Primary (Filter + Condensable)	Non-road Mobile Source Emissions Categories	13.14	13.17	0%
	Non-point Source Emissions Categories	395.97	399.17	1%
	On-road Mobile Emissions Source Categories	25.12	20.12	-20%
	Point Sources	1.39	1.39	0%
	Total	**435.62**	**433.85**	**0%**
SO2 - Sulfur Dioxide	Non-road Mobile Source Emissions Categories	2.80	2.80	0%
	Non-point Source Emissions Categories	28.32	28.33	0%
	On-road Mobile Emissions Source Categories	7.49	4.60	-39%
	Point Sources	0.48	0.48	0%
	Total	**39.10**	**36.22**	**-7%**
VOC - Volatile Organic Compounds	Non-road Mobile Source Emissions Categories	158.61	159.58	1%
	Non-point Source Emissions Categories	902.67	912.56	1%
	On-road Mobile Emissions Source Categories	426.18	369.54	-13%
	Point Sources	3.31	3.31	0%
	Total	**1,490.77**	**1,444.99**	**-3%**

Appendix A: ADOA Estimated Santa Cruz and City of Nogales Populations, 2000-2010

ADOA Estimate Period	Est. Base 2000 Revised to U.S. Census	Est. July 1, 2000	Est. July 1, 2001	Est. July 1, 2002	Est. July 1, 2003	Est. July 1, 2004	Est. July 1, 2005	Est. July 1, 2006	Est. July 1, 2007	Est. July 1, 2008	Est. July 1, 2009	July 1, 2010 Est. Revised to U.S. Census
Santa Cruz	**38,381**	**39,305**	**39,224**	**39,657**	**40,528**	**42,038**	**43,809**	**44,929**	**46,519**	**47,016**	**47,384**	**47,539**
Nogales	20,878	20,969	20,887	20,923	20,915	21,219	21,474	21,327	21,223	21,107	20,956	20,880
Balance of County	16,599	17,441	17,446	17,836	18,708	19,918	21,427	22,697	24,388	24,996	25,519	25,750

Nogales NAA Boundary By 2010 Census Block



Appendix B: MOVES 2008 Run Specification using Santa Cruz County Database (local)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Appendix C: MOVES 2008 Run Specification using EPA's Default Database (national)


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Appendix D: Email from EPA specifying Re: Nogales Emissions Inventory and MOVES

From: Jeffrey Buss [Buss.Jeffrey@epamail.epa.gov]
Sent: Thursday, May 31, 2012 8:32 AM
To: Ryan C. Templeton
Cc: Diane Arnst; Steve M. Calderon; Colleen McKaughan; Phil B. Denee; Jerry Wamsley; Theresa E. Rigney
Subject: Re: Nogales Emissions Inventory and MOVES
Good morning Ryan.

I checked my notes from our conversation last April and agree with your summary about how to proceed with the PM emissions inventory development using MOVES. I would just note that the reason for using population increase between 2008 and 2010 (as described in the #3 recommendations below) is that VMT or related data (which might be more accurate than population) is not available.

Please let me know if you have questions or need other information.

Best,

Jeffrey Buss
U.S. EPA Region 9
415-947-4152

From: "Ryan C. Templeton" <Templeton.Ryan@azdeq.gov>
To: Jeffrey Buss/R9/USEPA/US@EPA
Cc: Colleen McKaughan/R9/USEPA/US@EPA, Diane Arnst <Arnst.Diane@azdeq.gov>, Jerry Wamsley/R9/USEPA/US@EPA, "Theresa E. Rigney" <Rigney.Theresa@azdeq.gov>, "Steve M. Calderon" <Calderon.Steve@azdeq.gov>, "Phil B. Denee" <Denee.Phil@azdeq.gov>
Date: 05/31/2012 08:08 AM
Subject:

Jeff,

As ADEQ is currently in the final stages of completing the Emission Inventory (EI) for the Nogales, AZ Non-Attainment Area, we wanted to confirm the alternative methods you proposed for estimation of on-road mobile source emissions using MOVES were acceptable for the PM2.5 Inventory development. On 4/30/2012 you and I spoke on the phone regarding the following issues with MOVES on-road mobile emission estimation using the Santa Cruz county database that was supplied to ADEQ by EPA ("c04023y2008_in20100329"):

1) 2008 SO2 MOVES emissions were under-calculated as 0 tons.

2) 2008 VOC MOVES emissions were over-calculated as 40,000 tons.
3) The 2010 specific data was not included within the supplied database making ADEQ unable to run MOVES for this year.

A more accurate dataset was unavailable from Santa Cruz County or ADOT. Upon discussing these issues with you, the following recommendations/agreements were made regarding how to proceed with PM2.5 EI development:

1) 2008 SO2 emissions should be calculated using the National, default database within MOVES.
2) 2008 VOC emissions should be calculated using the National, default database within MOVES.
3) 2010 emissions should be grown from 2008 MOVES results based on population increases within the Non-Attainment Area over the same time period.

Please confirm that these alternative methods of MOVES emission calculation are acceptable for the finalization of the Nogales, AZ PM2.5 EI. If these methods are not acceptable, please advise on what steps should be taken to compensate for the above listed MOVES County database deficiencies.

Thanks,

Ryan Templeton
Environmental Engineer Specialist
Air Quality Division
Arizona Department of Environmental Quality
rct@azdeq.gov
(602) 771-4230

Appendix E: MOVES Emission Calculations using local database to National Default Ratio Technique

The emissions (tpy) presented in the "2008 local (FINAL)" Table below contain the MOVES results for NH_3, NO_x, and $PM_{2.5}$ using the local database and the SO_2 and VOC results using the national default database.

Table E-1

2008 local (FINAL)	NH3		NOx		PM2.5		SO2		VOC	
	SC county	NAA	SC county	NAA	SC county	NAA	SC county	NAA	SC county	NAA
On-Road Gasoline Off-Network	0.00	0.00	138.93	91.80	1.77	1.17	0.29	0.19	413.29	273.09
On-Road Gasoline Rural Restricted Access	4.71	3.11	113.37	74.91	1.44	0.95	1.91	1.26	38.17	25.22
On-Road Gasoline Rural Unrestricted Access	4.73	3.13	113.27	74.85	1.04	0.69	2.41	1.59	54.64	36.10
On-Road Gasoline Urban Restricted Access	2.18	1.44	51.57	34.08	0.70	0.46	0.45	0.30	10.79	7.13
On-Road Gasoline Urban Unrestricted Access	8.88	5.87	215.64	142.49	2.03	1.34	2.17	1.43	61.98	40.95
On-Road Diesel Off-Network	0.00	0.00	72.17	47.69	1.07	0.71	0.13	0.09	25.41	16.79
On-Road Diesel Rural Restricted Access	0.60	0.40	326.14	215.51	12.27	8.11	2.35	1.55	18.45	12.19
On-Road Diesel Rural Unrestricted Access	0.24	0.16	106.38	70.29	4.88	3.22	0.99	0.65	12.35	8.16
On-Road Diesel Urban Restricted Access	0.13	0.09	62.30	41.17	2.84	1.88	0.17	0.11	2.15	1.42
On-Road Diesel Urban Unrestricted Access	0.35	0.23	181.80	120.13	9.98	6.59	0.47	0.31	7.74	5.11
TOTAL	**21.82**	**14.42**	**1381.57**	**912.91**	**38.02**	**25.12**	**11.34**	**7.49**	**644.97**	**426.18**

The emissions (tpy) presented in the "2008 National" Table below contain the MOVES results for NH_3, NO_x, $PM_{2.5}$, SO_2, and VOCs using the national default database for 2008.

Table E-2

2008 National	NH3		NOx		PM2.5		SO2		VOC	
	SC county	NAA	SC county	NAA	SC county	NAA	SC county	NAA	SC county	NAA
On-Road Gasoline Off-Network	0.00	0.00	193.08	127.58	2.48	1.64	0.29	0.19	413.29	273.09
On-Road Gasoline Rural Restricted Access	7.89	5.22	208.24	137.60	2.54	1.68	1.91	1.26	38.17	25.22
On-Road Gasoline Rural Unrestricted Access	9.09	6.00	238.54	157.62	2.09	1.38	2.41	1.59	54.64	36.10
On-Road Gasoline Urban Restricted Access	1.73	1.14	44.90	29.67	0.59	0.39	0.45	0.30	10.79	7.13
On-Road Gasoline Urban Unrestricted Access	7.17	4.74	189.64	125.31	1.73	1.14	2.17	1.44	61.98	40.96
On-Road Diesel Off-Network	0.00	0.00	109.55	72.39	1.65	1.09	0.13	0.08	25.41	16.79
On-Road Diesel Rural Restricted Access	1.05	0.69	588.19	388.66	22.49	14.86	2.35	1.56	18.45	12.19
On-Road Diesel Rural Unrestricted Access	0.55	0.36	243.99	161.22	11.29	7.46	0.99	0.66	12.35	8.16
On-Road Diesel Urban Restricted Access	0.09	0.06	42.53	28.10	1.99	1.31	0.17	0.11	2.15	1.42
On-Road Diesel Urban Unrestricted Access	0.24	0.16	114.86	75.90	6.30	4.16	0.47	0.31	7.74	5.11

The ratios presented in the '2008 local ratio' Table below are the calculated ratios of the 2008 local emissions (Table E-1) to the 2008 national emissions (Table E-2). Ratios for SO_2 and VOCs were not calculated since the 2008 National emissions were used in place of the 2008 Local due to the anomalous emissions that were calculated from the 2008 local database.

Table E-3

2008 local ratio	NH3	NOx	PM2.5	SO2	VOC
	SC county	SC county	SC county	SC county	SC county
On-Road Gasoline Off-Network	0.00	0.72	0.71	NA	NA
On-Road Gasoline Rural Restricted Access	0.60	0.54	0.57	NA	NA
On-Road Gasoline Rural Unrestricted Access	0.52	0.47	0.50	NA	NA
On-Road Gasoline Urban Restricted Access	1.26	1.15	1.19	NA	NA
On-Road Gasoline Urban Unrestricted Access	1.24	1.14	1.17	NA	NA
On-Road Diesel Off-Network	0.00	0.66	0.65	NA	NA
On-Road Diesel Rural Restricted Access	0.57	0.55	0.55	NA	NA
On-Road Diesel Rural Unrestricted Access	0.44	0.44	0.43	NA	NA
On-Road Diesel Urban Restricted Access	1.44	1.46	1.43	NA	NA
On-Road Diesel Urban Unrestricted Access	1.46	1.58	1.58	NA	NA

Table E-4

Population		
	2008	2010
Santa Cruz County	47,016	47,539
Nogales NA	31,067	31,413
Ratio	66.1%	66.1%

The emissions (tpy) presented in the "2010 National" Table below contain the MOVES results for NH_3, NO_x, $PM_{2.5}$, SO_2, and VOCs using the national default database for 2010.

Table E-5

2010 National	NH3		NOx		PM2.5		SO2		VOC	
	SC county	NAA	SC county	NAA	SC county	NAA	SC county	NAA	SC county	NAA
On-Road Gasoline Off-Network	0.00	0.00	176.61	116.70	2.22	1.47	0.20	0.13	372.57	246.19
On-Road Gasoline Rural Restricted Access	7.08	4.68	177.33	117.18	2.29	1.51	1.32	0.87	30.69	20.28
On-Road Gasoline Rural Unrestricted Access	8.16	5.39	203.50	134.47	1.88	1.24	1.67	1.10	43.36	28.65
On-Road Gasoline Urban Restricted Access	1.55	1.02	38.09	25.17	0.53	0.35	0.31	0.21	8.52	5.63
On-Road Gasoline Urban Unrestricted Access	6.43	4.25	160.67	106.17	1.58	1.04	1.51	0.99	48.74	32.21
On-Road Diesel Off-Network	0.00	0.00	97.75	64.59	1.26	0.83	0.06	0.04	21.11	13.95
On-Road Diesel Rural Restricted Access	0.95	0.63	440.66	291.18	17.34	11.46	1.12	0.74	15.14	10.00
On-Road Diesel Rural Unrestricted Access	0.51	0.34	186.12	122.98	8.81	5.82	0.48	0.32	10.51	6.95
On-Road Diesel Urban Restricted Access	0.08	0.06	32.40	21.41	1.55	1.03	0.08	0.05	1.83	1.21
On-Road Diesel Urban Unrestricted Access	0.23	0.15	89.38	59.06	4.96	3.28	0.23	0.15	6.76	4.47

The emissions (tpy) presented in the "2010 corrected for local (FINAL)" Table below represent the final MOVES emissions results for Santa Cruz County for 2010. The NH_3, NO_X, and $PM_{2.5}$ emissions resulted from an adjustment to the emissions that were produced when using the 2010 National Default database by multiplying the emissions from Table E-5 by the ratios from Table E-3. SO_2, and VOC emissions presented in Table E-6 were simply calculated using the 2010 national default database and are identical to those emissions presented in Table E-5.

Table E-6

2010 corrected for local (FINAL)	NH3		NOx		PM2.5		SO2		VOC	
	SC county	NAA	SC county	NAA	SC county	NAA	SC county	NAA	SC county	NAA
On-Road Gasoline Off-Network	0.00	0.00	127.08	83.97	1.58	1.05	0.20	0.13	372.57	246.19
On-Road Gasoline Rural Restricted Access	4.23	2.79	96.54	63.79	1.30	0.86	1.32	0.87	30.69	20.28
On-Road Gasoline Rural Unrestricted Access	4.25	2.81	96.63	63.85	0.94	0.62	1.67	1.10	43.36	28.65
On-Road Gasoline Urban Restricted Access	1.95	1.29	43.75	28.91	0.63	0.42	0.31	0.21	8.52	5.63
On-Road Gasoline Urban Unrestricted Access	7.96	5.26	182.70	120.72	1.85	1.23	1.51	0.99	48.74	32.21
On-Road Diesel Off-Network	0.00	0.00	64.40	42.55	0.82	0.54	0.06	0.04	21.11	13.95
On-Road Diesel Rural Restricted Access	0.54	0.36	244.34	161.45	9.46	6.25	1.12	0.74	15.14	10.00
On-Road Diesel Rural Unrestricted Access	0.22	0.15	81.15	53.62	3.81	2.52	0.48	0.32	10.51	6.95
On-Road Diesel Urban Restricted Access	0.12	0.08	47.46	31.36	2.21	1.46	0.08	0.05	1.83	1.21
On-Road Diesel Urban Unrestricted Access	0.34	0.22	141.47	93.48	7.86	5.19	0.23	0.15	6.76	4.47
TOTAL	**19.61**	**12.96**	**1125.51**	**743.72**	**30.46**	**20.12**	**6.98**	**4.60**	**559.23**	**369.54**

A brief explanation of how the calculations were performed is provided below:

Example using On-Road Gasoline Urban Restricted Access (highlighted in blue)

Table E-1 The MOVES (County) 2008 emission using local (County) data for the Urban Restricted Access for NH3 is 2.18
Table E-2 The MOVES (County) 2008 emission using the National data for the Urban Restricted Access for NH3 is 1.73
Table E-3 The ratio of National to local is 2.18/1.73 = 1.26
Table E-5 The MOVES (County) 2010 emission using the National data for the Urban Restricted Access for NH3 is 1.55
Table E-6 The MOVES (County) 2010 emission for (County) data for the Urban Restricted Access for NH3 would then be 1.55 X 1.26 = 1.95

AI2 Analysis of $PM_{2.5}$ Exceedance in Pinal County Arizona: Demonstration that PM2.5 Concentrations are Driven by Local Sources of PM10 Near the Cowtown Monitor

Arizona Department of Environmental Quality

Analysis of $PM_{2.5}$ Exceedances in Pinal County Arizona:

Demonstration that $PM_{2.5}$ Concentrations are Driven by Local Sources of

PM_{10} Near the Cowtown Monitor

March 15, 2010

Air Quality Division
Arizona Department of Environmental Quality
Phoenix, AZ 85007

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Appendix A Memorandum from Pinal County Air Quality Control District Regarding Data Invalidation

Analysis of $PM_{2.5}$ Exceedances in Pinal County Arizona:

Demonstration that $PM_{2.5}$ Concentrations are Driven by Local Sources of PM_{10} Near the Cowtown Monitor

Summary

In 2006, the EPA revised the 1997 $PM_{2.5}$ (particulate matter smaller then 2.5 microns in size) National Ambient Air Quality Standard (NAAQS), setting the 24-hour average standard to 35 µg/m³, but leaving the annual average standard at 15 µg/m³. Since then, the EPA has sent notice to the State that the Cowtown monitor in Pinal County exceeds both the annual average and 24-hour average $PM_{2.5}$ NAAQS, but only requested that the State send a recommendation for a nonattainment area boundary for the annual average standard. Further, EPA indicated that it may favor a proposal in which Pinal County and eight other surrounding counties (approximately 58,000 square miles) be designated as a $PM_{2.5}$ nonattainment area. Any proposal, however, would be based solely on violations of the $PM_{2.5}$ NAAQS measured at the Cowtown monitor located in the Town of Maricopa in Pinal County. The Cowtown monitor frequently records $PM_{2.5}$ concentrations above the established 2006 ambient $PM_{2.5}$ 24-hour standard. Yet, unlike most other existing $PM_{2.5}$ nonattainment areas, the elevated $PM_{2.5}$ concentrations measured at Cowtown are not primarily from combustion, medium- or long-range transport of emissions, or secondary particle formation. Rather, they are the result of very high localized $PM_{2.5}$ concentrations as a component of PM_{10} and from emissions generated within a few kilometers of the monitor.

This memorandum demonstrates that the monitored $PM_{2.5}$ exceedances are largely, if not entirely, a product of local sources — primarily, nearby agriculture and related activities, including geologic dust, manure particles, and, on occasion, smoke and soot. Results presented in a 2005 source apportionment study[1] carried out by the Pinal County Air Quality Control District (PCAQCD), as well as statistical analysis of recent PM_{10} and $PM_{2.5}$ air quality data, study of meteorology data, and back trajectory analysis will each demonstrate that local sources of PM_{10} are the most significant contributors to elevated $PM_{2.5}$ concentrations at the monitor. One of the major implications of this analysis is that no $PM_{2.5}$ specific control measures will be necessary to attain the NAAQS; i.e., controls capable of attaining the PM_{10} NAAQS will result in attainment of the $PM_{2.5}$ NAAQS. Further, these findings would support a recommendation to establish $PM_{2.5}$ nonattainment area, if it is at all necessary, covering only that geographic area directly affecting the Cowtown monitor and nearby areas with the same primary sources of PM_{10} and, thus, $PM_{2.5}$.

[1] PCAQCD staff, "Pinal County Air Quality Control District Source Apportionment Study," July 29, 2005

Introduction

As a technical support document to the Pinal County nonattainment area boundary recommendation, this paper will present several analytical methods to help regulators better understand ambient $PM_{2.5}$ pollutant concentrations in Pinal County, AZ. the objective of this paper is to discuss the factors which have likely contributed to the 29 $PM_{2.5}$ exceedances recorded at the Cowtown monitor during 2006, 2007, and 2008.

It should be noted that EPA has notified the State that a nonattainment designation needs to address violations of the annual average $PM_{2.5}$ NAAQS. Any analysis of annual average data, however, would be a fruitless exercise for a large number of reasons. Understanding the nature and causes of elevated $PM_{2.5}$ concentrations is best accomplished by looking at the smallest unit of analysis – the 24-hour average concentrations in this case. Evaluation of the exceedances of the 24-hour average NAAQS will shed ample light on all the issues that affect the violations of the annual standard, and, further, all control measures that are implemented to address the annual average will, by necessity, need to reduce emissions every day of the year.

The Cowtown, Pinal County, monitor has exceeded the $PM_{2.5}$ standard 30 times during calendar years 2006, 2007, and 2008. On April 17, 2006 there was a fire at the Hyponex Corporation facility, located in the town of Maricopa, AZ, which may have impacted the Cowtown monitor. The 30 days are listed in chronological order in Table 1.

Table 1: A total of 30 days exceeded the current $PM_{2.5}$ standard of 35 µg/m³ during 2006, 2007, and 2008.

RUN DATE	$PM_{2.5}$	RUN DATE	$PM_{2.5}$
1/11/2006	36.2	4/12/2007	45.4
1/17/2006	39.4	4/30/2007	53.9
2/22/2006	44.3	5/30/2007	37.0
4/17/2006 *	48.5	6/5/2007	44.2
5/5/2006	48.9	6/17/2007	48.2
5/23/2006	46.2	10/9/2007	38.3
5/29/2006	38.2	11/8/2007	44.7
6/16/2006	36.4	11/26/2007	46.8
10/2/2006	35.0	3/25/2008	41.7
10/20/2006	47.9	4/12/2008	40.7
11/1/2006	37.0	4/18/2008	35.9
12/1/2006	69.4	4/30/2008	39.6
12/7/2006	47.9	5/6/2008	40.4
12/13/2006	46.3	6/23/2008	36.8
2/23/2007	59.7	11/20/2008	38.1

* Hyponex fire

The Cowtown monitoring site is located approximately four miles southeast of the City of Maricopa and 15 miles south of the Phoenix urban area at 37580 W. Maricopa/Casa Grande Hwy. (Lat. N 33°63' Long. W 111°58'). The site lies within the irrigated desert plain, with active and retired agricultural operations to the north, northwest, and east. A grain-processing complex and three cattle-feedlot companies operate within a short distance of the monitor, to the south, southwest, and southeast. The source makeup near the Cowtown monitor suggests that nearby sources have a high potential to contribute to elevated $PM_{2.5}$ concentrations at the monitor; thus, any boundary recommendation must take into consideration these nearby sources. Most existing $PM_{2.5}$ nonattainment areas within the United States are affected by long-range transport of primary and secondary particles from combustion, as well as locally generated primary and secondary particulates. However, after an investigation into the primary causes of the Cowtown exceedances, this does not appear to be the case for the Cowtown monitor.

Results from a 2003 source apportionment study and from recent ongoing source attribution work at the Cowtown monitoring site will be used to evaluate sources near the Cowtown monitor. CMB (Chemical Mass Balance) modeling will determine relative source contributions at both the Cowtown and other Pinal County monitors. An investigation into the meteorological factors on each of the 30 exceedance days, and statistical analysis of the $PM_{2.5}$ data from Cowtown and other monitors, will demonstrate that local sources are driving the elevated $PM_{2.5}$ concentrations at Cowtown.

Source Apportionment

In 2003 PCAQD embarked on a rigorous source apportionment study to identify which emission sources are contributing to elevated particulate matter concentrations in the Pinal County agricultural basin. The study required extensive field work to collect ambient PM_{10} and $PM_{2.5}$ samples from five monitoring sites and three local source types, within Pinal county. The ambient and source-specific samples were chemically speciated and source-receptor chemical profiles were modeled with CMB (Chemical Mass Balance). The results of that study are presented in a 2005 report prepared by PCAQD titled "Pinal County Air Quality Control District Source Apportionment Study" and are summarized in this memorandum.

PCAQCD co-located filter based Mini-Vol monitors capable of measuring $PM_{2.5}$ and PM_{10} at five existing monitoring sites: Casa Grande, Coolidge, Cowtown, Pinal County Housing and Stanfield. All the existing sites had at least one Federal Reference Method (FRM) monitor configured to measure ambient PM_{10} concentrations and one site had an existing FRM monitor configured to measure ambient $PM_{2.5}$ concentrations. The Mini-Vol monitors operated in parallel with existing FRM monitors. Data collection occurred in October and November of 2003. The fieldwork also required that soil and feedlot surface material samples be collected to characterize unpaved road dust, agricultural dust and feedlot dust. DRI (Desert Research Institute) analyzed the material on the filters using various chemical methods, which provided refined source profiles or "fingerprints" for Pinal County soils and feedlots.

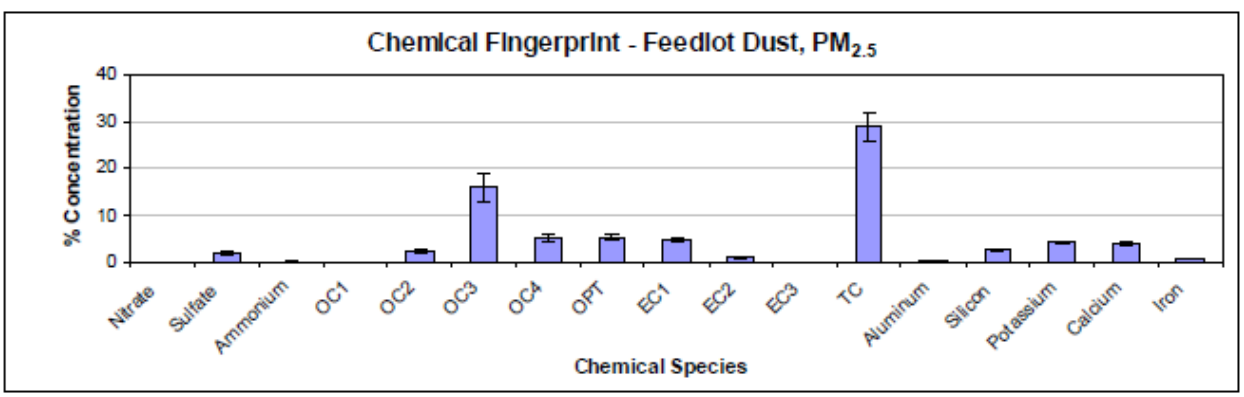
Table 2: The source apportionment modeling required chemical source profiles from seven source types, the eight source type was unclassifiable.

Source ID	Source Description	Notes
Soil	Geologic Soil	Existing 1990 Phoenix/Tucson - ag, unpaved roads, desert soils (Pinal County soils were updated for 2003)
Feedlot	Feedlot Soil	5 samples collected from nearby Cowtown feedlot soil
MvEmi	Motor vehicle Sources	Phoenix motor vehicle composite / Texas BRAVO [2]roadside exhaust
VgBrn	Vegetative Burning	BRAVO open burning – mesquite/shrubs/brush/dry grass piles
ColPP	Coal Fired Power Plant	BRAVO stack emissions from Texas electric utility
AmSulf	Ammonium Sulfate	Secondary ammonium sulfate
AmNitr	Ammonium Nitrate	Secondary ammonium nitrate
Other	Unclassified	Sources not modeled

Fine dust samples were collected from five different locations from each of the three Pinal County sources (feedlots, unpaved roads and agricultural fields) and were then shipped to the laboratory for chemical analysis. The new source specific chemical fingerprints for feedlots, unpaved roadways and agricultural fields, were then used as input to the CMB model, along with the other existing source profiles, to determine source contributions at each of five monitors. Motor vehicle, vegetative burning, coal power pant, ammonium sulfate and ammonium nitrate fingerprints were acquired from existing source profiles.

The chemical source profiles for feedlot dust, unpaved road dust and agricultural field dust are presented in Figures 1, 2 and 3 below.

Figure 1: Source specific chemical fingerprint for feedlot dust. The samples were collected from five locations at a feedlot near the Cowtown monitor, during October and November 2003 and analyzed



[2] BRAVO - Big Bend Regional Aerosol and Visibility Observational Study

Figure 2: Source specific chemical fingerprint for unpaved road dust. The samples were collected from five locations along an unpaved road near the Cowtown monitor, during October and November 2003.

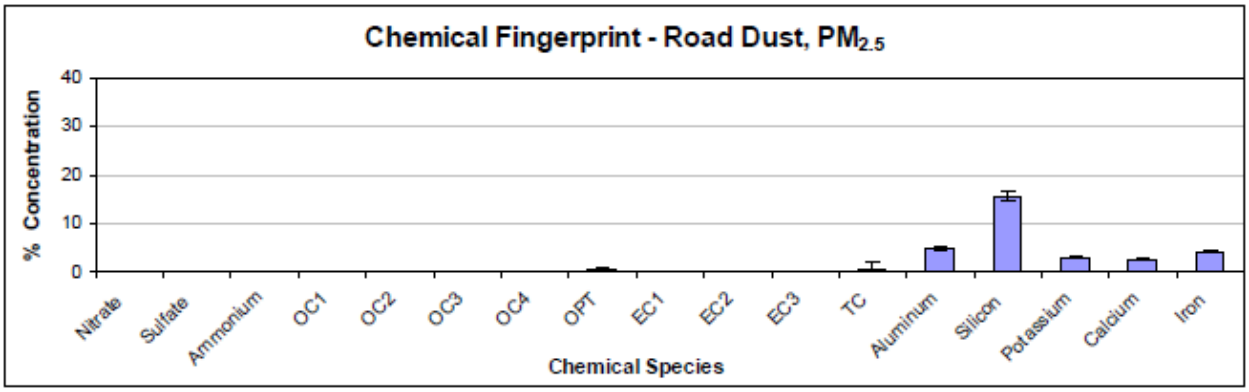
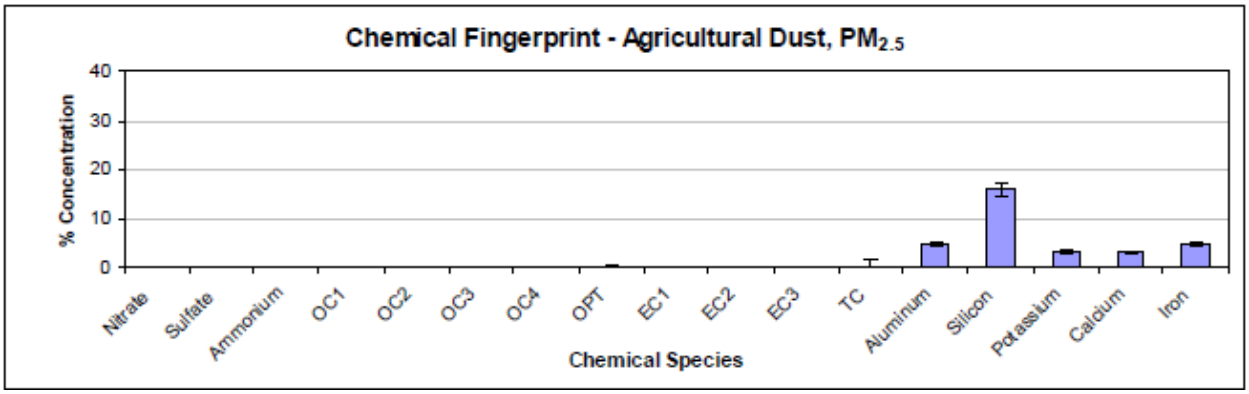


Figure 3: Source specific chemical fingerprint for agricultural dust. The samples were collected from five locations within an agricultural field near the Cowtown monitor, during October and November 2003.



Figures 1-3, illustrate the comparative chemical fingerprints from Pinal County, for fine particulate matter ($PM_{2.5}$). Shown are the percent concentrations of 17 chemical species and their analytical uncertainties, including water soluble nitrate, sulfate and ammonium, the eight carbon species (organic carbon fraction (OC1-4), pyrolysis of organic carbons to elemental carbons (OPT) and elemental carbon fraction (EC1-3), as well as the total carbon (TC), and five metals typical of most soils (aluminum, silicon, potassium, calcium and iron).

The chemical fingerprints are derived from an assortment of chemical analyses, including X-ray Fluorescence spectrometry (XRF) for elemental species like aluminum, silicon and iron, Ion Chromatography (IC) for sulfates and nitrates, Atomic Absorption (AA) for potassium, Automated Calorimetry (AC) for ammonium and Thermal/Optical Reflectance (TOR) for the carbon fractions (OC1-4, OPT, EC1-3 and TC). The relative abundance of each compound or compound group makes up the source signature. For example, the feedlot dust has a substantial amount of Total Carbon (TC) and OC3, with OC2, OC4, OPT and EC1 shares following close behind. The OC1, OC2, OC3, OC4, OPT, EC1, EC2 and EC3 designations refer to eight

separate carbon fractions, defined by temperature, oxidation atmosphere, and He-Ne laser light (J.C. Chow, 2001). One purpose of the TOR analysis is to distinguish, for example, diesel combustion from wood smoke particulate sources or in the case of Cowtown, to help catalog any organic carbon species associated with the feedlots, like cow manure, and distinguish them from other carbon rich sources. The Feedlot Dust sample differs from the Agricultural and Road Dusts in that it contains a substantial amount of total carbon (TC) which is the total of the concentrations of the carbon species, particularly of OC2, OC3, OC4, OPT and EC1.

Three ambient samples collected on high wind days on October 18 and 21 2003 and November 8 2003, from the Cowtown monitoring site were also analyzed using the same analytical methods used to profile the three nearby sources (feedlots, agricultural fields and unpaved roads). The chemical profiles from the Cowtown monitoring site indicate that feedlot emissions do contribute to the ambient $PM_{2.5}$ sample, while unpaved road dust and agricultural dust, albeit evident in the sample, are less conspicuous.

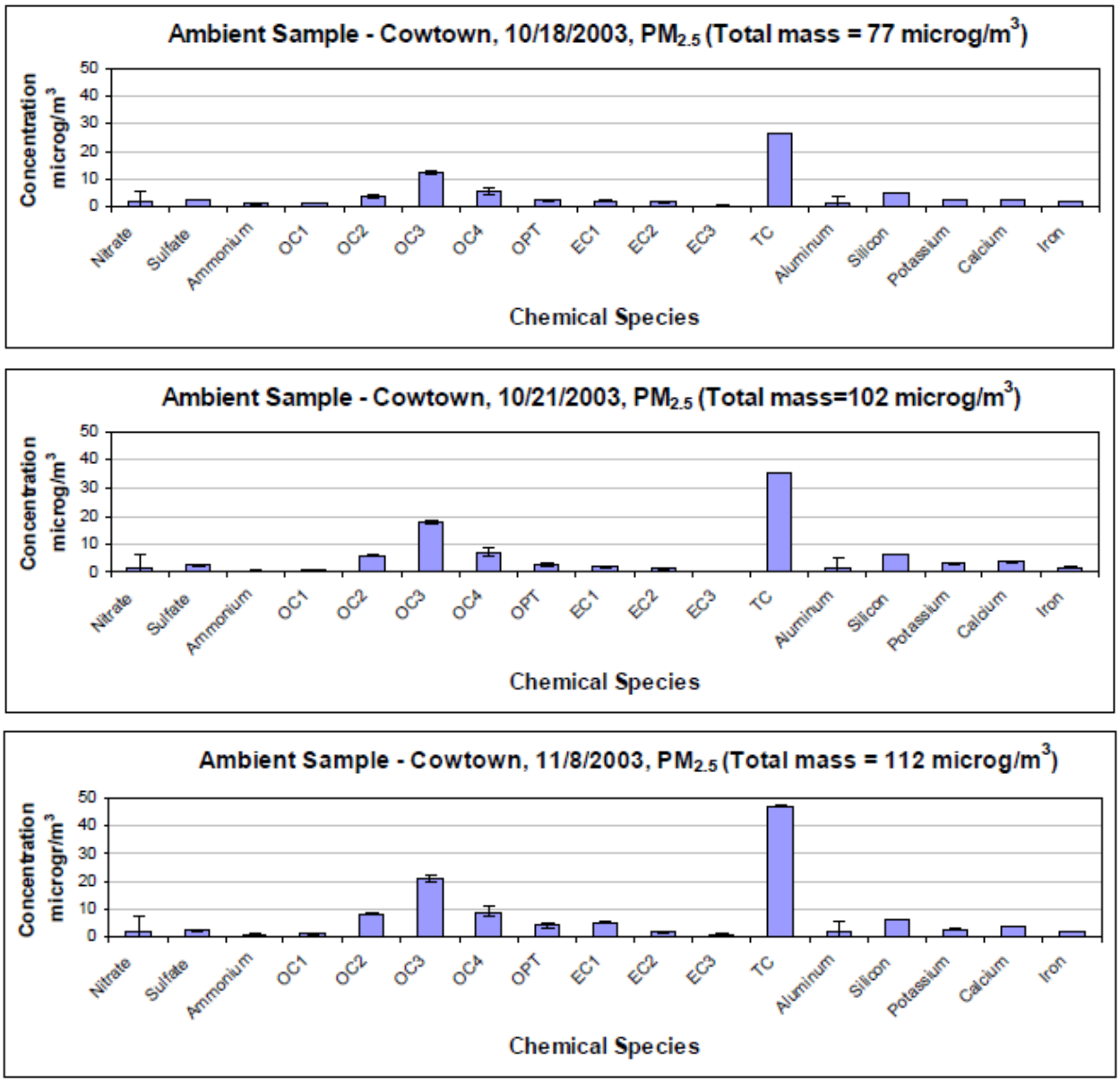
The three ambient samples are similar to the Feedlot Dust fingerprint since they all contain substantial amounts of total carbon (TC) with large proportions of OC2, OC3, OC4, OPT and EC1. This shows that the ambient samples do contain substantial amounts of the Feedlot Dust, as was confirmed by the Chemical Mass Balance (Version 8) receptor modeling results.

With the source and receptor profiles created, the CMB model was then used to evaluate source contributions at each Pinal County monitoring site. This receptor-oriented model is a good choice for this type of source contribution analysis, since we are attempting to identify and apportion source categories to the observed $PM_{2.5}$ concentrations from each monitoring site, but have limited source specific emissions inventory data and meteorology. Receptor-oriented models focus on the chemical profiles of ambient samples collected at the receptor and apply a mass balance approach to identify and apportion the sources. Source-oriented dispersion models, on the other hand, rely on real-world meteorology to transport the pollutant from the source to the receptor. Although dispersion models are generally capable of estimating quantitative impacts from sources, limitations in the model's ability to simulate complex meteorological conditions, like stagnation and varying qualities of emission inventories, make dispersion models insufficient for apportioning sources.

Fortunately, the CMB model can overcome the need to simulate complex meteorology and temporally resolved source specific emission inventories by establishing a source / receptor relationship based on an effective-variance least squares method (EVLS)[3], by analyzing and comparing the chemical characteristics of each ambient sample and source profile. The CMB model however, may not be the best choice to establish a quantitative measure of impacts from any particular source, but may be used to demonstrate relative impacts from sources or source categories at each monitor.

[3] http://www.epa.gov/scram001/receptor_cmb.htm

Figure 4: The sample source profiles from Cowtown for three high concentration days in 2003 (October 18 2003, October 21 2003 and November 8 2003).



Seven source categories (including one category for unclassifiable compounds), each with speciated source profiles from potential nearby and distant sources, were modeled along with each speciated set of samples collected from each Pinal County monitoring site. At the Cowtown monitor, the CMB model estimated that, on average, 49% of $PM_{2.5}$ at the monitor originates from feedlots and is the major component of the eight source types presented in Table 2. The CMB modeling results are consistent with the findings from the speciated source profile analyses, whereby feedlot emissions appeared prominent in the three ambient samples collected from the Cowtown monitor.

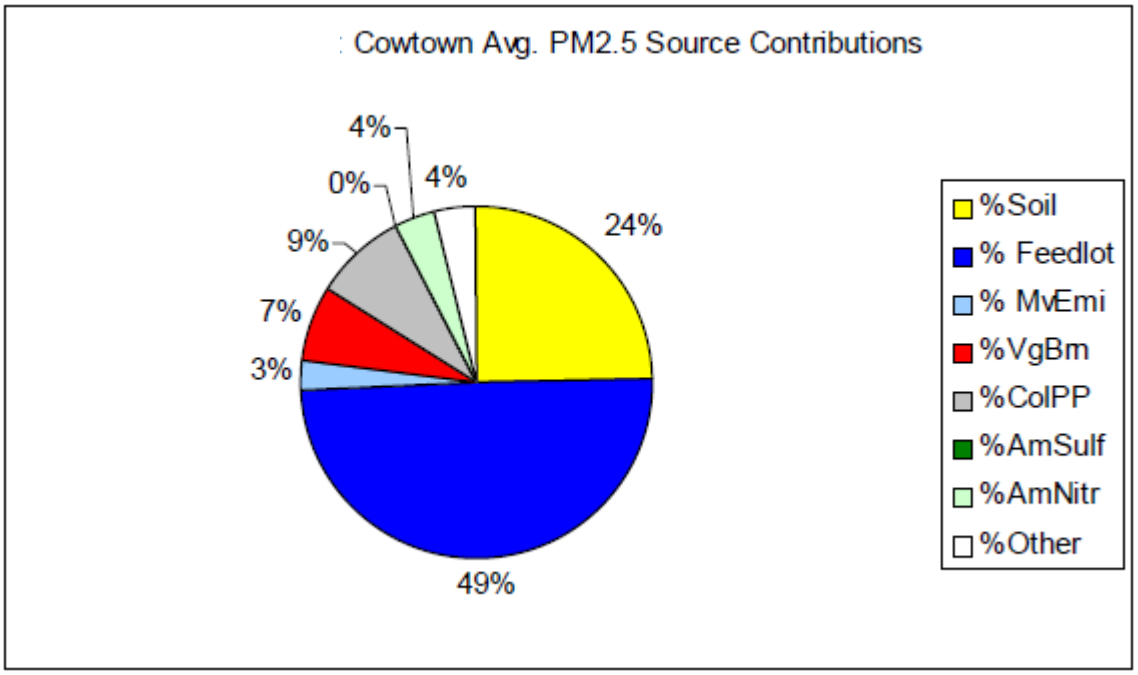
The average source category contributions from the remaining four monitoring sites were compared to the average source category contributions from the Cowtown monitor. That conclusion indicated that the Cowtown monitor is the only monitoring site in Pinal County where feedlot emissions dominate the $PM_{2.5}$ samples. Geologic soil was the dominate source category for each of the remaining four monitoring sites. It is also worth mentioning, that the PM_{10} samples from the Cowtown monitor were also dominated by feedlot emissions, which supports the *$PM_{2.5}$ as a function of PM_{10}*, data analysis presented later; that analysis shows that when $PM_{2.5}$ exceeds the standard, so does PM_{10}.

Source Apportionment - Primary Components of Cowtown $PM_{2.5}$

Nine 24-hour ambient $PM_{2.5}$ samples were collected from the Cowtown monitoring site during October and November 2003. The nine ambient samples were speciated and modeled using the CMB model to estimate the relative source category contributions at the Cowtown monitor. Based on the ambient sample data and CMB modeling, the most abundant source category for $PM_{2.5}$ was feedlot soils with an average contribution of 49% of the total. The second highest source contribution was the geological soil category with an average contribution of 24%. Cowtown was the only monitor in the Pinal County study area where the geological soil category did *not* have the highest source contribution. (See Figure 5) The average 24-hour $PM_{2.5}$ concentration at Cowtown was also well above any other Pinal County site at 67$\mu g/m^3$, as recorded by the Mini-Vol $PM_{2.5}$ sampler. Three samples had a recorded $PM_{2.5}$ Mini-Vol concentration above 100 $\mu g/m^3$, October 21, 2003, October 27, 2003, and November 8, 2003. On all three dates, the meteorological data indicates inversion conditions with light winds throughout the day, which further indicates that distant sources are not likely to have been major contributors to the highest recorded days during this study period.

The coal-fired power plant source category was the third most abundant category with an average relative contribution of 9%. This contribution from the coal power plant source category is a bit perplexing, however. According to the most updated state-wide emissions inventory, the nearest coal power plant is approximately 82 miles to the south east of the Cowtown monitor, and although it is possible for stack emissions to transport long distances, the stagnant meteorological conditions which were evident on the highest recorded $PM_{2.5}$ days, would likely have served to mitigate or even prevent any long range pollutant transport from affecting the Cowtown monitor on those days. Given that several exceedances were recorded on stagnant days, the relative contribution from the coal power plant source category is expected to be less than the third most abundant. This is particularly true at the Cowtown monitor, since it is located near several local sources of $PM_{10/2..5}$ and just 50 meters to the north of the Union Pacific Railroad tracks. However, although it is the third most abundant source category, the relative contribution from the power plant signature is only 9%, while geologic dust and feedlots together comprise 73% of the total $PM_{2.5}$.

Figure 5: Average source contributions predicted by the CMB model at the Cowtown monitor according to the 2003 source apportionment study. Feedlots are the predominant category at Cowtown.



It is possible; however, that the coal power plant profile was confused with the locomotive emission profile or even with feedlot emissions, since both locomotives and feedlots, like power plants, can have high measures of total carbon (TC) in their speciation profiles. However, locomotive sources were not modeled in the 2003 CMB analysis, so a locomotive emission profile was not readily available for comparison to the coal fired power plant profile. In any event, coal power plant emissions typically have more traceable heavy metals like selenium (Se) in the exhaust stream, which would make it difficult to confuse diesel exhaust from locomotives with coal power plant emissions. In fact, locomotive emissions may be more likely confused with heavy duty diesel vehicle emissions. But, if the locomotive emission profile were mixed-in with vehicle exhaust profile, locomotives would only likely be marginally responsible for any elevated $PM_{2.5}$ concentrations, since vehicle emissions are only on average 3% of the total ambient $PM_{2.5}$. However, no evidence appears to support that locomotive emissions have been confused with any of the seven source profiles, including the coal power plant source category.

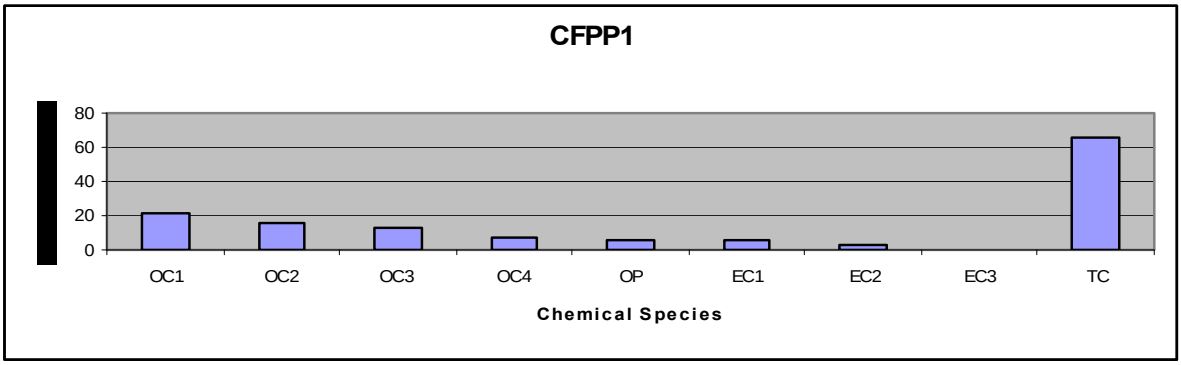
It is also unlikely that the coal fired power plant signature was confused with feedlot emissions. The carbon fraction profiles for the three power plants used as source profiles in the PCAQCD study are substantially different then that of feedlot signature. Figure 6 below illustrates the BRAVO carbon profiles for the three power plants. Each profile is different than that of the feedlot profile illustrated in Figure 1. The feedlot signature measures an abundance of TC and OC3, yet CFPP1, 2 and 3 (Coal Fired Power Plants 1, 2 and 3) each only indicate an abundance of TC, yet OC3 remains unsubstantial relative to the other carbon fractions.

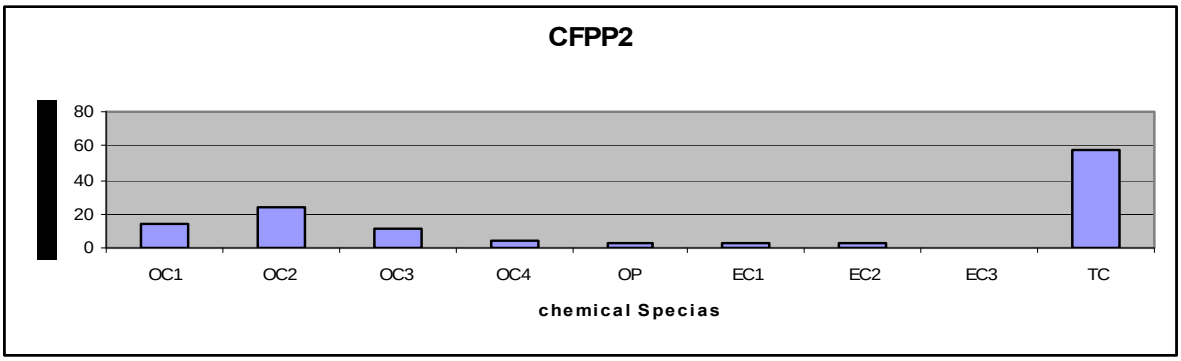
One explanation may be that the coal power plant category is entirely erroneous. The CMB modeling in the PCAQCD source apportionment report made use of both source specific chemical profiles for geologic and feedlot dust in addition to source profiles from the BRAVO study. As part of the BRAVO study, six coal power plants were profiled and all but two (plant numbers two and three) used lignite coal as a fuel, which is not used as a fuel in Arizona. However, the PCAQCD study, used three of the BRAVO coal power plants signatures, plant one (CFPP1), plant two (CFPP2) and plant three (CFPP3). CFPP2 and CFPP3 are described in the BRAVO study as using low-sulfur Western coal as fuel, similar to the fuel used in Arizona coal plants. However, CFPP1 has no such description, leaving some uncertainty as to what type of fuel CFPP1 uses. Furthermore, the PCAQCD report makes no mention of how the CMB model made use of the three profiles. So, the coal power plant contribution at Cowtown and in Pinal County should likely be considered unknown.

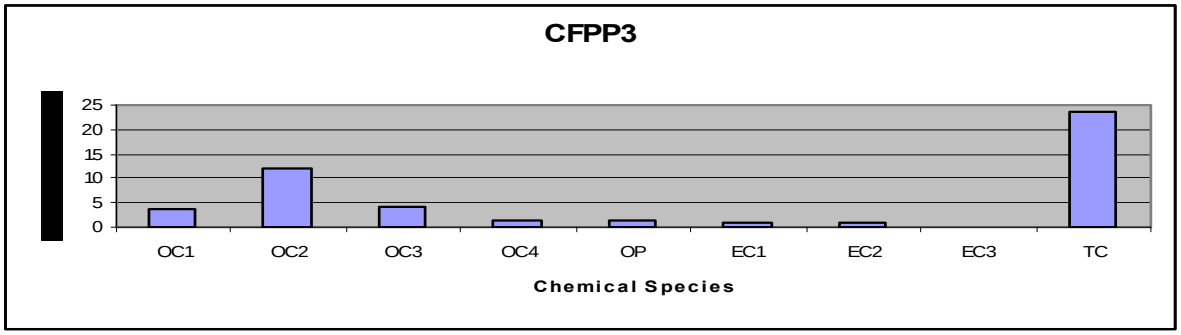
ADEQ has no data that suggest or supports that emissions from gas- or coal-fired power plants contribute to the $PM_{2.5}$ problem in Pinal County. Transport of windblown $PM_{2.5}$ to the Cowtown monitor has not been documented in Pinal County. To the contrary, the 2005 PCAQCD source apportionment report estimated that, on average, 49% of $PM_{2.5}$ at the Cowtown monitor originates from feedlots. While this study concludes that coal fired power plants may have contributed to the $PM_{2.5}$ concentrations measured at Cowtown:

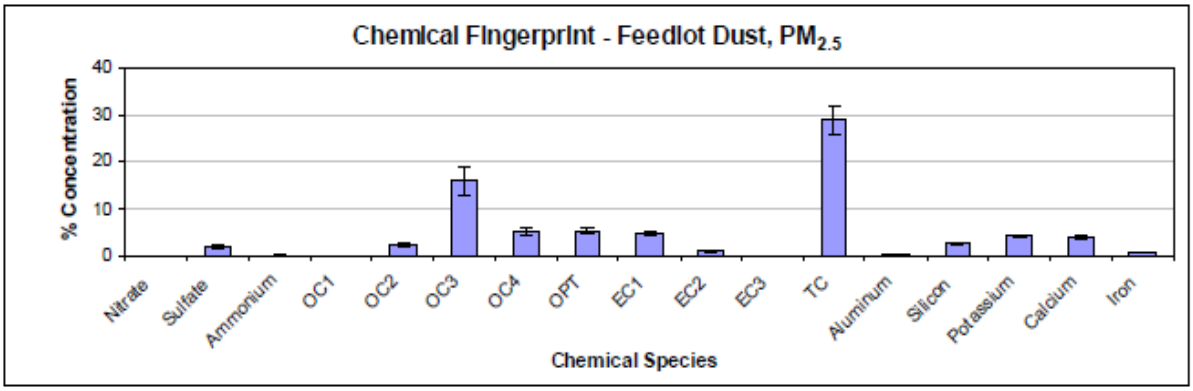
- The coal power plant proportion is small when compared to the portion of particulate apportioned to dust from soil and feedlots (the feedlot proportion increases with increasing $PM_{2.5}$ concentration) and is smaller when exceedances of the 24-hour average standard is exceeded;
- The most important marker of long-range emissions transport from coal power plants is secondary sulfate particles, the presence of which in the ambient samples was not at all in proportion to the amount of particulate attributed to coal power plants;
- ADEQ has very high confidence in the other "chemical fingerprints" used for the source apportionment analysis and the results relating to those sources (e.g., feedlot dust, soil, vegetative burning), but power plant signatures are poorly documented and significant nearby sources, such as railroad locomotives, were not included, which reduces the reliability of the results regarding power plants;
- Even if one assumes the coal power plant apportionment is correct, it is evidenced at all of the Pinal County sites, not just the only violating monitor, Cowtown; and
- Trajectory analyses described later in this paper show that for the range of meteorological conditions when exceedances of the 24-hour average standard are measured, winds in most cases would be carrying emissions from these plants (85 to 140 miles southeast of the violating monitor) away from the monitor rather than towards it.

Figure 6: Coal fired power plant (CFPP) carbon fraction signatures according to the BRAVO speciation profiles and the feedlot profile from the PCAQCD study.









Source Apportionment - Comparison with other $PM_{2.5}$ monitors

Samples collected at each of the five Pinal County monitoring sites were analyzed and their chemical profiles were modeled with CMB. The CMB modeling results indicate that soil dust is the major contributor at each monitor – Casa Grande, Coolidge, Pinal County housing and Stanfield.

The Casa Grande monitoring site is located in the downtown area of Casa Grande. There are no agricultural fields, dirt roads, feedlots or large construction projects in the area immediately surrounding the monitoring site. The CMB modeling results (Figure 7) indicate that geologic soil, coal power plants and automobile exhaust are the top three source categories contributing to this monitor.

The Coolidge monitoring site is located on the eastern side of the agricultural basin and is located near the edge of town. The site is located in a residential neighborhood and approximately ¼ of a mile west of active agricultural fields. The agricultural basin extends north of the Coolidge site a substantial distance. Although, approximately six miles east of the Coolidge site the landscape generally changes back to native desert and that landscape continues to the eastern boundary of the County with increasing elevations further to the east. The CMB modeling results (Figure 8) indicate that geologic soil, coal power plants and vegetative burning are the top three source categories contributing to this monitor.

The Pinal County Housing site is located in the heart of the agricultural basin. The site is immediately surrounded by native desert; beyond that open field agriculture dominates the landscape for at least ten miles in all directions. The CMB modeling results (Figure 9) indicate that geologic soil, coal power plants are the top two source categories, with vegetative burning and feedlot emissions tied for third.

The Stanfield site is located near several feedlots and dairies and is generally surrounded by open field agriculture. The community of Stanfield only extends ¼ to ½ a mile in all directions from the site, beyond that open field agriculture dominates the landscape. Sizeable feedlot operations and dairies lie approximately three miles to the north, east, and west. The CMB modeling results (Figure 10) indicate that geologic soil, coal power plants and vegetative burning are the top three source categories contributing to this monitor.

Even though each monitoring site is surrounded by a different source mix, soil emissions contribute the most to all monitors, except Cowtown. Coal power plants, vegetative burning and automobile exhaust are also prominent at each of the sites and although each site is relatively distinct from the other, the source profiles predicted by CMB are generally similar. The exception, again, is the Cowtown monitor, where feedlot emissions are dominant.

Figures 7, 8, 9 and 10: The CMB modeling results for each of the four monitoring sites (Casa Grande, Coolidge, Pinal County housing and Stanfield). The figures illustrate the average relative percent $PM_{2.5}$ source contributions for ten samples collected and analyzed at the Casa Grande monitoring site. (MvEmi = Motor Vehicle Emissions, VgBrn = Vegitative Burning, ColPP = Coal Fired Power Plant, AmSulf = Ammonium Sulfate, AmNitr = Ammonium Nitrate)

Figure 7 Casa Grande Avg. PM2.5 Source Attributions

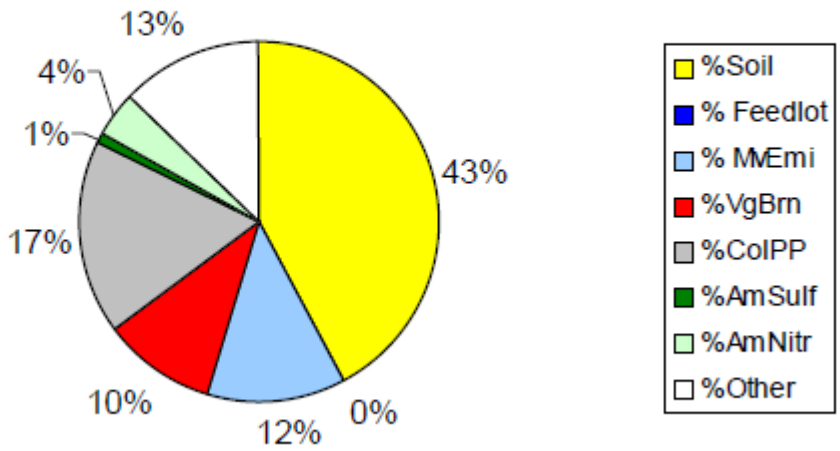


Figure 8 Coolidge Avg. PM2.5 Source Contributions

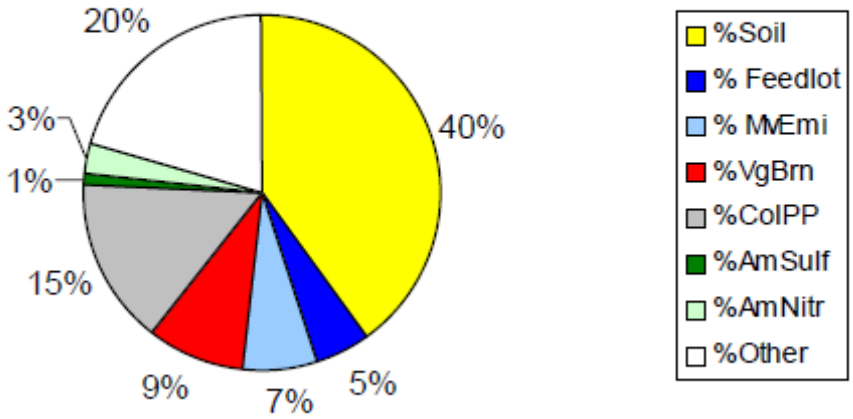


Figure 9 Pinal County Housing Avg. PM2.5 Source Contributions

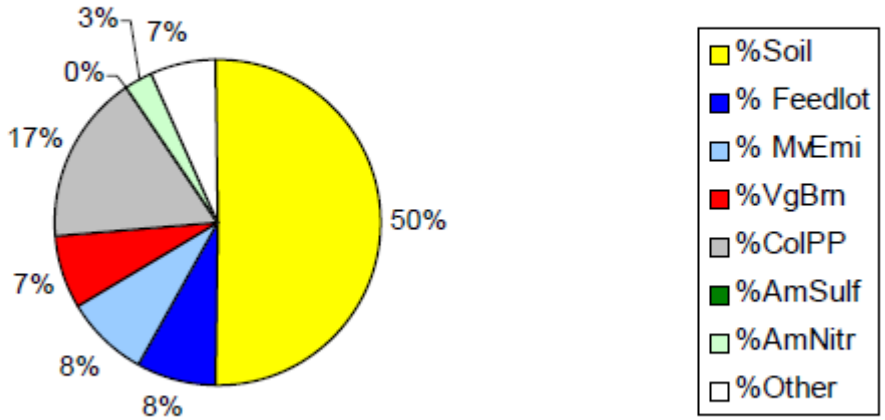
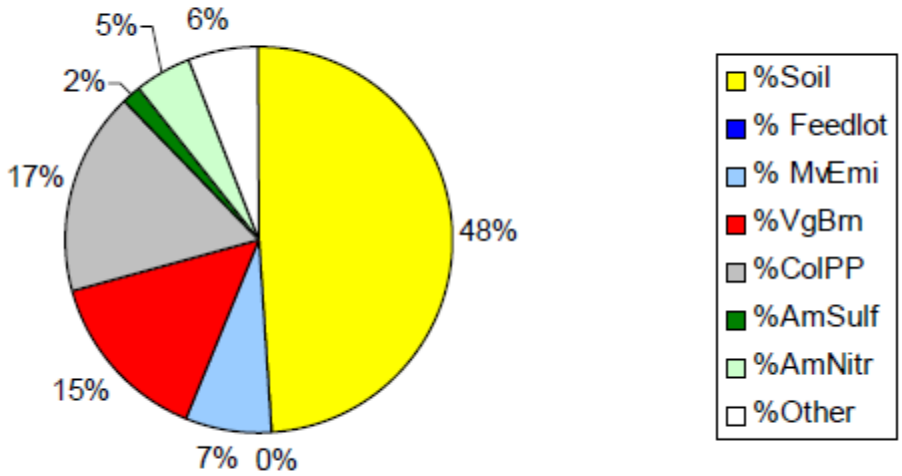


Figure 10 Stanfield Avg. PM2.5 Source Contributions



Meteorological Analysis

Site Geography

The Cowtown monitor is situated about 17 miles northwest of Casa Grande and 30 miles south of downtown Phoenix, Arizona. It is in the northern part of the Sonora Desert. The elevation of Cowtown is approximately 1,200 feet above sea level and separated from Phoenix by two mountain ranges – the Estrella Mountains (peak of 4,511 feet) and Phoenix's South Mountains (peak of 2,330 feet). Natural drainage is to the north via the Gila River. The Salt River merges with this drainage, which continues to run east to west on the north side of the above-mentioned mountain ranges. The Gila River then flows south to Gila Bend, eventually colliding with the Colorado River in Yuma, Arizona, an elevation near 250 feet above sea level.

Site Climatology

Temperature
Daily temperatures can fluctuate as much as 40 to 50 degrees Fahrenheit daily depending on atmospheric moisture, cloud cover and surface composition. The large fluctuations can play a role in the strength of afternoon surface breezes under high pressure. They can also increase the likelihood of morning surface inversions (where the surface becomes significantly colder than the air above it), especially during the winter. The normal January high temperature in Casa Grande (17 miles southeast of Cowtown) is 65°F and the normal low is 38°F. The normal July high temperature is 105°F and the low is 78°F.

Precipitation
The northern part of the Sonora Desert receives very little rain, typically between 5 to 10 inches annually. There are two distinct rain seasons in this part of the Sonoran Desert – winter (associate with low pressure systems and attached cold fronts) and summer (Monsoon wind shift with increase moisture from Mexico).

Wind
Strong winds typically occur when low pressure systems with attached cold fronts push through the region. This pattern is often seen in the spring and fall season. Characteristically as the system approaches, winds increase out of the southwest, moisture levels increase (depending on how much moisture is available) and atmospheric pressure decreases, resulting in increased vertical mixing. This turbulent atmosphere can trigger wide-spread areas of blowing particulates, especially in the absence of rain. After the front passes, decreasing winds shift out of the west and much cooler, drier air fills in behind the system. This can produce strong morning inversions that trap particles near the surface in shallow mixing depths.

Another scenario where strong winds may occur is during the summer Monsoon season where thunderstorms typically develop over mountainous areas as well as the open desert. Because the storms can develop anywhere, winds can come from any direction. As storms become severe,

microburst outflow winds can exceed 60 mph along the surface, again producing local and wide-spread areas of blowing particles.

Inversions

The typical profile from the surface to the bottom of the troposphere (approximately 11 miles above the surface) shows temperatures decreasing with increasing height. Warm air naturally rises and mixes with cooler air in an effort to reach equilibrium. The rate at which temperatures decrease is dependant on moisture. A dry air mass has a temperature decrease of about 5.5°F per 1,000ft in elevation (dry adiabatic lapse rate), and a saturated air mass has a temperature decrease of 3°F per 1,000ft (moist adiabatic lapse rate). Sometimes there can be a surge of warmer air aloft that cause temperatures to increase with height rather than decrease. Other times, the surface cools at a much more rapid rate than the air above. Both conditions produce the same result - a temperature inversion. Under an inversion, there is very little vertical mixing and typically weak horizontal winds due to high pressure. As the sun heats the surface in the morning, the temperature inversion weakens as the air at the surface warms. If the surface temperatures surpasses that of the air above it, the inversion breaks and vertical mixing ensues. Weak inversions (1-5°F) may break within an hour of sunrise. Sometimes, however, strong inversions (15-20°F) may not break at all, possibly keeping the air and its accumulated pollution trapped near the surface for several days at a time.

Stagnation

Stagnation conditions occur when a stable air mass remains over an area for an extended period of time, which can last as long as several days. In Arizona, this most often occurs during the winter months when a large ridge of high pressure sets up over most of the western United States. Afternoon desert temperatures may reach 70-80°F during these episodes under sunny conditions. Winds tend to be light both vertically and horizontally, primarily driven by topography. The typical surface flow is up-slope during the afternoon and down-slope during the night time and morning hours. Calms can be common and persistent. Under these conditions, pollution accumulates in the lower levels of the atmosphere, potentially leading to PM_{10} and $PM_{2.5}$ exceedances. Summer stagnation events may occur in late June and early July until Arizona Monsoon pattern sets up.

$PM_{2.5}$ Exceedance Days from 2006-2008

Table 3: A total of 30 days exceeded the current $PM_{2.5}$ standard of 35 µg/m³ during 2006, 2007, and 2008. 9 days were subject to stagnant conditions, 16 days had high winds and 5 days cannot be classified as windy or stagnant. This suggests that the PM2.5 exceedances are not directly associated with high or low winds.

RUN DATE	Meteorology	$PM_{2.5}$	RUN DATE	Meteorology	$PM_{2.5}$
1/11/2006	STAGNANT	36.2	4/12/2007	WIND	45.4
1/17/2006	STAGNANT	39.4	4/30/2007	WIND	53.9
2/22/2006	WIND	44.3	5/30/2007		37
4/17/2006 *	WIND	48.5	6/5/2007	WIND	44.2
5/5/2006	WIND	48.9	6/17/2007	WIND	48.2
5/23/2006	WIND	46.2	10/9/2007		38.3
5/29/2006	WIND	38.2	11/8/2007	STAGNANT	44.7
6/16/2006	WIND	36.4	11/26/2007	STAGNANT	46.8
10/2/2006	WIND	35	3/25/2008	STAGNANT	41.7
10/20/2006		47.9	4/12/2008		40.7
11/1/2006	STAGNANT	37	4/18/2008		35.9
12/1/2006	STAGNANT	69.4	4/30/2008	WIND	39.6
12/7/2006	WIND	47.9	5/6/2008	WIND	40.4
12/13/2006	STAGNANT	46.3	6/23/2008	WIND	36.8
2/23/2007	WIND	59.7	11/20/2008	STAGNANT	38.1

* Hyponex fire

Exceedances by Season

Looking at the weather pattern on the days that exceeded the $PM_{2.5}$ Federal health standard at the Cowtown monitoring site, 15 days (50%) occurred during the spring time. There were ten exceedance days (33%) in the fall. Four exceedance days occurred in the winter and just one in the summer. As noted above, strong winds due to low pressure systems accompanied by cold fronts are typically seen during the spring and fall months in Arizona. With 25 of the 30 exceedance days (88%) occurring during these seasons, it would appear that a large portion of the $PM_{2.5}$ exceedances are a result of non-stagnant events.

Exceedances by Wind Event/Stagnation

A closer look at horizontal and vertical wind speeds at the Cowtown monitor on the days that exceeded the $PM_{2.5}$ Federal health standards shows that 17 of the 30 days (56.3%) had relatively strong sustained winds with positive vertical mixing. Nine exceedance days (30.3%) were due to relatively light horizontal winds that could be classified under stagnant conditions. The final

four days (13.3%) have relatively low average wind speeds but strong enough peak wind gusts to neither be classified as wind or stagnation event.

As expected, 14 of the 17 (82%) high-wind exceedance days occurred in either the spring or fall. Two were in the winter (Feb. 22, 2006 and Feb. 23, 2007) and the last one occurring on the third day of summer (June 23, 2008). Seven of the nine stagnant days (77%) occurred in the spring or fall where only two (Jan. 11 and 17, 2006) were in the winter. The final four days that were neither classified as high-wind or stagnant all occurred in either the spring or fall.

The Cowtown $PM_{2.5}$ location is susceptible to exceeding the Federal health standard primarily during the spring and fall months. The majority of those exceedances are due strong winds while a large minority of exceedance days are due to inversions under stagnant conditions.

Back Trajectory Analysis

A series of back trajectory analyses were conducted using the NOAA (National Oceanographic and Atmospheric Administration) HYSPLIT (HYbrid Single-Particle Lagrangian Integrated Trajectory) model. The model is capable of computing air parcel trajectories in either a forward or backward mode and is a common tool used to examine long range transport. Forward trajectories can compute the path forward of an air parcel as it leaves a known point, while back trajectories can compute the path an air parcel traversed to get to a known point. The HYSPLIT model was used to compute back trajectories for each of seven design days: January 11, 2006, February 22, 2006, June 16, 2006, October 2, 2006, October 9, 2007, March 25, 2008, and June 23, 2008. The model results are used to estimate which sources may have contributed to the $PM_{2.5}$ exceedances at Cowtown on those days. The seven design dates represent seasonal high wind and low wind episodes for 2006, 2007 and 2008 on days when the Cowtown monitor exceeded the $PM_{2.5}$ standard.

For each day, HYSPLIT was used to compute a midnight, morning, afternoon and evening back trajectory. Each trajectory represents an air parcel as it moves through the atmosphere over twenty four hours, starting at 2300 hours and adjusted back every six hours for a total of 4 trajectories for each of the seven days. Each trajectory moves backwards from the end point at Cowtown to the, yet unknown, starting point, twenty four hours earlier. But, for ease of interpretation, it may be more practical to discuss the trajectories as moving forward, even though the HYSPLIT model calculated the paths in reverse.

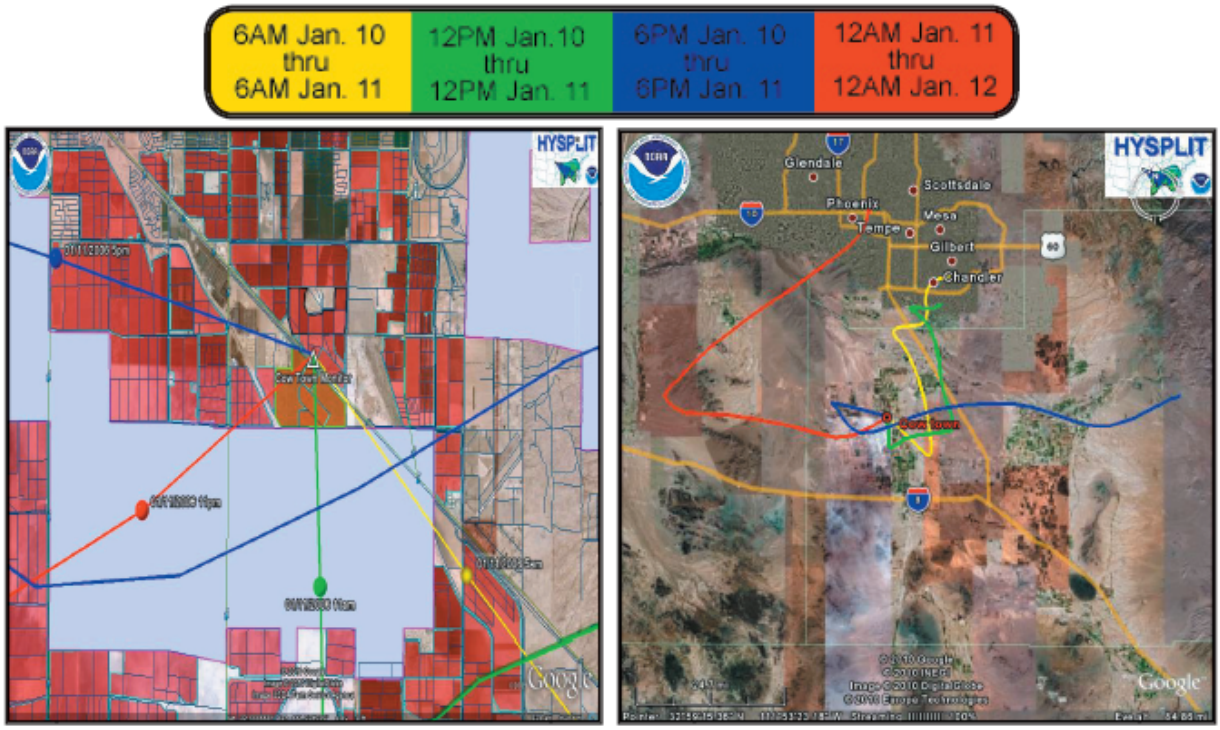
If one were to consider only the yellow line, in Figure 11a below, and move forward, the air parcel begins near Chandler, AZ at 6AM on January 10, 2006 and travels south for most of the day. The parcel then turns toward the north near Cowtown and at 6AM January 11, 2006 (twenty four hours later), the air parcel arrives at Cowtown. The green trajectory is next in the series and also begins near Chandler, AZ. But, this trajectory begins at 12PM on January 10, 2008 and travels south for most of the day, until it changes direction to the west and arrives at Cowtown at 12PM on January 11, 2006. The blue trajectory begins at 6PM on January 10, 2006 and arrives at Cowtown at 6PM January 11, 2006. The red trajectory begins at midnight January 10, 2006 and arrives at midnight January 11, 2006. Each of the trajectories for the seven design days begin at

the same times (6AM, 12PM, 6PM and 12AM) and travel for 24 hours, for each date. On this day, most of the winds were coming from the north and east and due to stagnant conditions, the winds were moving very slowly. On most other days, the typical wind direction is from the southwest, as seen in the remaining HYSPLIT analyses.

The January 11th modeling results indicate that the majority of 24-hour trajectories do not traverse any likely $PM_{2.5}$ sources until the air parcel nears the Cowtown monitor. For example, on June 23, 2008 (Figure 11g), each trajectory begins in the south-southwest area of the state and travels steadily towards the Cowtown monitor. Since no obvious $PM_{2.5}$ sources are located along the trajectory (beyond the area near Cowtown) only local $PM_{2.5}$ sources could have caused the exceedance on that day. The same is true for June 16, 2006 (Figure 11c), October 2, 2006 (Figure 11c), October 9, 2007 (Figure 11e), and March 25, 2008 (Figure 11f), only when the parcel nears the Cowtown monitor, does the air parcel traverse any $PM_{2.5}$ sources. However, January 11, 2006 (Figure 11a) and February 22, 2006 (Figure 11b) are somewhat different from the other five days, because some trajectories begin near the Phoenix and Yuma, urban areas. On January 11, 2006 (Figure 11a), the yellow, green and red trajectories originate from the Phoenix metropolitan area and on February 22, 2006 (Figure 11b) the yellow and green trajectories begin near Yuma, AZ. The January and February 2006 trajectories may indicate some tendency for air pollution from these urban areas to migrate towards Cowtown at those select times, but during the vast majority of the 24 hour trip, the air parcel did not pass over any likely $PM_{2.5}$ source(s). When the air parcel nears the Cowtown monitor, however, the majority of the trajectories will traverse nearby feedlot and agricultural sources.

The HYSPLIT model was also used to investigate the wind flows nearby the Cowtown monitor during times when the $PM_{2.5}$ monitor was measuring elevated hourly concentrations. The hourly PM_{10} data profiles (Continuous $PM_{2.5}$ was not available, so PM_{10} is used as a surrogate for $PM_{2.5}$) are provided for each figure. Detailed HYSPLIT output images illustrating the time varying air parcel trajectories layered on top local and distant sources is provided for each modeled day and are illustrated in the following figures (11a-h):

Figure 11a: January 11, 2006 (stagnant) modeled Cowtown back trajectories. There was a weak ridge of high pressure overhead that resulted in very light surface winds much of the day. The HYSPLIT 24-hour back trajectory shows the surface winds generally out of the north and east. The exceedance on this date appears to be attributed to stagnant conditions. During the times when ambient hourly PM10 was high, winds were coming from the southeast in the morning and southwest in the evening. The image on the left illustrates four color coded wind trajectories. The markers indicate the location of the air parcel, one hour before it reaches the Cowtown monitor. The red shaded areas are agricultural lands; the brown shaded areas are feedlots. The image to the right illustrates the long range 24-hour trajectory. The graph at bottom is the hourly PM10 data from the Cowtown monitor and is color coded the same as the trajectory maps to indicate the ambient PM10 concentration at the monitor one hour before the air parcel reaches the monitor. The brown and pink line at 150 µg/m³ indicates when the 24-hour PM10 standard was exceeded (12:00 hrs). Hourly PM2.5 data was not available, so hourly PM10 was used as a surrogate for PM2.5.



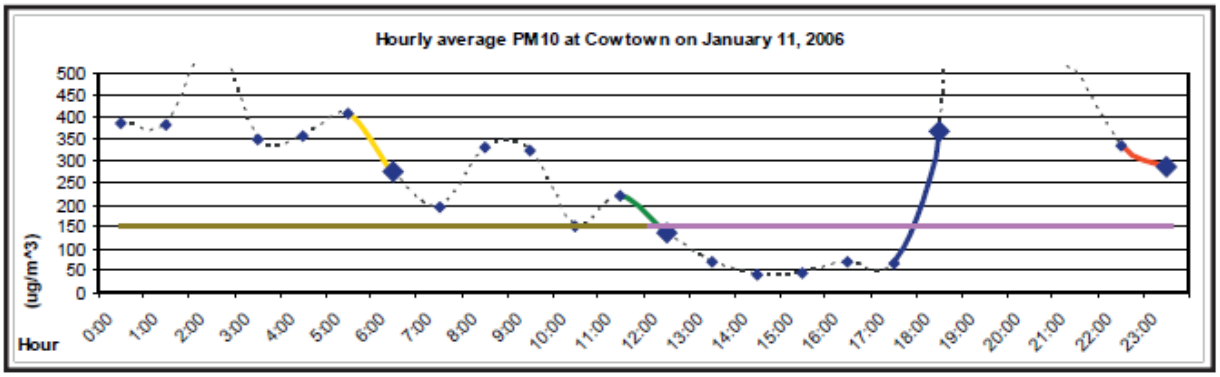


Figure 11b: February 22, 2006 (wind) modeled Cowtown back trajectories. On this date, a large trough of low pressure approached the region from the west. Strong surface winds caused widespread areas of blowing dust across the region. As expected, the HYSPLIT 24-hour back trajectory model shows these near-surface winds out of the west and northwest during this period. The image on the left illustrates four color coded wind trajectories. The markers indicate the location of the air parcel, one hour before it reaches the Cowtown monitor. The red shaded areas are agricultural lands; the brown shaded areas are feedlots. The image to the right illustrates the long range 24-hour trajectory. The graph at bottom is the hourly PM10 data from the Cowtown monitor and is color coded the same as the trajectory maps to indicate the ambient PM10 concentration at the monitor one hour before the air parcel reaches the monitor. The brown and pink line at 150 µg/m³ indicates when the 24-hour PM10 standard was exceeded (22:00 hrs). Hourly PM2.5 data was not available, so hourly PM10 was used as a surrogate for PM2.5.

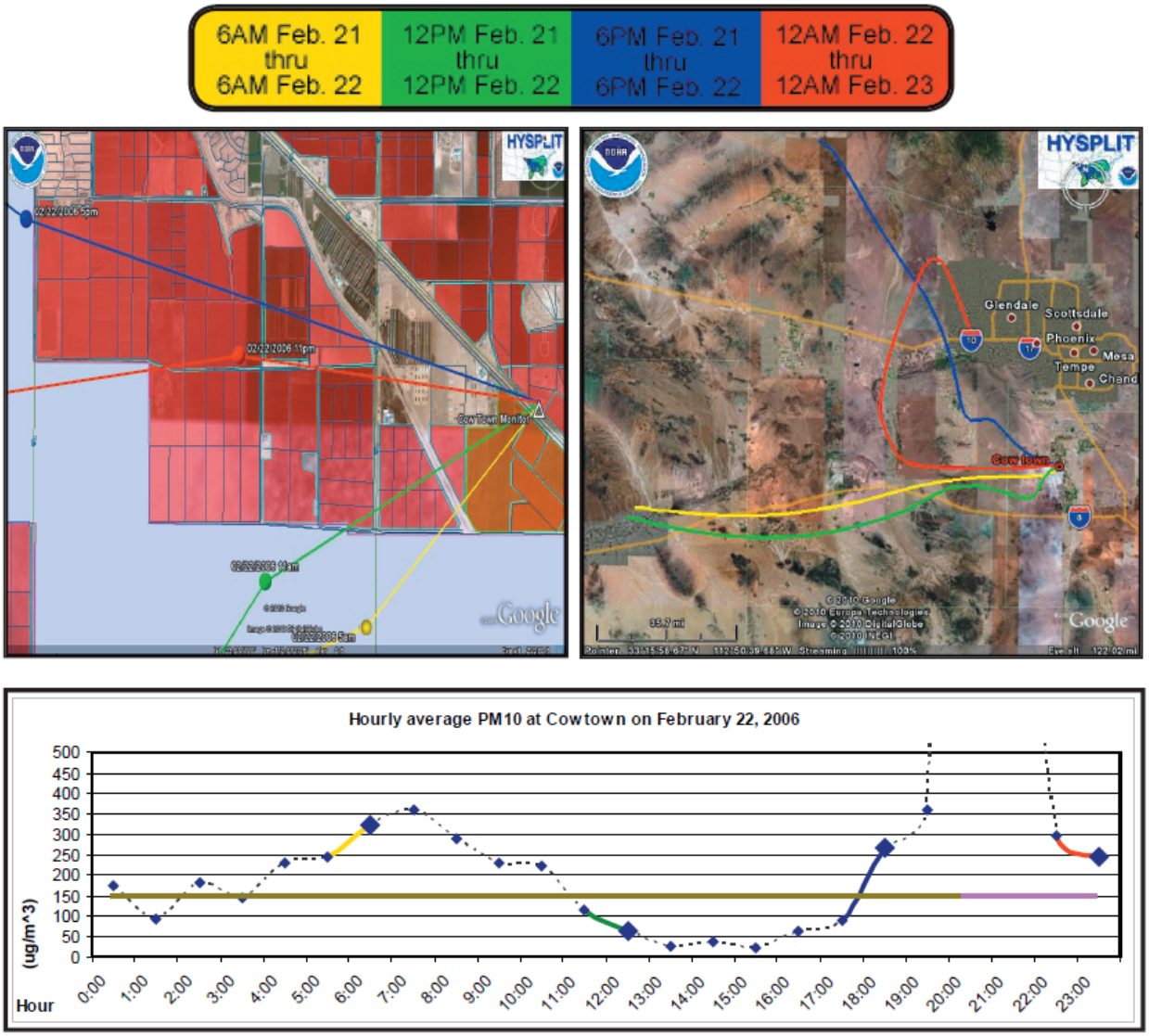


Figure 11c: June 16, 2006 (wind) modeled Cowtown back trajectories. On this date, a large trough of low pressure swept through the region. Strong surface winds caused wide-spread areas of blowing dust, resulting in the exceedance at the Cowtown monitor. Southwest and northwest near-surface winds are pictured in the HYSPLIT 24-hr back trajectory model for this date. The image on the left illustrates four color coded wind trajectories. The markers indicate the location of the air parcel, one hour before it reaches the Cowtown monitor. The red shaded areas are agricultural lands; the brown shaded areas are feedlots. The image to the right illustrates the long range 24-hour trajectory. The graph at bottom is the hourly PM10 data from the Cowtown monitor and is color coded the same as the trajectory maps to indicate the ambient PM10 concentration at the monitor one hour before the air parcel reaches the monitor. The brown and pink line at 150 µg/m³ indicates when the 24-hour PM10 standard was exceeded (09:00 hrs). Hourly PM2.5 data was not available, so hourly PM10 was used as a surrogate for PM2.5.

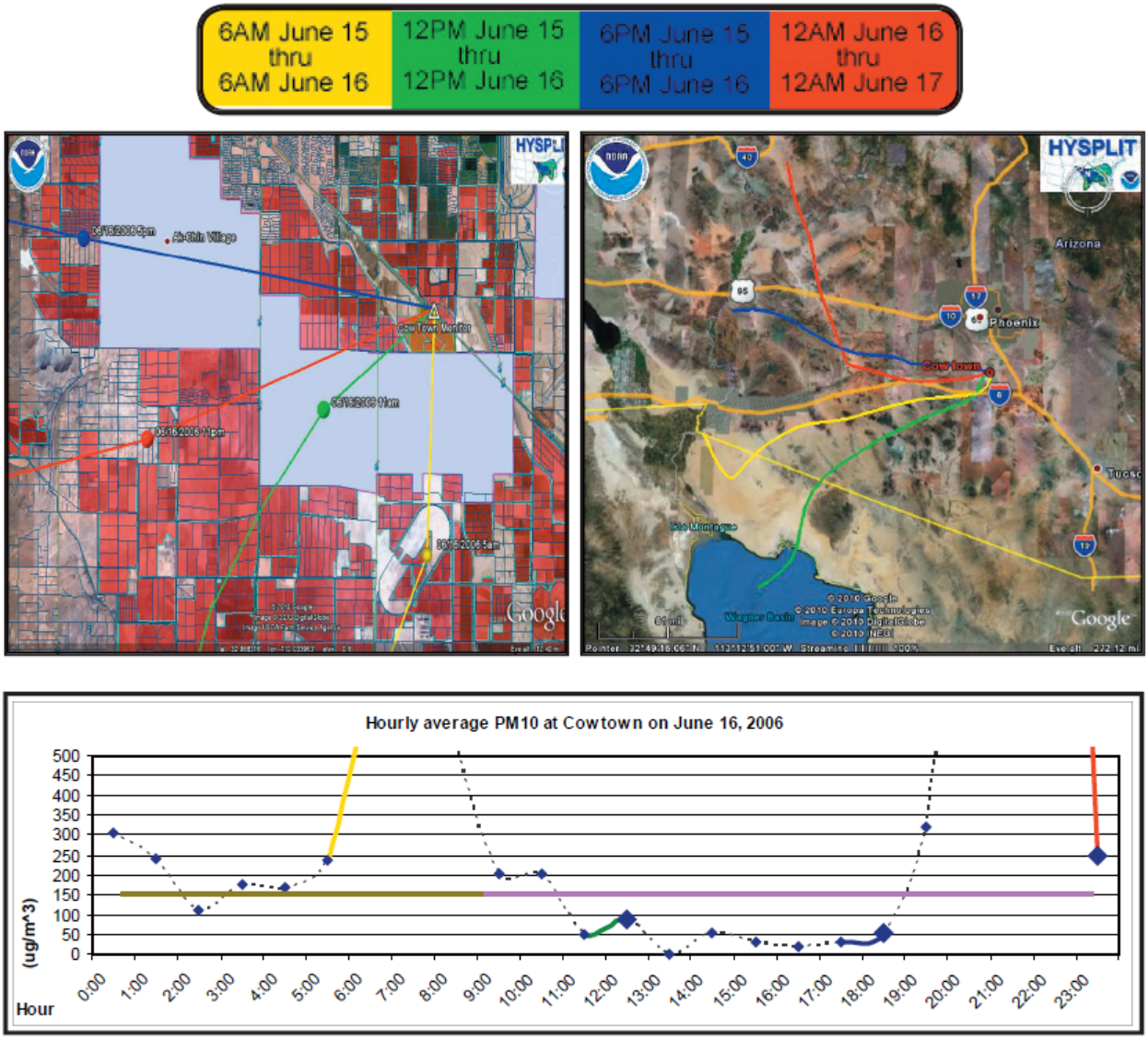


Figure 11d: October 2, 2006 (wind) modeled Cowtown back trajectories. On this date, Arizona was under the influence of high pressure to the southeast and an approaching trough of low pressure to the northwest. The increasing pressure gradients resulted in breezy to gusty surface winds during this period which likely contributed to the Cowtown exceedance on this date. The HYSPLIT 24-hr back trajectory model verifies the approaching trough of low pressure with winds out of the south during this period. The image on the left illustrates four color coded wind trajectories. The markers indicate the location of the air parcel, one hour before it reaches the Cowtown monitor. The red shaded areas are agricultural lands; the brown shaded areas are feedlots. The image to the right illustrates the long range 24-hour trajectory. The graph at bottom is the hourly PM10 data from the Cowtown monitor and is color coded the same as the trajectory maps to indicate the ambient PM10 concentration at the monitor one hour before the air parcel reaches the monitor. The brown and pink line at 150 µg/m³ indicates when the 24-hour PM10 standard was exceeded (07:00 hrs). Hourly PM2.5 data was not available, so hourly PM10 was used as a surrogate for PM2.5.

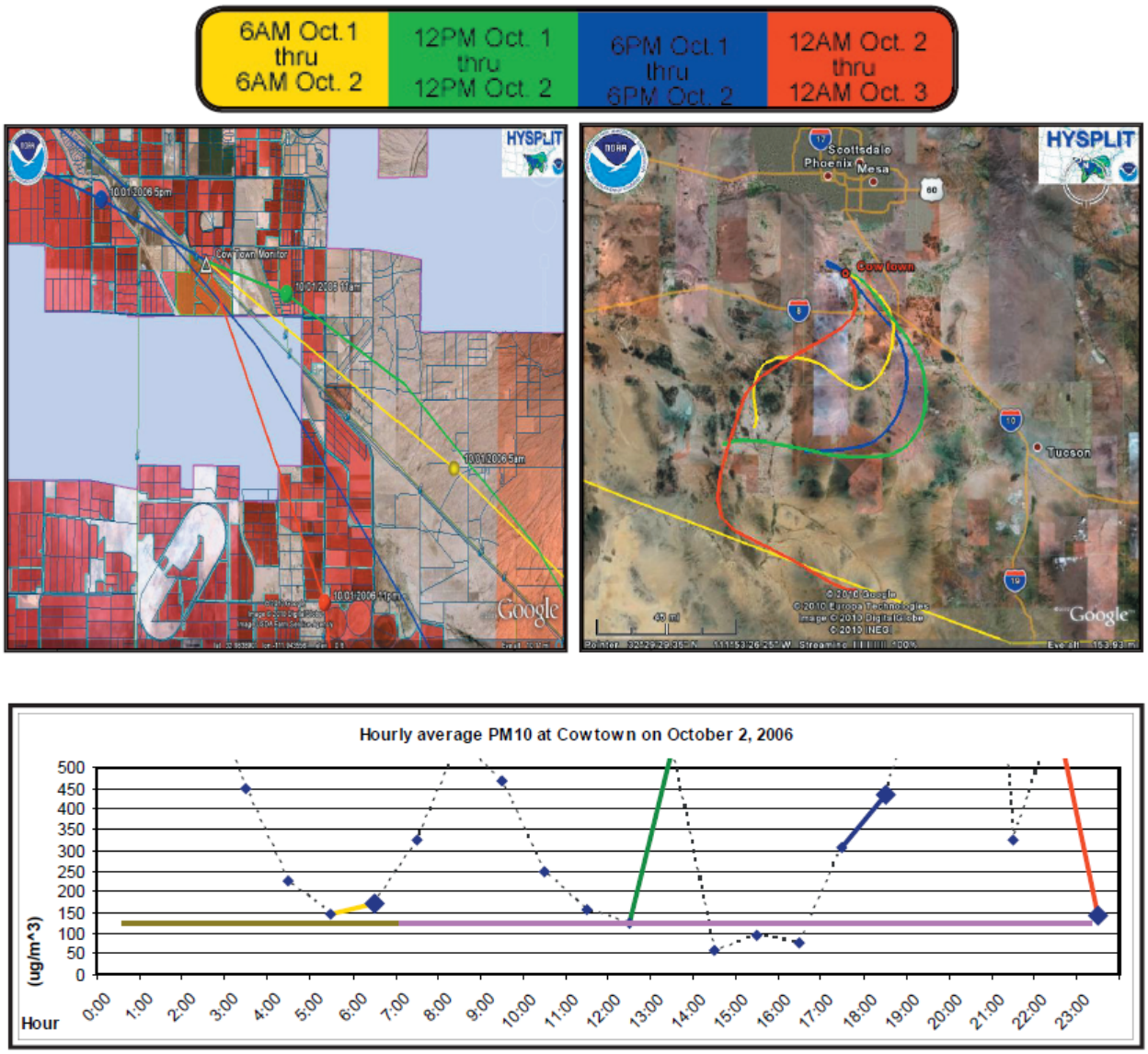
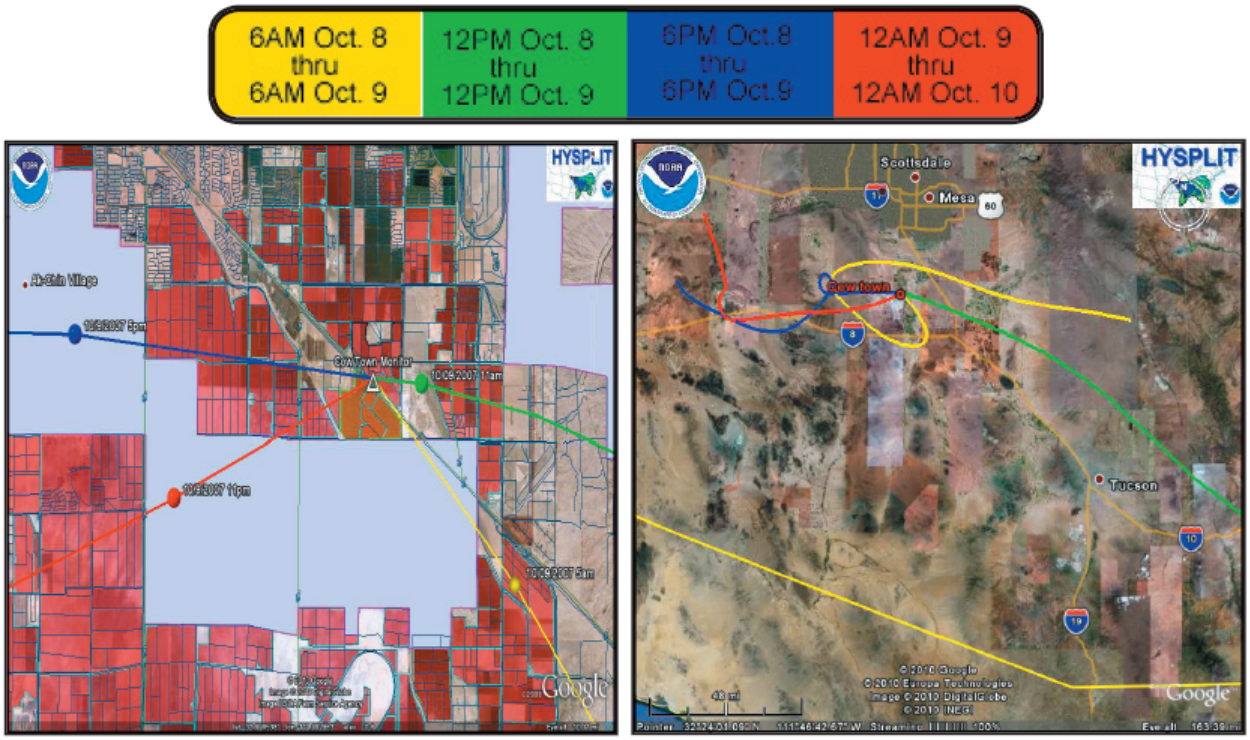


Figure 11e: October 9, 2007 (moderate winds) modeled Cowtown back trajectories. A weak ridge of high pressure overhead on this date resulted in mostly light surface winds during this period. The Cowtown monitor, however, showed several hours near 10 mph. Therefore, this date could not be classified as either high-wind or stagnant. The HYSPLIT 24-hr back trajectory model shows the variable wind directions a typical high pressure system would produce. The PM2.5 exceedance at Cowtown on this date was likely due to several days of accumulating particulates in the local area. The image on the left illustrates four color coded wind trajectories. The markers indicate the location of the air parcel, one hour before it reaches the Cowtown monitor. The red shaded areas are agricultural lands; the brown shaded areas are feedlots. The image to the right illustrates the long range 24-hour trajectory. The graph at bottom is the hourly PM10 data from the Cowtown monitor and is color coded the same as the trajectory maps to indicate the ambient PM10 concentration at the monitor one hour before the air parcel reaches the monitor. The brown and pink line at 150 µg/m³ indicates when the 24-hour PM10 standard was exceeded (13:00 hrs). Hourly PM2.5 data was not available, so hourly PM10 was used as a surrogate for PM2.5.



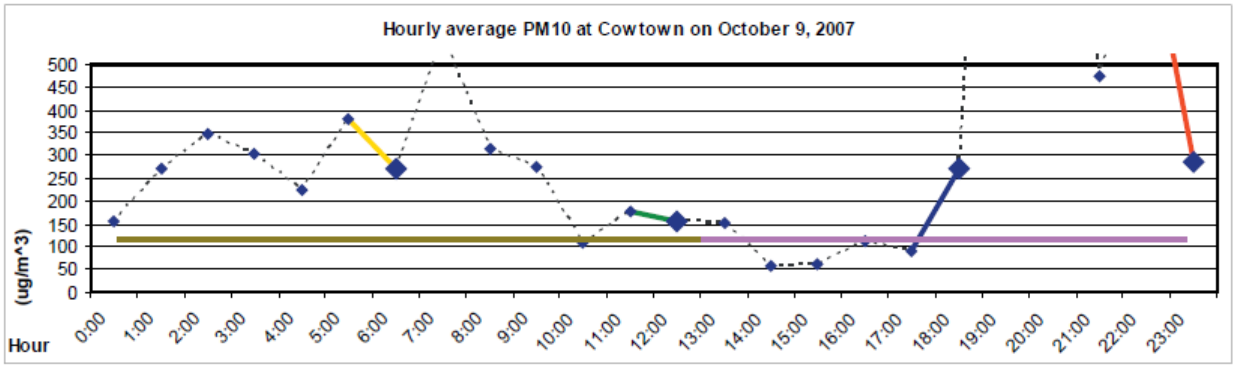


Figure 11f: March 25, 2008 (stagnant) modeled Cowtown back trajectories. A large ridge of high pressure to the southwest produced very light winds at the surface for several days during this period. The HYSPLIT 24-hr back trajectory model shows winds out of the southwest on this date. With very light surface winds, it appears that the stagnant conditions can be attributed to the exceedance at Cowtown. The image on the left illustrates four color coded wind trajectories. The markers indicate the location of the air parcel, one hour before it reaches the Cowtown monitor. The red shaded areas are agricultural lands; the brown shaded areas are feedlots. The image to the right illustrates the long range 24-hour trajectory. The graph at bottom is the hourly PM10 data from the Cowtown monitor and is color coded the same as the trajectory maps to indicate the ambient PM10 concentration at the monitor one hour before the air parcel reaches the monitor. The brown and pink line at 150 µg/m³ indicates when the 24-hour PM10 standard was exceeded (10:00 hrs). Hourly PM2.5 data was not available, so hourly PM10 was used as a surrogate for PM2.5.

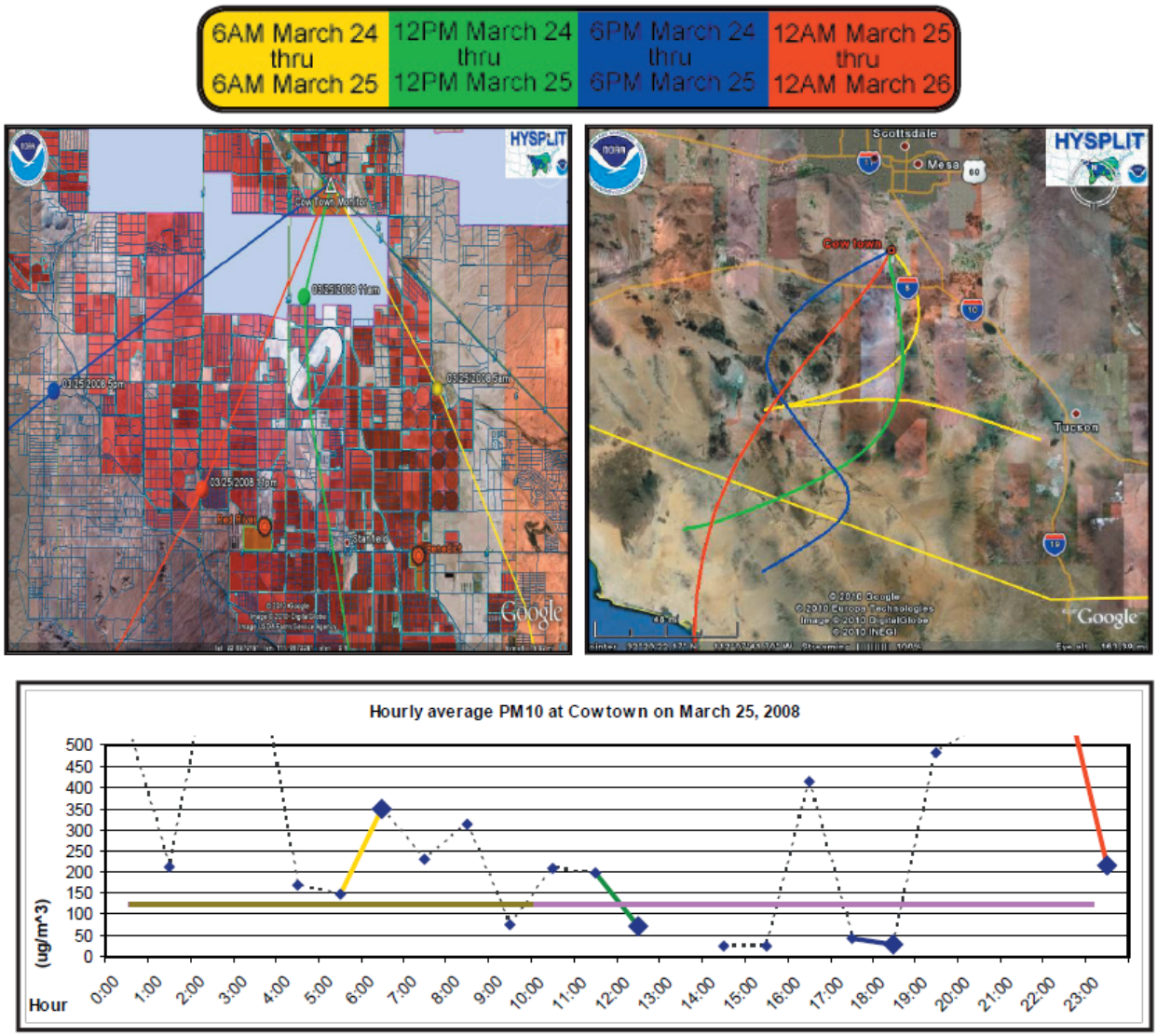
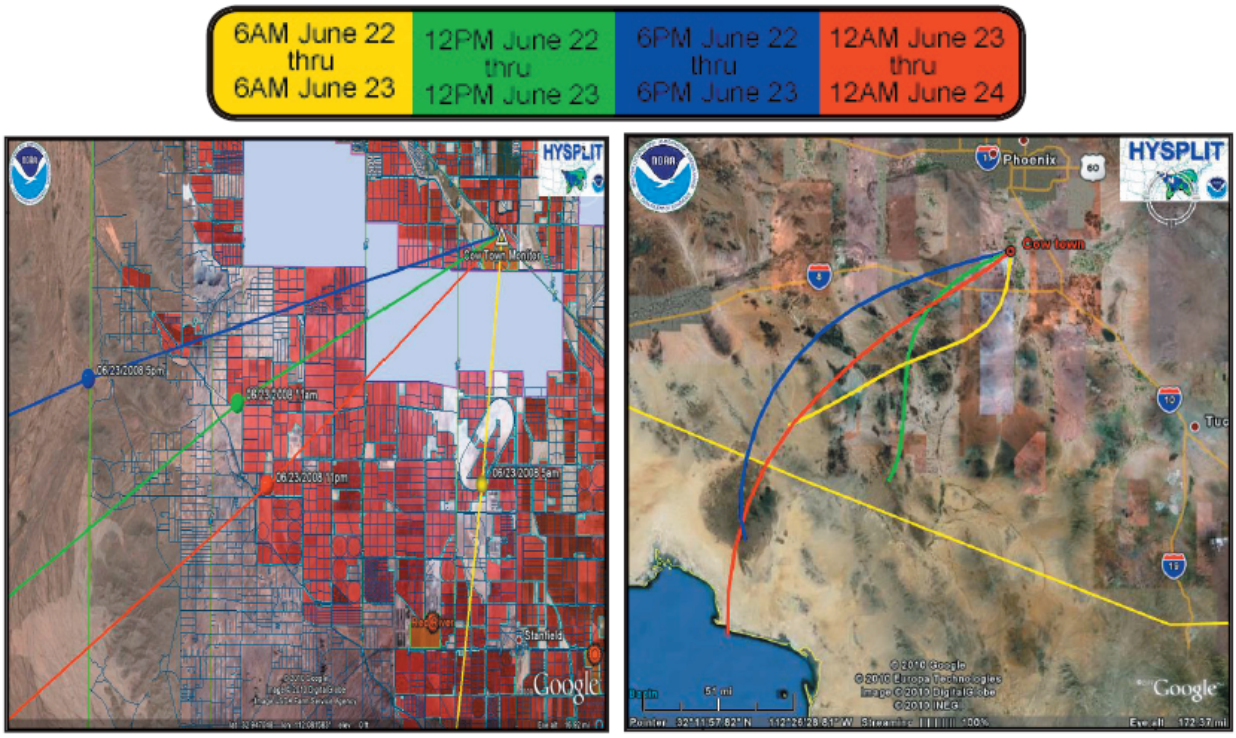
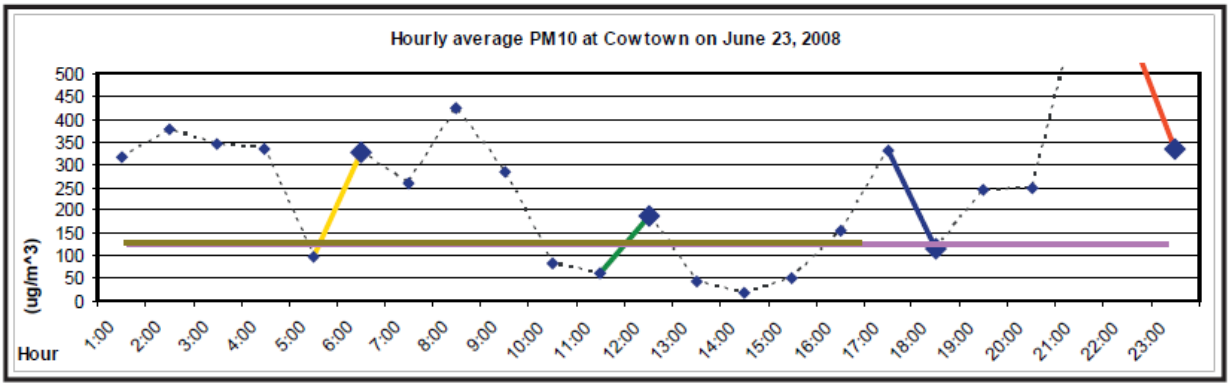


Figure 11g: June 23, 2008 (wind) modeled Cowtown back trajectories. On this date, a large area of high pressure over the region was competing with a trough of low pressure in the Pacific Northwest. Increased pressure gradients resulted in stronger surface winds during this period. The HYSPLIT 24-hour back trajectory model shows a classic southwesterly flow associated with an approaching trough of low pressure. It would appear that strong winds can be attributed to the exceedance at Cowtown on this date. The image on the left illustrates four color coded wind trajectories. The markers indicate the location of the air parcel, one hour before it reaches the Cowtown monitor. The red shaded areas are agricultural lands; the brown shaded areas are feedlots. The image to the right illustrates the long range 24-hour trajectory. The graph at bottom is the hourly PM10 data from the Cowtown monitor and is color coded the same as the trajectory maps to indicate the ambient PM10 concentration at the monitor one hour before the air parcel reaches the monitor. The brown and pink line at 150 μg/m³ indicates when the 24-hour PM10 standard was exceeded (17:00 hrs). Hourly PM2.5 data was not available, so hourly PM10 was used as a surrogate for PM2.5.



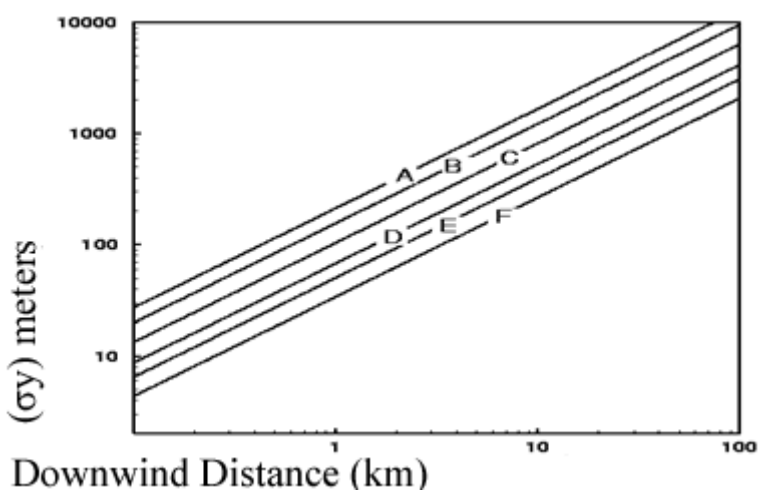


Data Analysis - Medium and long range transport is not occurring

Long and medium range transport of Primary PM generally creates region wide impacts due to down wind horizontal plume spreading. This is a well known component of dispersion and becomes particularly evident in ambient PM monitoring data for air pollution monitors which are located within the same airshed and in close proximity to each other. In Arizona, there are several $PM_{2.5}$ monitors in the state, including: Casa Grande, Apache Junction, Douglas, Orange Grove, Prescott Valley, and Yuma. Of these sites, Casa Grande is the nearest to Cowtown at approximately 24 km while Yuma is the farthest at 253 km. The Cowtown, Casa Grande and Apache Junction monitors are all in the same Gila River basin airshed and in terms of potential impacts from long range transport, would all likely to be impacted by the same plume.

The relative distance from the Cowtown monitor for Casa Grande and Apache Junction are 24 km and 64 km, respectively. If one were to assume Pasquill-Gifford rural horizontal dispersion (see figure 12) from a source 100 km from Cowtown and south-westerly winds, which is the predominant wind direction for each of the seven days modeled in the back trajectory analysis, it is easy to see that both Cowtown and Casa Grande should be equally impacted by the distant source. This is because the horizontal plume spread (σ_y) is expected to be large enough to impact both sites (figure 13). Based on each meteorological stability class, A-F, a source 100 km away from Cowtown is likely to produce a plume with a σ_y ranging from 20 km to 100 km. Since the Casa Grande monitor is only 24 km from the Cowtown monitor, one would estimate that long range transport from any direction would likely impact the two monitors. Of course, for the impacts to be equal at each site, one would need to assume a perpendicular incident angle of impact to the line drawn between Cowtown and Casa Grande, but varying the incident angle in either direction would only likely create marginal variations in relative impacts at each site, since the deposition rate of $PM_{2.5}$ is slow and the two monitors are close together.

Figure 12: Pasquill-Gifford σ_y, rural horizontal dispersion parameters. A-F are meteorological stability classes, where A is extremely unstable, B is moderately unstable, C is slightly unstable, D is neutral, E is slightly stable, F is moderately stable.



The Pasquill-Gifford dispersion parameters are theoretical and except for the use of stability classes, it does not include provisions for real world actions: like chemical conversion, deposition and removal, wind speed, surface roughness and a whole suite of meteorological variables which will directly influence the plume spread and PM concentrations downwind. Furthermore, the six stability classes do not represent the real atmosphere. Real dispersion varies continuously throughout the atmosphere, from stable to unstable and not stepwise as the A-F stability classes do. So, some variation in the relative PM impacts at each monitor is expected, but the general principal remains the same; distant sources from Cowtown will likely impact both Cowtown and Casa Grande, and on some occasions impact all three monitors, including Apache Junction.

If long or medium range transport is the source of the exceedances at Cowtown, a statistical analysis of the data collected from each of the three Pinal County monitoring sites should demonstrate that the ambient concentrations of the three sites are similar. The following analysis compares the ambient $PM_{2.5}$ concentrations from Cowtown to the ambient $PM_{2.5}$ concentrations from the nearby Casa Grande monitor, and as a supplement, to the more distant monitors at: Apache Junction, Douglas, Orange Grove, Prescott Valley, and Yuma for three years spanning from 2006 to 2008.

The comparison between the Casa Grande $PM_{2.5}$ Monitor and the Cowtown monitor reveals a significant difference in measured concentrations on both daily average and annual average $PM_{2.5}$. Over a period of three years from 2006 to 2008, the Cowtown monitor consistently measured more than double the ambient concentrations at Casa Grande, which implies that the impacts at that monitor are not from distant sources, but are from local sources of particulate pollution. Table 4 below illustrates the long term average differences between all of the $PM_{2.5}$ monitors in Arizona For all days in 2006, 2007 and 2008.

Table 4: Annual average ambient $PM_{2.5}$ concentrations at the Cowtown monitoring site and other $PM_{2.5}$ monitoring sites. In 2006 the annual average $PM_{2.5}$ concentration at Cowtown was 22.74 $\mu g/m^{3,}$ while the next highest annual average $PM_{2.5}$ concentration was 5.31 $\mu g/m^3$ from Apache Junction. This substantial difference in average ambient $PM_{2.5}$ concentrations continues through 2007 and 2008.

PM2.5 Measurements ($\mu g/m^3$)

Site	Site ID	2006	2007	2008	3 Yr Annual Avg
Cowtown	04-021-3013	22.74	22.5	19.63	21.62
Apache Junction	04-021-3002	5.31	6.96	7.52	6.60
Casa Grande	04-021-0001	7.55	10.25	10.61	9.47
Douglas	04-003-1005	6.78	6.79	6.84	6.80
Orange Grove	04-019-0011	5.8	5.84	5.57	5.74
Prescott Valley	04-025-2002	-	-	6.42	-
Yuma	04-027-0004	-	-	10.18	-

Close inspection of monitored $PM_{2.5}$ concentrations at Cowtown for days where the concentration exceeded the 35 µg/m^3 standard, again indicates highly localized $PM_{2.5}$ values at Cowtown independent of meteorological conditions. A comparative analysis of a sample of 30 days where the Cowtown monitor exhibits an exceedance for the three year period is shown Table 5 below.

Table 5: Daily ambient $PM_{2.5}$ concentrations at the Cowtown monitoring site and other Pinal county monitoring sites for the 30 exceedance days. For all $PM_{2.5}$ monitors in the state.

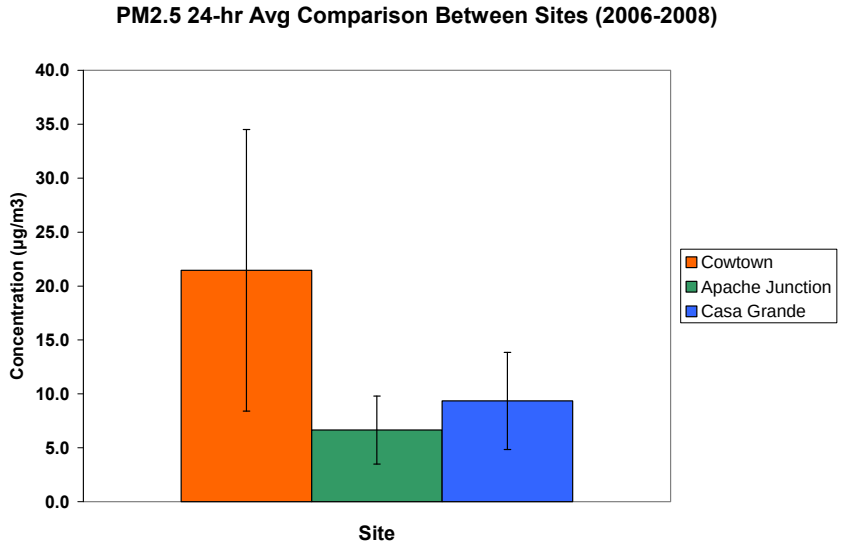
Sample of 30 Exceedance Days of PM2.5 (µg/m^3)

Site	Site ID	Sample Average	Observations*
Cowtown	04-021-3013	43.8	30
Apache Junction	04-021-3002	8.1	25
Casa Grande	04-021-0001	11.8	29
Douglas	04-003-1005	9.5	27
Orange Grove	04-019-0011	6.1	25
Prescott Valley	04-025-2002	7.2	7
Yuma	04-027-0004	13.8	5

*Not all monitors were in operation prior to 2008 and some monitors were flagged for invalid data on the day of the Cowtown monitor exceedance.

A statistical analysis was performed between the Pinal County ambient $PM_{2.5}$ monitored values: Cowtown, Casa Grande and Apache Junction. The average measured 24-hr averages are plotted in the Figure 13 below and indicate that the average 24-hour $PM_{2.5}$ concentrations are more than twice that of Casa Grande and Apache Junction.

Figure 13: A comparison of average 24-hour $PM_{2.5}$ concentrations between Cowtown, Apache Junction and Casa Grande.



Paired t-tests were performed to test the statistical significance of the difference between the measured concentrations at the three sites. The first set of three paired t-tests (Tables 6,7 and 7) use all available $PM_{2.5}$ data from 2006, 2007 and 2008, while the second set of three (Tables 9,10 and 11) are paired t-tests using only the $PM_{2.5}$ data from the 30 exceedance days. Results indicate the differences in the measured concentrations at Cowtown are statistically significant compared to Casa Grande and Apache Junction at the 95% confidence interval. The detailed results of the t-tests are:

Table 6: Paired t-test between Cowtown and Casa Grande, for all data 2006, 2007 and 2008.

	Cowtown	***Casa Grande***
Mean	21.65	9.34
Variance	167.99	20.30
Observations	159	159
Pearson Correlation	0.44	
Mean Difference	12.30	
Maximum Difference	55.26	
Minimum Difference	-6.80	
df	158	
t Stat	13.263	
P(T<=t) one-tail	9.25E-28	
t Critical one-tail	1.655	
P(T<=t) two-tail	1.85E-27	
t Critical two-tail	1.975	

Table 7: Paired t-test between Cowtown and Apache Junction, for all data 2006, 2007 and 2008.

	Cowtown	***Apache Junction***
Mean	21.05	6.65
Variance	153.69	9.94
Observations	150	150
Pearson Correlation	0.35	
Mean Difference	14.40	
Maximum Difference	55.70	
Minimum Difference	-6.00	
df	149	
t Stat	15.127	
P(T<=t) one-tail	3.28E-32	
t Critical one-tail	1.655	
P(T<=t) two-tail	6.55E-32	
t Critical two-tail	1.976	

Table 8: Paired t-test between Casa Grande and Apache Junction, for all data 2006, 2007 and 2008.

	Casa Grande	***Apache Junction***
Mean	9.41	6.75
Variance	21.39	9.97
Observations	144	144
Pearson Correlation	0.55	
Mean Difference	2.65	
Maximum Difference	22.60	
Minimum Difference	-6.50	
df	143	
t Stat	8.122	
P(T<=t) one-tail	9.70E-14	
t Critical one-tail	1.656	
P(T<=t) two-tail	1.94E-13	
t Critical two-tail	1.977	

Table 9: Paired t-test between Casa Grande and Apache Junction, for only the 30 exceedance days.

	Casa Grande	***Cowtown***
Mean	11.6034	44.0692
Variance	27.8040	57.3325
Observations	29	29
Pearson Correlation	-0.1982	
Mean Difference	32.4658	
Maximum Difference	55.2633	
Minimum Difference	19.2	
df	28	
t Stat	-17.4001	
P(T<=t) one-tail	7.55652E-17	
t Critical one-tail	1.7011	
P(T<=t) two-tail	1.5113E-16	
t Critical two-tail	2.0484	

Table 10: Paired t-test between Casa Grande and Apache Junction, for only the 30 exceedance days.

	Apache Junction	*Cowtown*
Mean	8.105	42.9657
Variance	9.1113	32.4848
Observations	25	25
Pearson Correlation	-0.3151	
Mean Difference	34.8607	
Maximum Difference	55.7	
Minimum Difference	21.6	
df	24	
t Stat	-24.0702	
P(T<=t) one-tail	1.28801E-18	
t Critical one-tail	1.7109	
P(T<=t) two-tail	2.57601E-18	
t Critical two-tail	2.0639	

Table 11: Paired t-test between Casa Grande and Apache Junction, for only the 30 exceedance days.

	Casa Grande	*Apache Junction*
Mean	11.78	8.1050
Variance	30.9350	9.1113
Observations	25	25
Pearson Correlation	0.6993	
Mean Difference	3.675	
Maximum Difference	11.7	
Minimum Difference	-5	
df	24	
t Stat	4.5147	
P(T<=t) one-tail	7.13287E-05	
t Critical one-tail	1.7109	
P(T<=t) two-tail	0.000142657	
t Critical two-tail	2.0639	

The data analysis makes a clear distinction between the three Pinal County $PM_{2.5}$ monitoring sites. If the assumption is made that long range transport is the source of the $PM_{2.5}$ exceedances in Pinal County, one would also need to assume that the exceedances would be more regional in nature, and therefore any statistical analysis on $PM_{2.5}$ monitor data from Pinal County would show considerable agreement among the monitors. The paired t-tests do not indicate that level of agreement, however. For all data, the paired t-test indicates that the Cowtown monitoring site is very different from both Casa Grande and Apache Junction, while the paired t-test for Casa Grande and Apache Junction show reasonable agreement. The same is true when looking at only the 30 exceedance days.

Data Analysis - $PM_{2.5}$ is a function of PM_{10}

The $PM_{2.5}$ problem in western Pinal County is relatively unique because, unlike virtually all other areas of the United States experiencing nonattainment of the $PM_{2.5}$ NAAQS, it does not

appear that primary combustion emissions and secondary particles are dominant for the site where the exceedances have been recorded. Both direct and statistical evidence suggests that $PM_{2.5}$ exceedances at the Cowtown monitor are largely the result of the numerous and extreme exceedances of the PM_{10} NAAQS.

First, with only one exception, all of the exceedances of the 24-hour average $PM_{2.5}$ NAAQS of 35 μg/m^3 occur only when there is also an exceedance of the PM_{10} NAAQS of 150 μg/m^3, as the following Table 9 illustrates:

Table 12: Comparison of PM_{10} and $PM_{2.5}$ Values for Valid $PM_{2.5}$ Exceedances for the Cowtown Monitor

		2006	***2007***	***2008***	***All Years***
Average	PM_{10} (μg/m^3)	380.5	353.6	322.6	358.2
	$PM_{2.5}$ (μg/m^3)	45.1	46.5	39.0	44.1
	Percent $PM_{2.5}$	12.6%	16.1%	12.8%	13.7%
Maximum	PM_{10} (μg/m^3)	606.0	759.3	465.0	759.3
	$PM_{2.5}$ (μg/m^3)	69.4	59.7	41.7	69.4
	Percent $PM_{2.5}$	20.4%	32.7%	18.2%	32.7%
Minimum	PM_{10} (μg/m^3)	249.0	182.6	217.0	182.6
	$PM_{2.5}$ (μg/m^3)	36.2	37.0	35.9	35.9
	Percent $PM_{2.5}$	6.9%	6.0%	9.0%	6.0%
Number of Samples		13	9	7	29

The one exception was for August 27, 2006, for which the $PM_{2.5}$ concentration was recorded as 35.8 μg/m^3 and PM_{10} was 86 μg/m^3. Closer examination of this sample revealed that the original filter weight was very likely erroneous. This value has been flagged in AQS as invalid. The supporting documentation for this is contained in Appendix A of this memorandum.

In addition to this assessment, linear regression analysis was performed to determine the degree to which PM_{10} concentrations and meteorological factors explained the variation in $PM_{2.5}$ concentrations. Data from calendar years 2006 through 2008 and January through June 2009 were included in this analysis. Meteorological data were taken from the AZMET Maricopa station because there was a complete record for that site, whereas the meteorological data set for the Cowtown monitor contains several data gaps. The AZMET Maricopa monitor (Latitude 33° 04' 07" N, Longitude 111° 58' 18" W) is located approximately 4 miles north of the Cowtown monitor (Latitude 33° 00' 38" N, Longitude 111° 58' 19" W). Meteorological variables evaluated included: average, maximum and minimum temperature; average and maximum relative

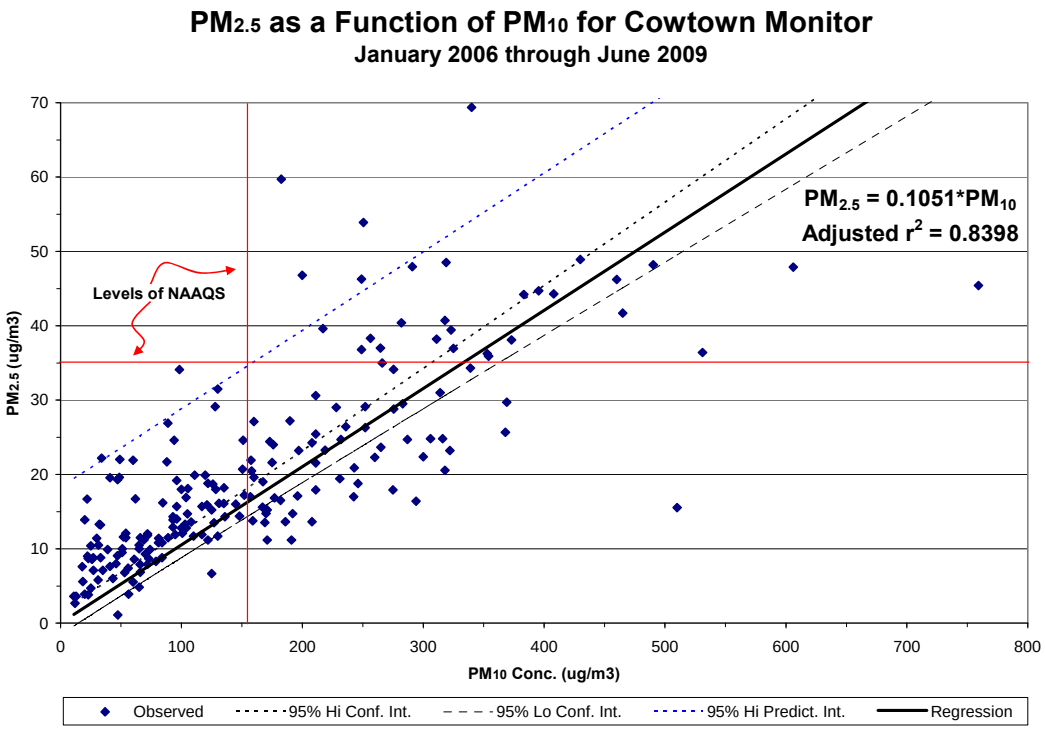
humidity; daily average, hourly average and hourly maximum wind speed; and daily average vector wind speed and direction, and wind direction during the maximum wind hour.

Multiple linear regression can be done either as a least-squares fit based on the averages of the dependent and independent variables, which includes calculating the estimate for a non-zero constant (y=ax+b), or through the origin (intercept of zero, or y=ax). Because $PM_{2.5}$ is a subset of PM_{10}, the potential that none of the particulate matter would be in the $PM_{2.5}$ fraction is highly unlikely; i.e., performing a linear regression with an intercept other than zero would be inappropriate. PM_{10} concentration and several meteorological variables were evaluated using scatter plots to determine if nonlinear relationships were evident (none were found), and then regressed with $PM_{2.5}$ as the dependent variable. PM_{10}, by far, explained more variation in $PM_{2.5}$ than any other variable. The only other variable that explained a significant amount of variation in $PM_{2.5}$ concentrations was relative humidity, and maximum relative humidity was a better predictor. This model, however, had a significant fault, in that the residuals (difference between the predicted and actual $PM_{2.5}$ concentrations) were significantly correlated with the actual $PM_{2.5}$ concentration. Consequently, the only reliable model that could be developed was for $PM_{2.5}$ as a function of PM_{10}. The results of that regression analysis are presented in Table 13:

Table 13: A linear regression analysis to determine the degree to which PM_{10} concentrations and meteorological factors explained the variation in $PM_{2.5}$ concentrations.

Regression Statistics					
Multiple R	0.9192				
R Square	0.8448				
Adjusted R Square	0.8398				
Standard Error	9.30858				
Observations	199				
ANOVA					
	df	SS	MS	F	Significance F
Regression	1	93417.61	93418	1078.11	7.92E-82
Residual	198	17156.62	86.65		
Total	199	110574.23			
	Coefficients	Standard Error	t Statistic	P-value	
Intercept	0	#N/A	#N/A	#N/A	
PM_{10}	0.1051	0.00320	32.83	4.7E-82	

Figure 14, below, presents a scatter plot with the regression line, the 95% confidence intervals for the regression line and the 95% one-tailed upper prediction interval.



This figure demonstrates that there is still a lot of variability that is not explained within this simple statistical model, especially for the outliers – where either the percentage of PM_{10} that is $PM_{2.5}$ is either much higher or much lower than the statistically estimated average of 10.5%. Many of these intervening factors likely include levels of activity at difference sources, wind direction and speed with respect to emissions from specific sources on certain days, and smoke from local fires (which would result in a much higher $PM_{2.5}$ proportion in that sample), to name a few. Regardless, this model indicates that, with 95% confidence, $PM_{2.5}$ concentrations are largely driven by the amount of PM_{10} in the atmosphere.

Conclusions

The Cowtown monitoring site lies within an irrigated desert plain, with active and retired agricultural operations to the north, northwest and east. Three cattle feedlot companies and a grain-processing complex operate to the south, southwest and southeast. Given the source mix near the Cowtown monitor, it is of little surprise that the major contributor from each of seven source categories (geologic soil, feedlot soil, motor vehicle emissions, vegetative burning, coal fired power plant, ammonium sulfate and ammonium nitrate) is from the feedlot source category, with geologic soil (including unpaved roads and agricultural soils) following second.

The following list presents the major findings of this research:

- The Cowtown monitor has a prominent chemical signature from nearby feedlots.
- The major source contributors to the $PM_{2.5}$ exceedances at Cowtown are from feedlots and geologic soil.
- When compared to other monitors in Pinal County, only Cowtown has feedlots as the major source contributor; other sites are geologic soil.
- Stagnation during the 2003 study produced high relative contributions from feedlot dust at Cowtown.
- Both stagnation and non-stagnation events created elevated $PM_{2.5}$ concentrations at Cowtown in 2006, 2007 and 2008, which indicate that fairly strong local sources can impact the monitor under any meteorological condition.
- The trajectory of winds for each of the 29 days in 2006, 2007 and 2008 can transport emissions from local sources to the Cowtown monitor.
- The trajectory of winds for each of the 29 days in 2006, 2007 and 2008 indicate that there are no distant sources along the back trajectory which would be expected to contribute to any of the $PM_{2.5}$ exceedances at Cowtown.
- On a daily and annual basis, Cowtown consistently measures higher $PM_{2.5}$ then any other monitor in Pinal County.
- $PM_{2.5}$ exceedances are always concurrent with PM_{10} exceedances.
- Any control measures that will achieve attainment of the PM_{10} NAAQS will also yield attainment of the $PM_{2.5}$ NAAQS.

REFERENCES

PCAQCD staff, "Pinal County Air Quality Control District Source Apportionment Study," July 29, 2005

Clements, A.L., Jia, Y., Fraser, M.P., Herckes, P., Sundblom, M., & Solomon, P.A., (2010). Chemical Analysis for Source Attribution of Fine and Coarse particulate Matter in Pinal County, AZ. [Presented to PCAQCD]

Chow, J.C., Watson, J.G., Crow, D., Lowenthal, D.H., Merrifield, T., (2001). Comparison of IMPROVE and NIOSH Carbon Measurements.

Chow, J.C., Watson, J.G., Kuhns, H., Etyemezian, V., Lowenthal, D.H., & Crow, D., Kohl, S.D., Engelbrecht, J.P., Green, M.C., (2004). Source profiles for industrial, mobile, and area sources in the Big Bend regional Aerosol Visibility and Observational study.

APPENDIX A

Ken Buchanan
Assistant County Manager

Development Services

Don Gabrielson
Air Quality Director

PINAL • COUNTY
wide open opportunity

Terry Doolittle
County Manager

MEMORANDUM FROM AIR QUALITY

Date: December 7, 2009

To: File: S:\Word\Field Services\Ambient Monitors\QA Documents\QA Memos\Corrective Action

Cc:

From: Kale Walch

RE: Cowtown 8/27/2006 PM2.5 invalidation

Priority:

Below is summary of the actions that lead to the invalidation of the Cowtown August 27, 2006 PM2.5 filter being invalidated

During the course of reviewing data for the PM2.5 nonattainment boundary recommendation the original concentration listed for the Cowtown filter based PM2.5 sample taken on August 27, 2006 became suspect. Out of the thirty PM2.5 exceedance days reviewed for the 2006- July 2009 timeframe the only day on which a corresponding PM10 exceedance did not occur was August 27, 2006.

The internal review that was initiated resulted in the following conclusions

- The 8/27/2006 Cowtown PM2.5 filter was equilibrated and re-weighed on 10/20/09. The concentration value from the second weighing was 9 $\mu g/m^3$ versus the original concentration of 36 $\mu g/m^3$.
- The PM2.5 filters that were originally weighed before and after the Cowtown 8/27/2006 filter were also re-weighed. Unlike the Cowtown filter both of the second weights for these filters closely agreed with the first weighing.
- Pictures of several PM2.5 filters from 2006 were taken on 11/4/2009. While a colorimetric comparison of the filters did not lead to any quantifiable conclusion it did show the 8/27/2006 filter was lighter in color compared to other exceedance days.
- It is believed human error resulted in the original concentration that was entered into PCAQCD documents and AQS for the 8/27/2006 Cowtown sample. As a result this date has been invalidated in both PCAQCD documents and AQS as of 11/20/2009.

PCAQCD will resubmit a data certification to EPA Region 9 in April of 2010 that will include a request to certify the 2006 PCAQCD data set.

AIR QUALITY CONTROL DISTRICT

31 North Pinal Street, Building F, PO Box 987 Florence, AZ 85132 **T** 520-866-6929 **FREE** 888-431-1311 **F** 520-866-6967 www.pinalcountyaz.gov

Corrective Action Form

PART 1 – PROBLEM IDENTIFICATION

Submitted to: Don Gabrielson Date: October 30, 2009

Site/Location: Cowtown (CWTN) PM2.5 Date problem identified: October 28, 2009

Nature of problem:

The 8/27/09 PM2.5 filter value of 35.8 $\mu g/m^3$, an exceedance of the NAAQS, reported for CWTN appeared to be in error. Analysis conducted comparing PM10 and PM2.5 concentrations at CWTN demonstrated that the PM2.5 value reported for 8/27/2006 was approximately 42 percent of the total PM10 which is not consistent with other summertime values.

Recommended action:

Review the data point and determine validity

Signature of Requestor: _____ Date: 12/10/09

PART 2 PROBLEM RESOLUTION

Corrective action completed by: Mike Sundblom Date: October 30, 2009

Summary of corrective action:

CWTM PM2.5 sample filter collected on 8/27/2006 was equilibrated and re-weighed on 10/20/2009. The re-weighed mass value for the filter was 141.801mg. The original weight made on 9/13/2006 was 142.446mg. The revised concentration based upon the second weighing is 9$\mu g/m^3$. Based on this information and visiual observation of the filter color and loading I conclude that the original weight was erroneous. Because the filter was not stored at less that 25C the re-weighed value cannot be considered valid. The value has been invalidated in the PCAQCD datafile and was invalidated in AQS 11/20/2009 with code AR - Lab Error. The occurrence will be reported to EPA with July 2010 data certification.

Effectiveness of corrective action:

The action lead to a review of values reported before and after 8/27/06 and no related errors were discovered. Documentation located at: S:\Word\Field Services\Ambient Monitors\QA Documents\QA Memos\Corrective Action\CWTN PM2.5 08272006

If performance of monitoring equipment has been affected, provide last known date of proper performance and reason (audit, calibration, flow check, precision check, etc.):

No equipment effect was noted. The error was likely due to an operator oversight.

Signature of Unit Manager /Team Leader: _____ Date: 12/10/09

Part 3 – CORRECTIVE ACTION AND APPROVAL SIGNATURES

Could data be impacted (Y/N)? Y If yes, estimated date(s) of suspect/invalid data: 8/27/06

QA Staff _____ Date: 12/10/09

Monitoring Supervisor _____ Date: 12/10/09

ADEQ
Arizona Department of Environmental Quality

Appendix B
Public Process Documentation:

Delegation of Authority
Authorizing Statutes
Public Notice
Affidavit of Public Notice Publication
Public Hearing Agenda
Public Hearing Sign-In Sheet
Public Hearing Officer Certification
Public Hearing Transcript
Responsiveness Summary
Compilation of Comments and State Responses

Air Quality Division
February 15, 2019 Proposed Version

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Appendix B: Procedural Requirements and Authority – SIP

Exhibit B-I: Delegation of Authority

Exhibit B-II: Authorizing Statutes

Exhibit B-III: Public Notice and Affidavit of Publication

Exhibit B-IV: Public Hearing Agenda

Exhibit B-V: Public Hearing Sign-in Sheet

Exhibit B-VI: Public Hearing Officer Certification

Exhibit B-VII: Public Hearing Transcript

Exhibit B-VIII: Compilation of Comments and State Responses

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