

WATCO
COMPANIES

Dr. Allison Arwady
Acting Commissioner, Department of Public Health & Environment
Pollution Prevention Unit
333 South State St., 2nd Floor
Chicago, IL 60604

Via email

Re: Response to Comments for Request for Variance from the Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Solid Materials - Watco Companies

Dear Acting Commissioner Arwady:

On April 24, 2019, Watco Terminal and Port Services (“Watco”) submitted a request for variance (“Watco’s variance request”) for its Chicago Ferro Terminal facility (the “Facility”) pursuant to Part F, Section 10.0 of the City of Chicago Department of Public Health’s (“CDPH”) Rules and Regulations for the Control of Emissions from Handling and Storing Bulk Materials, Part D (the “Bulk Solid Materials Rules” or “Rules”). Specifically, Watco seeks a variance from the requirements of Part D of the Rules for materials which contain less than 2% manganese.

On June 28, 2019, a comment on Watco’s variance request was filed jointly by the Southeast Side Coalition to Ban Petcoke (“SSCBP”), the Southeast Environmental Task Force (“SETF”) and the Natural Resources Defense Council (“NRDC”), collectively referred to as the “Commenters”. The comment includes inaccurate or unsupported assertions concerning the Watco variance request which Watco addresses in this response. Watco also provides additional, responsive information to rebut the assertions in the comments. Finally, Watco is providing updates on changes at its facility post-filing of its variance request which further demonstrate that Watco has satisfied the criteria for granting the requested variance.

I. Watco Has Demonstrated That There Will Be No Adverse Impacts To The Community If This Variance Is Granted

Watco has consistently maintained compliance with the Rules’ sections 2.0(16) and 6.0(h) 0.3 $\mu\text{g}/\text{m}^3$ three-month rolling average Manganese Limit (ML) for emissions since the Rules went into effect, and has continued to improve its Facility and practices to further reduce manganese emissions. Just recently, Watco received its June 2019 manganese emissions

monitoring results showing a monthly average of 0.0226 $\mu\text{g}/\text{m}^3$. A copy of the June 2019 monitoring results for manganese is attached as Exhibit A. Watco's rolling three-month average results for manganese for each month since the Rules went into effect, starting with the most current June 2019 results, are as follows:

Month	Rolling Three Month Average ($\mu\text{g}/\text{m}^3$)
June 2019	0.115
May 2019	0.252
April 2019	0.270
March 2019	0.251
February 2019	0.192

The Commenters agree that a variance from Part D of the Rules for materials with lower manganese content should be granted if Watco persuasively demonstrates why there should be an exemption and assures the CDPH and the public that the exemption "will not create a public nuisance or adversely impact the surrounding area". Watco's manganese emissions monitoring results have objectively made this demonstration and, together with Watco's other evidence concerning its current operations and past Facility improvements, have provided this assurance despite the comment's attempt to cast doubt.¹

A. The CDPH Manganese Limit is the Objective Standard for Evaluating Potential Risks

That Watco has complied with the Rules' Manganese Limit is indisputable, and the Commenters concede Watco's compliance with that limit. The ML established by the Rules is the objective standard by which the CDPH assesses whether there is an adverse impact on the surrounding area or a public nuisance. It is stricter than the Agency for Toxic Substances and Disease Registry's ("ATSDR") minimal risk level ("MRL") which is averaged over a longer period of one year.² The CDPH has noted the more stringent nature of the ML, explaining that this stricter limit is a precautionary measure intended to "prevent problems before they occur".³ Accordingly, the Watco terminal's consistent compliance with the ML shows that it is not creating any public nuisance or adversely impacting the surrounding area.

Additionally, the CDPH previously rejected the comment's attempt to interpret the ATSDR's MRL for manganese as a "guideline". The CDPH's Official Response to Public

¹ In response to the comment's disagreement with Watco's characterization of the surrounding population in its variance request, Watco agrees for the purposes of this variance request to adopt the CDPH's description of the population from its December 20, 2017 Response to Watco's Request for Variances from Air Pollution Control Rules and Regulations for Control of Emissions from Handling and Storage of Bulk Material Piles, at 6-7.

² ATSDR Toxicological Profile for Manganese, September 2012, at 20. Available at <http://www.atsdr.cdc.gov/toxprofiles/tp151.pdf>

³ The CDPH's Official Response to Public Comments on Proposed Amendments to Rules For the Handling and Storage of Bulk Material Pile, at 12.

Comments on Proposed Amendments to Rules confirms that the ATSDR's MRL should be interpreted as a maximum rather than a "guideline".⁴ This is a clear confirmation that if a facility complies with the rolling three-month average Manganese Limit in the Rules, it has demonstrated that its manganese emissions do not have adverse effects on the surrounding area and do not create a public nuisance.

The comment does not cite to any current data from Watco's Facility which indicates that Watco cannot comply with the CDPH's Manganese Limit based on its current operations, or that it has not met the standard for this variance. The comment's citation to single day emissions data as "violations" of the ML is unsupported because there cannot be a violation where a standard for single day exposures does not exist. The comment seems to imply that a standard for acute exposures exists by citing to the ATSDR manganese toxicology report. That implied assertion is incorrect. In that report, the ATSDR explicitly declined to adopt an acute or intermediate exposure standard because it lacked a basis to do so.⁵

The Commenters express a clear preference for a ban on the storage and handling of all bulk materials containing any concentration of manganese. However, a comment to a variance request is not the appropriate forum to dispute published health standards or the adequacy of the Rules that the CDPH has already adopted, and only detracts from the relevant discussion of whether Watco's variance request has satisfied the requirements of the Rules and thus, should be granted.

II. Current, Not Historical, Watco Facility Conditions Are Relevant To The Variance Request

Past operations and practices are not the appropriate context in which to consider Watco's variance request. Under Section 10.0 of the Rules, a variance request requires a "description of the process or activity for which the variance is requested" with "pertinent data" related to how those processes and activities affect or may potentially affect the surrounding area.⁶ The only "pertinent data" to how the processes or activities affect or may potentially affect the surrounding area is how Watco's Facility currently operates. The comment's citation to 2017 data, the December 2018 USEPA Notice of Violation, the CDPH's December 2018 inspection, and the CDPH's February 2019 inspection do not represent current conditions and practices at the Facility. They also ignore the substantial expenditures and improvements Watco described in its variance request in response to heightened regulation.

Every specific issue the Commenters raise has been resolved. Openings at Building F have been repaired. Trucks are tarped and loaded indoors under the dust collection system. Crushing operations and use of the processor have been discontinued. Watco has responded affirmatively and diligently in every instance in which the CDPH has identified areas for further improving its operations. If any "past history" is relevant to the pending variance request, it is

⁴ *Id.*, at 11-12.

⁵ ATSDR Toxicological Profile for Manganese, at 20.

⁶ Rule 10.0(2)

that Watco has and will continue to fully cooperate with the CDPH to ensure that it operates within the requirements of the Rules.

Moreover, Watco continues to implement operational improvements that go beyond the requirements of the Rules. For example, since the filing of its variance request, Watco is pursuing the following:

- At a cost of approximately \$200,000, the installation of high-speed doors at the north and south ends of Building F that will shorten the time period during which the doors are open to accommodate trucks entering or leaving the building; and
- At a cost of approximately \$210,000, the paving of an approximately 22,900 sq. ft. area previously used for parking certain contractor vehicles. Watco is not required to be pave this area under the Rules because it was not used as an internal roadway.

Contrary to the statements and inferences drawn by the Commenters, Watco's current variance request presents a completely different situation than its prior 2017 variance request. In its denial of that request, the CDPH noted that Watco had primarily based its request on the implementation of best management practices (BMPs) that had not proceeded far enough to demonstrate that PM₁₀ monitoring should not be required.⁷ In its decision, the CDPH specifically focused on Building F conditions that may have been contributing to fugitive dust emissions. Today, Watco has addressed both of those areas of concern. It has clearly shown through both PM₁₀ and manganese emissions monitoring data that its subsequent physical improvements and technology enhancements to the Facility, together with BMPs, are sufficient to maintain compliance with the Rules. This empirical data, not available in 2017, conclusively demonstrates that granting the requested variance is appropriate. Similarly, Building F improvements have addressed the CDPH's prior concerns. Repairs to the building have been made, the high-speed doors are opened and closed more quickly to further reduce fugitive emissions and more high-speed doors are going to be installed in the future. Moreover, the CDPH's prior concerns about Building F emissions were not related to Watco's outdoor storage and handling of pig iron, which is the primary material for which this variance is requested. The CDPH said its 2017 variance decision was supported by "the nature of the material handled."⁸ As further detailed below, the "nature" of that material has significantly changed with the elimination of manganese-bearing material of greater than 2% concentration. Because the "nature of the material handled" has so significantly changed to be limited to material with less than 2% manganese concentrations and manganese monitoring has confirmed that this type of manganese-bearing material can be handled and stored outdoors without exceeding the ML, the pending variance request should be granted.

⁷ See the CDPH's December 20, 2017 Response to Watco's Request for Variances from Air Pollution Control Rules and Regulations for Control of Emissions from Handling and Storage of Bulk Material Piles, at 9.

⁸ *Id.* at 11.

III. Watco's Decision To Stop Handling Bulk Manganese Confirms That Materials With Less Than 2% Manganese Are Appropriately "De Minimis"

In February 2019, Watco committed to discontinue handling higher concentration manganese bearing material at its Facility, and the removal of these materials has been steadily ongoing. Watco previously notified its customers that all such Bulk Solid Materials must be removed from the terminal by the end of 2019. Approximately 17,000 net tons of bulk manganese material has been removed from the terminal, and as of the date of this Response, only approximately 8,000 net tons remain. As stated in the Watco variance request, all such remaining material is stored in Building F and is being handled in compliance with the Rules.

Watco's decision to stop handling the higher concentration manganese bearing material is important to this variance request because it confirms that in the context of the Facility's current operations, compliance with Part D for the less than 2% manganese materials is an arbitrary and unreasonable hardship. Particularly as to the de minimis determination, Watco's current operations and practices demonstrate that a less than 2% concentration is appropriate to consider de minimis. The Rules did not establish a specific de minimis percentage for handling and storing manganese bearing material because the CDPH intended to make these determinations on a case by case basis, and invited variance requests specifically for materials with manganese concentrations between 1% and 4%.⁹ As described above, Watco has already demonstrated it can consistently meet the Rules' Manganese Limit even during the current phase out of the higher concentration manganese bearing material.

The Commenters' concerns about the risk of an adverse cumulative effect of the Watco Facility's handling of manganese-bearing materials are unsupported by the empirical data and are unwarranted. The most recent manganese emissions results for June 2019 bear this out. The monthly average manganese emissions for June were $0.0226 \mu\text{g}/\text{m}^3$, a small fraction of the allowable ML, with five daily non-detect readings and the highest reading of $.077 \mu\text{g}/\text{m}^3$. The remaining manganese-bearing products handled at the terminal have very low concentrations of manganese. Watco will continue to handle and store pig iron and iron ore slag, which do not significantly contribute to manganese emissions at the Facility.¹⁰

The Commenters' assertions about the Facility's pig iron storage capacity and throughput is completely speculative. Watco did not report its throughput of pig iron because the pig iron at the Facility contains less than 1% concentrate of manganese, and is therefore exempt from the CDPH's throughput reporting requirements.¹¹ In an effort to maintain transparency for the purposes of this variance request, Watco confirms that as of the date of this Response, it is

⁹ The CDPH Response to Public Comments, at 4.

¹⁰ The Commenters' speculation that the iron ore slag may constitute a waste is flatly wrong. This material is a customer's product for which it has arranged for storage at the Watco Facility. Just because the customer's need for the delivery of this material is infrequent does not render it a "waste." This material is not "discarded" or "abandoned" material within the meaning of the Illinois definition of "solid waste." See 35 IL. Adm. Code §721.102.

¹¹ See the City of Chicago's Quarterly Non-Packaged Manganese-Bearing Material Operation Reporting Form, noting that "[t]he term 'manganese-bearing material' does not include any material which contains an amount of manganese that is less than 1 percent by weight."

storing just under 10,000 net tons of pig iron. The comment also improperly implies that storage of pig iron is storage of manganese at the Facility. This characterization of pig iron is incorrect and misleading because pig iron, a material which has an extremely low concentration of manganese, does not remotely present the same risk of adverse effects that is present for high-concentrate manganese bearing materials.¹²

The specific materials Watco handles and the amounts of each will vary based on customer needs. While the comment calls for additional assurances regarding the materials the Facility will handle, this is unnecessary and overly burdensome. Watco's continuing obligation to comply with the Rules provides the assurance that the community will be adequately protected. Watco's variance request is only for materials that contain less than 2% manganese, and Watco is required to comply with the requirements in Part D of the Rules for all other manganese-bearing materials. Additionally, Watco is required to report to CDPH its throughput of any manganese-bearing materials over 1%, and Watco committed in its variance request that it would seek approval from CDPH before commencing outdoor storage of any materials containing less than 2% of manganese that were not included in Watco's variance request.¹³ Therefore, the Rules provide more than adequate assurances to the community.

Finally, the burden of compliance with Part D for less than 2% materials and for the requirement to fully enclose the barge dock represents an unreasonable hardship because it is not commensurate with the potential for adverse impacts. Watco has invested approximately \$2.6 million to date on fugitive dust emissions control measures at the Facility. The planned work described above to add four more high speed doors and to pave an additional area will increase the total financial investment to over \$3 million. Watco estimates that it would cost more than \$4 million to fully enclose its barge operations, which is more than the total investment to date to comply with the requirements of the Rules and to reduce fugitive dust emissions to well below the applicable standards.¹⁴ The water fogging system in the barge unloading area has already proved to be effective by Watco's consistent compliance with the ML. More than doubling the cost of compliance when there is absolutely no data showing that the additional step of enclosing the barge area is either necessary to maintain compliance with the Rules or that it would significantly further reduce fugitive dust emissions is an arbitrary and unreasonable hardship.

IV. Conclusion

Watco has satisfied each of the requirements for a variance under the Rules applicable to manganese-bearing materials having a concentration of less than 2% manganese. The empirical manganese monitoring data shows that since the inception of the 3 month rolling average rule, Watco has consistently complied with the 0.3 $\mu\text{g}/\text{m}^3$ three-month rolling average Manganese Limit for emissions under the Rules. The empirical data clearly shows that granting Watco the

¹² For materials currently handled at the Facility, see Watco's Variance Request, Attachment A.

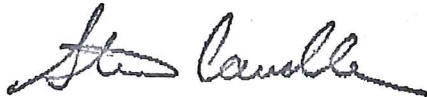
¹³ Watco's Variance Request, at 4.

¹⁴ The \$4 million cost estimate for the barge dock enclosure includes (at approximated values): \$1.5 million to construct a 16,500 ft² building; \$500,000 to install marine foundations; \$450,000 for a hopper and dust collector; \$50,000 for high speed doors; \$20,000 for an excavator door; \$225,000 for a barge haul winch system; \$75,000 for dust curtains and power louver fans; and an estimated contingency, soft cost, and tax allowance of \$1.25 million.

requested variance will not cause any adverse effects on the surrounding area and will not create a public nuisance, which is the standard for allowing variances.

The Commenters' concerns regarding prior CDPH inspections have been resolved and Watco is going further than the Rules require to ensure its continuing compliance. Watco appreciates the importance of demonstrating to the community that it has a strong commitment to protecting the environment and its continuing efforts to find ways to enhance its Facility's operations show that it takes this commitment seriously. Watco has invested millions to reduce fugitive dust emissions at the Facility. Based on the very low manganese emissions monitoring results it has already demonstrated for the Facility, requiring Watco to invest an estimated \$4 million just to enclose the barge unloading operation and additional significant sums to enclose all storage and handling of materials with less than 2% manganese concentrations is indisputably arbitrary when there is no need to do so in order to maintain compliance with the ML. For this same reason, it also would impose an unreasonable hardship upon Watco to force it to enclose transfer points and storage areas for such materials.

Watco's variance request more than adequately demonstrates compliance with the requirements for granting the variance and should be granted.



Steve Caudle

Terminal Manager

Watco Companies



**PARTICULATE (PM₁₀), METALS, AND
METEOROLOGICAL MONITORING DATA REPORT
WATCO'S CHICAGO FERRO TERMINAL
JUNE 2019**

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July 2019



Environmental solutions delivered uncommonly well

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1. INTRODUCTION

This report, prepared for Watco Terminal & Port Services by MSI Trinity Consultants, summarizes PM₁₀, Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), Manganese (Mn), Nickel (Ni), and Vanadium (V) metals and wind data for the period June 1 through June 30, 2019 that are being collected at monitoring stations operated by Watco at the Chicago Ferro Terminal. The purpose for the air quality and meteorological measurements is in response to a May 15, 2018 request made from EPA under Section 114(a) of the Clean Air Act in an effort to determine if Watco's emission sources are in compliance with the Clean Air Act and the Illinois State Implementation Program.

The Chicago Ferro Terminal is located near the intersection of E. 126th street and S. Carondelet Ave in Chicago, Illinois. The air quality monitoring station, located in the facility office building area, collects ambient filter-based particulate matter less than 10 (PM₁₀) concentration data. Since the nature of the dust principally contains lead and the toxic metals, these filters are analyzed for the metals listed above. At the meteorological station which is located atop building "D", continuous measurements of wind speed and wind direction are recorded.

1.1 MONITORING STATION DESCRIPTION

On September 5, 2018, a Met One Inc. Model E-SEQ-FRM filter-based PM₁₀ sampler was installed at the Chicago Ferro Terminal to document and record respirable PM₁₀ concentrations. Official PM₁₀ monitoring began on September 17, 2018. The meteorological monitoring station consisting of a wind speed and wind direction sensor was installed prior to September 2018 by Watco at the Chicago Ferro Terminal. The sampling locations of the PM₁₀ and meteorological monitoring equipment in latitude and longitude and in UTM coordinates are presented in Table 1-1. Figure 1.1 presents a Google Earth image showing the PM₁₀ and meteorological sampling locations. Figures 1.2 and 1.3 present photographs of the PM₁₀ sampler and meteorological measurement system.

Table 1-1 PM₁₀ and Meteorological Sampling Locations

	Meteorological	Air Quality
Latitude (WGS84)	41°40'7.65"N	41°40'5.69"N
Longitude (WGS84)	87°33'19.90"W	87°33'11.68"W
UTM Easting (m) (NAD83)	453754.62	453944.31
UTM Northing (m) (NAD83)	4613152.66	4613090.99
Elevation (m-msl)	178.3	178.3



Figure 1.1 Google Earth Image Showing PM₁₀ and Meteorological Monitoring Locations



Figure 1.2 Photograph of PM₁₀ Sampling Location



Figure 1.3 Photograph of Meteorological Tower on Building D

1.2 MONITORING EQUIPMENT

At the PM₁₀ sampling location, a Met One E-SEQ-FRM filter-based sampler, which is a candidate EPA federal reference method for PM₁₀, is operated. In this unit, a sample stream passes through filter cassettes containing a 47 mm diameter sample filter. A mass flow controller downstream of the filter controls the flow rate at a constant volumetric level. The sampler is configured to collect 24-hour (midnight to midnight) samples every three days in accordance with the schedule adopted by EPA. The Met One 034B Wind Sensor, attached to tripod mast, combines wind speed and direction measurements in a single sensing unit. Wind measurements are recorded continuously.

2. DATA SUMMARY

This section of the report summarizes the PM₁₀ and metals concentration data, and wind data results for June 1 through June 30, 2019. PM₁₀ and metal concentration filter results, and hourly wind speed and direction data are tabulated in the appendices. For the meteorological measurements, the appendix tables display the hourly average of measurements recorded in the hour "ending"; that is, the first hour of the day is labeled 01, meaning the hour beginning at 00:00:01 and ending at 01:00:00 a.m. The second hour is labeled 02, meaning the values collected from 01:00:01 a.m. to 02:00:00 a.m.

Gravimetric and metals analysis results were provided by Intermountain Laboratories (IML). For the determination of metals (As, Cd, Cr, Pb, Mn, Ni, and V) on PM air filters, EPA's IO Compendium Method IO-3.5: "Determination of Metals in Ambient Particulate Matter Using Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)" was utilized by the analytical laboratory.

2.1 PM₁₀ AND METALS CONCENTRATION DATA

The three-day PM₁₀ filter sampling results, in micrograms per cubic meter (µg/m³), and sampling information for the June 1 through June 30 monitoring period are presented in Table 2-1 and Appendix A. Metals concentrations, in nanograms per cubic meter (ng/m³) and corrected to standard temperature and pressure (STP), for the June 1 through June 30 monitoring period are presented in Table 2-2 and Appendix B.

Table 2-1 PM₁₀ Concentration Results in Micrograms per Cubic Meter from June 1 through June 30, 2019

Sampling Date	Filter Number	Net Weight (mg)	Elapsed Time (min)	LTP PM ₁₀ Conc. (µg/m ³)	STP PM ₁₀ Conc. (µg/m ³)	Comments
06/02/19	P2956003	0.2545	1440	10.6	10.5	
06/05/19	P2956004	0.4094	1440	17.0	17.4	
06/08/19	P2956005	0.0822	1440	3.4	3.4	
06/11/19	P2956006	0.6170	1440	25.7	26.0	
06/14/19	P2956007	0.0857	1440	3.5	3.6	
06/17/19	P2956010	0.5438	1440	22.6	22.4	
06/20/19	P2956011	0.4064	1440	16.9	16.9	
06/23/19	P2956012	0.2503	1440	10.4	10.6	
06/26/19	P2956013	0.8634	1440	35.9	36.9	
06/29/19	P2956014	0.6754	1440	28.1	28.8	

Table 2-2 Metal Concentration Results in Nanograms per Cubic Meter from June 1 through June 30, 2019

Sampling Date	Filter Number	As ¹ (ng/m ³)	Cd ¹ (ng/m ³)	Cr ¹ (ng/m ³)	Pb ¹ (ng/m ³)	Mn ¹ (ng/m ³)	Ni ¹ (ng/m ³)	V ¹ (ng/m ³)
06/02/19	P2956003	0	0	0	4.25	0	0	0
06/05/19	P2956004	0	0	0	3.99	37	0	0
06/08/19	P2956005	0	0	0	0.00	0	0	0
06/11/19	P2956006	0	0	0	0.00	0	0	0
06/14/19	P2956007	0	0	0	0.00	0	0	0
06/17/19	P2956010	0	0	0	7.89	46	0	0
06/20/19	P2956011	0	0	0	7.60	29	0	0
06/23/19	P2956012	0	0	0	2.76	0	0	0
06/26/19	P2956013	0	0	0	4.70	77	0	0
06/29/19	P2956014	0	0	0	4.75	37	0	0

¹ Corrected to standard temperature and pressure (0°C and 760 mmHg)

2.2 HORIZONTAL WIND DIRECTION AND WIND SPEED

Figure 2.1 presents a diagram of the joint frequency of occurrence distributions (wind rose) of wind speed and wind direction for June 1 through June 30, 2019. Hourly wind speed and wind direction data for June 2019 are presented in Appendix C.

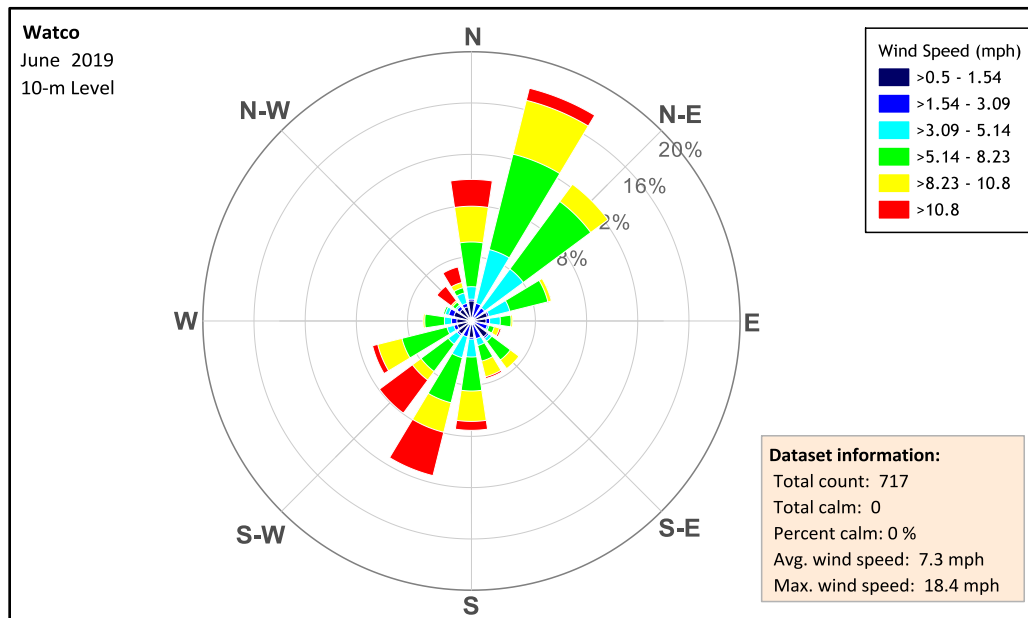


Figure 2.1 Wind Rose, June 1 through June 30, 2019

The predominant wind during June 2019 was from the north-northeast. Reported wind directions represent the directions **from which** the wind is blowing. During June, there were no calm periods. The percentage of wind speeds that were not calm but were less than 5.14 miles per hour (mph) were 26.2 percent. The percentage of wind that were greater than 10.8 mph was 13.8 percent. The maximum wind gust in June at the Watco monitoring station was 39.9 mph.

2.3 DATA RECOVERY

The data recovery for the PM₁₀ sampler for the June 1 through June 30, 2019 monitoring period, in percent possible, was 100%.

3. QUALITY CONTROL

Visual inspection of the PM₁₀ monitoring station occurs monthly since the Met One E-SEQ-FRM sampler holds 16 filters. At this time, the site technician performs any required maintenance. Monthly, the site operator performs flow checks on the Met One E-SEQ-FRM sampler. Calibration of the PM₁₀ equipment occurs quarterly, when changes are made to the sampler, or when problems require it.

The meteorological data are accessed from the Stevens-connect.com website. Meteorological equipment calibrations will be performed when problems are noted and semi-annually. Sensors which do not meet calibration specifications or fail performance audits are repaired and recalibrated.

APPENDIX A

PM₁₀ Concentration Data

PM₁₀ Sampler Summary

June 1, 2019 - June 30, 2019

Network: Trinity - Watco

Site: Watco

Sampler ID: 1

AQS ID:

Sampler Type: Met One E-SEQ-FRM

Date	Filter ID	Concentration (µg/m ³)		Sample Period (hr:min)	Sample Volume (m ³)	Std Volume (m ³)	Tare (mg)	Mass Gross (mg)	Net (mg)	Flag	Comments	
		LTP	STP									
06/02/19	P2956003	10.6	10.5	24:00	24.0	24.1	399.5741	399.8286	0.2545			
06/05/19	P2956004	17.0	17.4	24:00	24.0	23.5	397.8059	398.2153	0.4094			
06/08/19	P2956005	3.4	3.4	24:00	24.0	23.8	402.5159	402.5981	0.0822			
06/11/19	P2956006	25.7	26.0	24:00	24.0	23.7	400.2197	400.8367	0.6170			
06/14/19	P2956007	3.5	3.6	24:00	24.0	23.8	402.3094	402.3951	0.0857			
06/17/19	P2956010	22.6	22.4	24:00	24.0	24.2	396.6775	397.2213	0.5438			
06/20/19	P2956011	16.9	16.9	24:00	24.0	24.1	400.1544	400.5608	0.4064			
06/23/19	P2956012	10.4	10.6	24:00	24.0	23.5	394.7392	394.9895	0.2503			
06/26/19	P2956013	35.9	36.9	24:00	24.0	23.4	396.9993	397.8627	0.8634			
06/29/19	P2956014	28.1	28.8	24:00	24.0	23.4	404.1070	404.7824	0.6754			
06/15/19	P2956008	Field Blank						403.5637	403.5627	-0.0010		
	# Valid	Recovery	Average	St. Dev.	Max	Min						
	10	100%	17.7	11.0	36.9	3.4						

Inter-Mountain Laboratories' (IML) data validation is limited by the provided information. Data have been validated based on laboratory QC, field observations and other information available to IML. Additional data validation based on information not provided to IML may be required. According to 40 CFR 58.15 final responsibilities for data review and validation lies with each agency submitting data to AQS.

APPENDIX B

Metals Concentration Data



Date: 7/12/2019

CLIENT: Trinity Consultants
Project: WATCO
Lab Order: S1907139

CASE NARRATIVE
Report ID: S1907139001

Samples 2956003 #362, 2956004 #363, 2956005 #364, 2956006 #365, 2956007 #366, 2956008 #367, 2956010 #368, 2956011 #369, 2956012 #372, 2956013 #373 and 2956014 #374 were received on July 9, 2019.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition
40 CFR Parts 136 and 141
40 CFR Part 50, Appendices B, J, L, and O
Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012
ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by:

John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-001
Client Sample ID: 2956003 #362

Work Order: S1907139
Collection Date: 6/2/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24			m ³	06/02/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	07/11/2019 1751 MS	IO-3.5
Cadmium	ND	1000		ng/filter	07/11/2019 1751 MS	IO-3.5
Chromium	ND	1500		ng/filter	07/11/2019 1751 MS	IO-3.5
Lead	100	50		ng/filter	07/11/2019 1751 MS	IO-3.5
Manganese	ND	600		ng/filter	07/11/2019 1751 MS	IO-3.5
Nickel	ND	1300		ng/filter	07/11/2019 1751 MS	IO-3.5
Vanadium	ND	2450		ng/filter	07/11/2019 1751 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	07/12/2019 1001 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	07/12/2019 1001 JJ	Calculation
Chromium	ND	62.5		ng/m ³	07/12/2019 1001 JJ	Calculation
Lead	4.25	2.08		ng/m ³	07/12/2019 1001 JJ	Calculation
Manganese	ND	25		ng/m ³	07/12/2019 1001 JJ	Calculation
Nickel	ND	54.2		ng/m ³	07/12/2019 1001 JJ	Calculation
Vanadium	ND	102		ng/m ³	07/12/2019 1001 JJ	Calculation

These results apply only to the samples tested.

- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-002
Client Sample ID: 2956004 #363

Work Order: S1907139
Collection Date: 6/5/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24			m ³	06/05/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	07/11/2019 1804 MS	IO-3.5
Cadmium	ND	1000		ng/filter	07/11/2019 1804 MS	IO-3.5
Chromium	ND	1500		ng/filter	07/11/2019 1804 MS	IO-3.5
Lead	100	50		ng/filter	07/11/2019 1804 MS	IO-3.5
Manganese	900	600		ng/filter	07/11/2019 1804 MS	IO-3.5
Nickel	ND	1300		ng/filter	07/11/2019 1804 MS	IO-3.5
Vanadium	ND	2450		ng/filter	07/11/2019 1804 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	07/12/2019 1001 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	07/12/2019 1001 JJ	Calculation
Chromium	ND	62.5		ng/m ³	07/12/2019 1001 JJ	Calculation
Lead	3.99	2.08		ng/m ³	07/12/2019 1001 JJ	Calculation
Manganese	37	25		ng/m ³	07/12/2019 1001 JJ	Calculation
Nickel	ND	54.2		ng/m ³	07/12/2019 1001 JJ	Calculation
Vanadium	ND	102		ng/m ³	07/12/2019 1001 JJ	Calculation

These results apply only to the samples tested.

- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-003
Client Sample ID: 2956005 #364

Work Order: S1907139
Collection Date: 6/8/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Table with columns: Analyses, Result, RL, Qual, Units, Date Analyzed/Init, Method. Rows include Field (Actual Volume), IO-3.5 Teflon Filters (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium), and Filter Metals Concentration (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium).

These results apply only to the samples tested.

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

RL - Reporting Limit

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-004
Client Sample ID: 2956006 #365

Work Order: S1907139
Collection Date: 6/11/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Table with columns: Analyses, Result, RL, Qual, Units, Date Analyzed/Init, Method. Rows include Field (Actual Volume), IO-3.5 Teflon Filters (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium), and Filter Metals Concentration (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium).

These results apply only to the samples tested.

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

RL - Reporting Limit

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-005
Client Sample ID: 2956007 #366

Work Order: S1907139
Collection Date: 6/14/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Table with columns: Analyses, Result, RL, Qual, Units, Date Analyzed/Init, Method. Rows include Field (Actual Volume), IO-3.5 Teflon Filters (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium), and Filter Metals Concentration (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium).

These results apply only to the samples tested.

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

RL - Reporting Limit

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-006
Client Sample ID: 2956008 #367
Comment: Field Blank

Work Order: S1907139
Collection Date: 6/15/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	07/11/2019 1856 MS	IO-3.5
Cadmium	ND	1000		ng/filter	07/11/2019 1856 MS	IO-3.5
Chromium	ND	1500		ng/filter	07/11/2019 1856 MS	IO-3.5
Lead	ND	50		ng/filter	07/11/2019 1856 MS	IO-3.5
Manganese	ND	600		ng/filter	07/11/2019 1856 MS	IO-3.5
Nickel	ND	1300		ng/filter	07/11/2019 1856 MS	IO-3.5
Vanadium	ND	2450		ng/filter	07/11/2019 1856 MS	IO-3.5

These results apply only to the samples tested.

- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-007
Client Sample ID: 2956010 #368

Work Order: S1907139
Collection Date: 6/17/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Table with columns: Analyses, Result, RL, Qual, Units, Date Analyzed/Init, Method. Rows include Field (Actual Volume), IO-3.5 Teflon Filters (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium), and Filter Metals Concentration (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium).

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-008
Client Sample ID: 2956011 #369

Work Order: S1907139
Collection Date: 6/20/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24			m ³	06/20/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	07/11/2019 1909 MS	IO-3.5
Cadmium	ND	1000		ng/filter	07/11/2019 1909 MS	IO-3.5
Chromium	ND	1500		ng/filter	07/11/2019 1909 MS	IO-3.5
Lead	180	50		ng/filter	07/11/2019 1909 MS	IO-3.5
Manganese	700	600		ng/filter	07/11/2019 1909 MS	IO-3.5
Nickel	ND	1300		ng/filter	07/11/2019 1909 MS	IO-3.5
Vanadium	ND	2450		ng/filter	07/11/2019 1909 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	07/12/2019 1001 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	07/12/2019 1001 JJ	Calculation
Chromium	ND	62.5		ng/m ³	07/12/2019 1001 JJ	Calculation
Lead	7.60	2.08		ng/m ³	07/12/2019 1001 JJ	Calculation
Manganese	29	25		ng/m ³	07/12/2019 1001 JJ	Calculation
Nickel	ND	54.2		ng/m ³	07/12/2019 1001 JJ	Calculation
Vanadium	ND	102		ng/m ³	07/12/2019 1001 JJ	Calculation

These results apply only to the samples tested.

- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-009
Client Sample ID: 2956012 #372

Work Order: S1907139
Collection Date: 6/23/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Analyses	Result	RL	Qual	Units	Date Analyzed/Init	Method
Field						
Actual Volume	24			m ³	06/23/2019 0000	Field
IO-3.5 Teflon Filters						
Arsenic	ND	50		ng/filter	07/11/2019 1915 MS	IO-3.5
Cadmium	ND	1000		ng/filter	07/11/2019 1915 MS	IO-3.5
Chromium	ND	1500		ng/filter	07/11/2019 1915 MS	IO-3.5
Lead	70	50		ng/filter	07/11/2019 1915 MS	IO-3.5
Manganese	ND	600		ng/filter	07/11/2019 1915 MS	IO-3.5
Nickel	ND	1300		ng/filter	07/11/2019 1915 MS	IO-3.5
Vanadium	ND	2450		ng/filter	07/11/2019 1915 MS	IO-3.5
Filter Metals Concentration						
Arsenic	ND	2.08		ng/m ³	07/12/2019 1001 JJ	Calculation
Cadmium	ND	41.7		ng/m ³	07/12/2019 1001 JJ	Calculation
Chromium	ND	62.5		ng/m ³	07/12/2019 1001 JJ	Calculation
Lead	2.76	2.08		ng/m ³	07/12/2019 1001 JJ	Calculation
Manganese	ND	25		ng/m ³	07/12/2019 1001 JJ	Calculation
Nickel	ND	54.2		ng/m ³	07/12/2019 1001 JJ	Calculation
Vanadium	ND	102		ng/m ³	07/12/2019 1001 JJ	Calculation

These results apply only to the samples tested.

- Qualifiers:**
- B Analyte detected in the associated Method Blank
 - E Value above quantitation range
 - H Holding times for preparation or analysis exceeded
 - L Analyzed by another laboratory
 - ND Not Detected at the Reporting Limit
 - S Spike Recovery outside accepted recovery limits
 - X Matrix Effect

RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-010
Client Sample ID: 2956013 #373

Work Order: S1907139
Collection Date: 6/26/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Table with columns: Analyses, Result, RL, Qual, Units, Date Analyzed/Init, Method. Rows include Field (Actual Volume), IO-3.5 Teflon Filters (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium), and Filter Metals Concentration (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium).

These results apply only to the samples tested.

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

RL - Reporting Limit

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Sample Analysis Report

CLIENT: Trinity Consultants
4525 Wasatch Blvd.
Suite 200
Salt Lake City, UT 84124

Date Reported: 7/12/2019
Report ID: S1907139001

Project: WATCO
Lab ID: S1907139-011
Client Sample ID: 2956014 #374

Work Order: S1907139
Collection Date: 6/29/2019
Date Received: 7/9/2019 10:00:00 AM
Sampler: MS
Matrix: Filter
COC: 183262

Table with columns: Analyses, Result, RL, Qual, Units, Date Analyzed/Init, Method. Rows include Field (Actual Volume), IO-3.5 Teflon Filters (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium), and Filter Metals Concentration (Arsenic, Cadmium, Chromium, Lead, Manganese, Nickel, Vanadium).

These results apply only to the samples tested.

- Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
H Holding times for preparation or analysis exceeded
L Analyzed by another laboratory
ND Not Detected at the Reporting Limit
S Spike Recovery outside accepted recovery limits
X Matrix Effect

RL - Reporting Limit

- C Calculated Value
G Analyzed at IML Gillette laboratory
J Analyte detected below quantitation limits
M Value exceeds Monthly Ave or MCL or is less than LCL
O Outside the Range of Dilutions
U Analysis reported under the reporting limit

Reviewed by: John M. Jacobs
John Jacobs, Project Manager



Inter-Mountain Labs
Sheridan, WY and Gillette, WY

- CHAIN OF CUSTODY RECORD -

All shaded fields must be completed.
This is a legal document; any misrepresentation may be construed as fraud.

Client Name: Waste
Project Identification: Waste
Sampler (Signature/Attestation of Authenticity): [Signature]Telephone #: [Blank]

Report Address: Waste, 2926 E 126 St, Chicago IL 60633
Contact Name: Matt Sloan
Email: msloan@trinitylabs-wy.com
Phone: 330-844-6998
Purchase Order #: [Blank]Quote #: [Blank]

Invoice Address: [Blank]

ITEM	LAB ID (Lab Use Only)	DATE SAMPLED	TIME SAMPLED	SAMPLE IDENTIFICATION	Matrix	# of Containers	ANALYSES / PARAMETERS	REMARKS
1	51957131-001	6/2/19	23:59	2 956 003	362		Metals	
2	002	6/5/19	23:51	2 956 004	363			
3	003	6/8/19	23:51	2 956 005	364			
4	004	6/11/19	23:59	2 956 006	365			
5	005	6/14/19	23:59	2 956 009	366			
6	006	6/15/19	0:00	2 956 008	367			Field Blegk
7	007	6/17/19	23:59	2 956 010	368			
8	008	6/24/19	23:59	2 956 011	369			
9	009	6/23/19	23:59	2 956 012	372			
10	010	6/26/19	23:59	2 956 013	373			
11	011	6/29/19	23:59	2 956 014	374			
12								
13								
14								

LAB COMMENTS: Relinquished By (Signature/Printed): [Blank]

DATE: 7/19/19 TIME: 10:00
Received By (Signature/Printed): [Signature] Kate
DATE: 7.10.19 TIME: 13:01
Received By (Signature/Printed): [Signature] Kathy

SHIPPING INFO: UPS, Fed Express, US Mail, Hand Carried, Other [Blank]

MATRIX CODES: Water, Soil, Solid, Filter, Other [Blank]

TURNAROUND TIMES: Check desired service, RUSH - 5 Working Days, URGENT - < 2 Working Days

COMPLIANCE INFORMATION: Compliance Monitoring? Y/N, Program (SDWA, NPDES, ...), PWSID / Permit #, Chlorinated?, Sample Disposal: Lab, Client

APPENDIX C

Hourly Wind Speed and Wind Direction Data

10M Unit Vector Wind Speed and Direction in mph for June, 2019

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13
1	227/07.9	219/08.1	221/08.6	239/08.7	238/07.6	238/07.6	245/08.4	244/09.4	255/08.9	268/06.2	249/04.8	032/05.5	028/10.2
2	358/05.4	334/03.9	003/05.0	347/04.4	357/04.1	007/05.4	009/07.5	001/06.7	002/07.1	017/09.9	014/11.5	023/13.4	039/10.3
3	030/07.6	030/07.2	024/07.3	042/06.0	061/07.8	070/09.2	099/07.9	113/08.5	098/05.7	092/05.1	047/07.1	027/08.2	030/08.6
4	150/03.6	192/04.6	173/04.5	182/05.9	193/06.3	200/07.5	198/07.4	212/10.4	228/13.6	229/12.8	199/07.2	165/04.9	173/07.2
5	184/07.5	215/11.4	278/05.7	216/04.2	222/05.6	224/06.7	203/09.0	224/07.3	252/08.5	258/10.2	258/09.0	266/09.2	263/07.6
6	007/04.8	020/05.2	023/04.7	025/06.4	027/06.5	031/05.5	033/05.7	015/06.5	016/05.4	026/05.5	045/06.6	029/06.1	033/06.5
7	022/05.3	012/05.0	010/04.1	019/05.2	026/05.8	023/04.9	025/04.9	025/04.8	040/06.4	055/06.9	054/07.6	030/08.7	011/09.3
8	024/04.6	037/03.3	051/05.5	056/07.8	059/08.0	048/07.5	053/08.4	050/08.4	045/09.0	031/08.8	027/09.4	026/09.2	023/09.5
9	093/05.2	057/06.9	049/06.7	049/06.6	039/05.9	033/06.1	034/05.0	036/05.0	030/04.9	039/03.0	058/03.3	068/04.6	028/05.4
10	302/01.4	273/02.8	281/04.2	305/08.2	322/11.4	328/11.2	322/12.1	323/10.2	325/12.0	328/13.2	325/13.0	355/10.6	042/09.6
11	187/04.7	204/04.8	204/05.6	212/04.5	205/04.5	220/05.3	214/07.1	202/05.9	203/07.1	224/10.2	225/08.0	165/05.5	174/05.3
12	185/08.9	187/10.5	185/11.0	190/10.2	192/09.6	185/08.8	185/09.3	190/10.7	191/11.8	195/13.8	182/13.1	218/11.1	251/08.1
13	280/08.0	321/13.7	323/14.2	329/18.3	329/17.2	322/15.1	326/13.6	329/12.9	328/13.4	320/11.5	326/12.0	327/12.4	333/15.0
14	245/05.6	250/04.6	232/03.5	231/06.0	213/04.8	212/07.1	198/06.6	211/08.5	211/12.6	214/11.9	212/14.0	220/15.1	214/16.0
15	188/10.7	197/12.7	204/13.2	207/12.4	211/13.7	199/10.5	201/11.3	200/10.1	204/11.4	204/10.9	199/11.4	208/12.3	200/09.5
16	014/04.2	024/05.8	005/03.9	013/05.0	005/04.9	292/01.6	253/03.0	328/03.1	289/02.2	314/02.2	012/04.7	040/04.0	025/07.9
17	006/06.8	023/04.5	353/05.6	343/04.2	359/06.1	005/08.2	006/06.8	008/06.9	008/07.6	011/07.8	015/07.7	010/09.2	023/08.9
18	044/04.1	031/03.6	015/04.1	014/04.1	017/03.4	042/03.3	042/03.4	046/04.7	050/05.3	049/04.8	041/03.9	071/05.2	064/05.2
19	187/00.6	225/00.6	090/00.6	139/00.6	229/00.6	066/00.6	031/01.9	049/03.6	031/04.9	033/07.8	025/08.3	033/09.7	033/09.8
20	002/11.8	005/11.3	004/11.8	360/11.7	356/10.0	358/10.7	339/10.3	342/10.7	348/13.0	355/12.6	352/10.5	353/09.0	348/08.7
21	264/01.7	285/01.0	317/01.3	315/01.7	280/00.9	333/02.1	285/01.5	035/04.1	023/04.7	038/05.0	030/06.8	039/07.1	033/05.9
22	051/04.7	029/04.9	047/02.3	025/04.4	031/05.0	037/03.2	079/03.7	098/05.8	049/05.2	075/07.4	092/08.5	078/06.1	064/06.9
23	147/07.6	142/08.8	133/08.0	121/07.5	125/06.8	127/03.6	133/05.9	137/08.0	146/08.9	148/10.8	155/13.6	180/11.9	181/11.5
24	187/08.8	200/07.6	195/06.6	202/06.0	198/06.1	202/07.0	207/09.0	212/11.0	210/11.0	218/10.5	215/12.0	226/11.7	230/10.9
25	236/07.2	241/07.1	237/08.5	227/06.7	228/06.4	227/06.5	230/08.6	247/09.2	254/09.3	242/09.9	248/10.9	223/11.8	220/14.7
26	232/08.2	244/06.7	244/06.7	250/06.0	252/06.7	258/05.3	259/05.4	239/05.3	213/05.5	207/05.2	208/04.6	213/04.9	162/04.9
27	163/08.5	190/09.9	194/09.7	214/05.9	228/03.5	258/04.8	263/04.3	249/08.1	219/07.2	178/04.8	180/07.2	182/07.1	182/06.8
28	160/07.5	170/06.9	190/05.6	178/04.7	187/05.0	228/03.2	201/06.0	247/07.9	246/08.0	253/07.1	014/08.9	032/09.5	065/03.8
29	209/02.4	183/02.5	196/02.3	205/03.2	245/03.6	207/04.5	232/05.4	259/05.2	283/05.4	293/03.4	011/06.2	022/07.1	023/08.2
30	348/01.2	007/01.4	064/01.2	181/01.1	359/00.8	002/01.2	235/01.8	104/03.1	037/05.2	054/05.3	041/07.0	051/05.8	051/07.1
MEAN	215/05.9	264/06.2	304/06.1	256/06.2	282/06.3	303/06.1	255/06.7	290/07.4	309/08.0	324/08.1	014/08.6	036/08.6	038/08.6
MAX	002/11.8	321/13.7	323/14.2	329/18.3	329/17.2	322/15.1	326/13.6	329/12.9	228/13.6	195/13.8	212/14.0	220/15.1	214/16.0
MIN	187/00.6	225/00.6	090/00.6	139/00.6	229/00.6	066/00.6	285/01.5	104/03.1	289/02.2	314/02.2	058/03.3	040/04.0	065/03.8

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---

10M Unit Vector Wind Speed and Direction in mph for June, 2019

Hr Beg Hr End Day	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX SPD	MIN SPD
1	025/09.3	075/05.2	094/03.6	059/04.4	024/09.9	068/04.8	044/04.1	335/03.5	007/08.2	001/07.1	353/04.9	319/07.0	028/10.2	335/03.5
2	057/07.9	059/08.0	055/07.1	066/06.6	074/06.8	092/05.3	084/03.3	052/03.4	042/04.5	043/04.9	027/07.8	030/06.7	023/13.4	084/03.3
3	029/08.1	030/07.4	040/08.9	038/07.5	044/07.4	054/06.3	064/05.1	062/03.7	065/03.8	068/02.1	136/02.2	057/06.6	070/09.2	068/02.1
4	182/09.0	---	---	---	206/12.1	204/10.8	203/09.5	200/06.5	184/06.8	181/07.5	189/08.8	193/07.9	228/13.6	150/03.6
5	278/07.5	271/05.1	054/06.0	064/08.6	082/05.5	032/08.4	022/11.4	012/08.3	024/05.3	031/06.2	011/05.0	273/07.5	022/11.4	216/04.2
6	022/06.5	027/06.2	053/07.3	054/07.4	031/07.5	030/06.6	039/07.0	027/09.2	029/08.0	026/06.7	022/07.6	029/06.5	027/09.2	023/04.7
7	014/10.6	011/11.1	011/13.3	009/12.3	010/13.2	016/10.4	035/08.3	027/06.8	021/05.1	017/04.8	031/04.8	023/07.5	011/13.3	010/04.1
8	028/09.5	025/09.4	009/09.5	005/08.7	008/06.3	036/03.8	047/05.1	072/05.3	114/09.2	125/09.9	114/06.6	044/07.6	125/09.9	037/03.3
9	019/05.6	036/05.3	022/05.0	018/04.4	025/04.7	035/04.8	012/04.5	018/04.5	013/03.4	014/01.6	352/01.6	034/04.7	057/06.9	352/01.6
10	043/09.0	050/07.9	050/07.7	042/07.2	035/06.6	070/05.3	076/03.3	155/02.5	162/02.9	175/03.5	186/04.4	354/07.5	328/13.2	302/01.4
11	272/04.7	202/05.3	077/07.7	111/07.9	156/09.1	155/08.5	144/06.9	156/09.0	155/08.6	163/07.4	172/07.6	185/06.7	224/10.2	205/04.5
12	247/08.3	280/07.0	273/07.2	266/06.4	259/06.9	197/07.1	197/09.2	245/07.6	215/07.5	207/07.6	212/06.7	212/09.1	195/13.8	266/06.4
13	002/15.0	008/09.7	010/10.8	016/08.4	049/06.8	087/03.8	167/03.0	188/03.9	202/04.9	210/04.8	237/05.8	327/10.6	329/18.3	167/03.0
14	212/16.0	213/16.3	209/15.3	204/15.7	212/16.9	214/18.4	212/15.4	211/16.7	219/16.8	214/09.5	193/10.1	216/11.8	214/18.4	232/03.5
15	189/06.8	190/03.8	171/05.6	196/06.6	180/06.0	210/06.4	232/04.5	350/07.0	017/06.0	017/06.9	053/03.7	200/08.9	211/13.7	053/03.7
16	016/10.7	013/11.3	020/08.0	009/10.5	004/12.0	358/08.9	011/07.7	004/07.6	358/06.1	358/07.5	002/07.3	359/06.2	004/12.0	292/01.6
17	035/07.6	025/08.5	026/08.9	019/07.1	036/06.7	027/07.3	028/06.8	024/06.2	034/06.4	053/05.5	053/04.4	019/06.9	010/09.2	343/04.2
18	054/04.7	042/05.5	048/05.7	048/05.5	061/04.5	037/05.0	054/03.1	104/01.9	129/01.0	144/01.0	238/00.6	051/03.9	048/05.7	238/00.6
19	023/10.9	021/10.1	012/11.0	010/10.4	008/09.2	004/09.8	005/11.1	022/10.5	011/10.5	005/12.2	004/12.3	027/07.0	004/12.3	187/00.6
20	331/07.4	003/09.7	007/08.8	010/09.4	013/09.1	011/06.9	357/06.0	347/05.6	347/02.1	355/00.6	283/00.6	353/08.7	348/13.0	283/00.6
21	027/06.1	039/06.3	054/03.4	071/04.5	049/09.4	025/09.2	032/06.5	025/05.3	020/05.4	028/05.2	037/05.1	013/04.6	049/09.4	280/00.9
22	126/07.6	142/09.0	133/09.8	124/12.9	141/08.5	157/07.4	134/05.9	133/06.0	138/05.6	143/06.5	138/07.7	095/06.5	124/12.9	047/02.3
23	168/10.2	155/08.6	155/07.0	158/07.2	135/06.9	140/04.1	120/02.6	125/01.3	099/02.1	184/07.0	184/08.2	146/07.4	155/13.6	125/01.3
24	225/09.8	226/11.6	221/13.0	217/14.1	235/14.2	237/11.9	258/13.4	258/09.4	253/08.8	253/07.8	240/08.1	222/10.0	235/14.2	202/06.0
25	221/16.4	228/16.2	215/17.1	222/18.1	227/17.9	226/14.6	219/11.6	226/08.3	246/06.5	239/06.8	215/06.7	231/10.7	222/18.1	228/06.4
26	192/05.3	186/04.6	025/05.6	044/05.7	058/07.0	063/05.2	076/03.3	332/07.8	202/08.3	151/07.5	153/08.5	213/06.0	153/08.5	076/03.3
27	177/08.3	176/08.3	187/09.7	189/09.2	194/07.5	176/05.7	009/13.3	040/08.3	106/08.4	153/05.0	176/05.3	191/07.3	009/13.3	228/03.5
28	128/05.7	170/10.1	192/11.0	197/10.8	194/10.0	238/06.3	230/05.7	249/06.9	254/05.7	242/05.6	274/02.9	211/06.9	192/11.0	274/02.9
29	034/08.3	036/07.5	046/07.7	042/07.6	062/06.0	064/05.8	057/05.5	088/03.9	084/03.0	033/02.2	237/02.1	031/05.0	034/08.3	237/02.1
30	052/10.5	012/15.5	036/06.5	179/10.3	321/06.0	328/04.5	324/04.4	223/03.3	153/05.6	203/04.8	260/03.3	022/04.9	012/15.5	359/00.8
MEAN	035/08.8	041/08.6	050/08.6	056/08.8	053/08.7	062/07.4	053/06.9	038/06.3	078/06.2	099/05.9	209/05.7	029/07.3		
MAX	221/16.4	213/16.3	215/17.1	222/18.1	227/17.9	214/18.4	212/15.4	211/16.7	219/16.8	005/12.2	004/12.3		214/18.4	
MIN	272/04.7	190/03.8	054/03.4	018/04.4	061/04.5	087/03.8	120/02.6	125/01.3	129/01.0	355/00.6	238/00.6			238/00.6

POSSIBLE NUMBER OF OBSERVATIONS = 720 ACTUAL NUMBER OF OBSERVATIONS = 717 DATA RECOVERY RATE = 99.6%
 MONTHLY MEAN = 029/07.3 MAXIMUM WIND SPEED = 18.4 AT 214 DEGREES DATE OF OCCURRENCE = 6/14 AT 1900
 MEANS REQUIRE 75% VALID DATA MISSING DATA DENOTED BY ---

Watco

10M Joint Frequency Distribution for June, 2019

Percentage frequency of occurrence of hourly wind velocities for all stability classes

Wind Direction	Wind Speed (mph)						TOTAL	AVG SPEED
	OVER 0.5	1.54 - 3.09	3.09 - 5.14	5.14 - 8.23	8.23 - 10.8	OVER 10.8		
N 348.75 - 11.25	0.6	0.1	1.0	3.3	2.8	2.1	9.9	8.2
NNE 11.25 - 33.75	0.0	0.4	4.3	7.8	4.3	1.0	17.9	6.9
NE 33.75 - 56.25	0.0	0.3	3.8	6.6	1.7	0.0	12.3	6.1
ENE 56.25 - 78.75	0.3	0.1	1.7	3.1	0.3	0.0	5.4	5.5
E 78.75 - 101.25	0.1	0.3	0.8	0.8	0.1	0.0	2.2	4.6
ESE 101.25 - 123.75	0.0	0.3	0.1	0.4	0.4	0.1	1.4	6.9
SE 123.75 - 146.25	0.6	0.1	0.3	1.8	0.8	0.0	3.6	6.0
SSE 146.25 - 168.75	0.0	0.4	0.6	1.3	1.3	0.1	3.6	7.1
S 168.75 - 191.25	0.3	0.1	1.4	2.6	2.4	0.7	7.5	7.3
SSW 191.25 - 213.75	0.0	0.3	1.7	3.6	2.4	3.5	11.4	8.9
SW 213.75 - 236.25	0.3	0.1	0.8	2.6	0.8	3.2	7.9	9.3
WSW 236.25 - 258.75	0.1	0.3	0.6	3.6	2.0	0.4	7.0	7.3
W 258.75 - 281.25	0.1	0.4	0.6	1.5	0.1	0.0	2.8	5.4
WNW 281.25 - 303.75	0.4	0.4	0.3	0.1	0.0	0.0	1.3	2.4
NW 303.75 - 326.25	0.1	0.3	0.1	0.3	0.1	1.4	2.4	9.6
NNW 326.25 - 348.75	0.1	0.3	0.8	0.4	0.4	1.3	3.3	8.6
CALM							0.0	
TOTAL	3.1	4.3	18.8	40.0	19.9	13.8	100.0	7.3

TOTAL NUMBER OF OBSERVATIONS = 717

POSSIBLE NUMBER OF OBSERVATIONS = 720

DATA RECOVERY = 99.6%

Watco

10M WIND GUST in mph for JUNE, 2019

Hr Beg Hr End Day	0 1	1 2	2 3	3 4	4 5	5 6	6 7	7 8	8 9	9 10	10 11	11 12	12 13	13 14	14 15	15 16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24	MEAN	MAX	MIN
1	14.3	12.5	14.3	16.7	13.1	12.5	14.3	16.1	16.1	15.5	10.8	10.2	25.6	15.5	9.6	14.3	14.9	29.8	11.4	11.9	13.1	13.7	13.7	10.8	14.6	29.8	9.6
2	11.9	7.8	10.2	9.6	8.4	10.2	14.9	11.9	12.5	14.9	19.1	21.5	19.1	13.7	12.5	12.5	10.2	11.9	8.4	7.8	6.0	7.8	8.4	14.9	11.9	21.5	6.0
3	13.7	11.9	11.9	10.2	16.1	16.1	14.3	15.5	11.4	9.6	12.5	13.7	14.3	13.7	12.5	13.7	12.5	11.9	10.8	9.0	6.6	6.6	3.6	4.2	11.5	16.1	3.6
4	7.8	8.4	8.4	10.2	11.9	12.5	15.5	16.7	26.8	25.6	18.5	9.6	14.3	18.5	---	---	---	22.7	19.7	18.5	11.4	11.9	13.1	14.9	15.1	26.8	7.8
5	14.3	31.0	26.8	9.6	10.8	11.9	17.3	14.3	13.7	17.9	16.1	20.3	14.3	14.9	11.9	10.2	14.9	9.0	15.5	17.3	14.3	9.6	10.2	9.0	14.8	31.0	9.0
6	9.6	9.0	7.8	10.8	10.2	9.0	11.4	10.8	9.0	9.6	10.8	10.2	10.2	11.4	10.2	10.8	12.5	11.4	11.4	12.5	14.9	13.1	11.4	11.4	10.8	14.9	7.8
7	10.8	7.8	7.8	7.8	9.0	9.6	8.4	7.8	10.2	11.4	12.5	14.9	16.1	18.5	19.1	20.9	19.1	20.3	19.7	14.3	11.9	8.4	8.4	8.4	12.6	20.9	7.8
8	8.4	6.6	11.4	14.9	14.3	13.1	17.3	14.3	14.9	14.3	14.3	14.3	14.3	14.9	14.3	14.9	15.5	12.5	9.0	9.0	14.3	17.3	22.1	13.1	13.7	22.1	6.6
9	11.4	13.1	11.9	14.3	13.1	10.2	9.0	8.4	7.8	6.0	7.2	7.8	8.4	9.0	9.0	7.2	7.2	8.4	7.8	7.2	7.2	5.4	4.2	3.6	8.5	14.3	3.6
10	3.0	6.6	8.4	20.3	21.5	24.5	23.9	20.9	23.3	25.1	24.5	20.3	16.7	15.5	13.1	13.7	13.1	11.9	9.6	6.6	4.8	4.8	5.4	7.2	14.4	25.1	3.0
11	8.4	7.8	9.6	10.2	9.6	10.2	11.4	9.6	14.3	16.7	16.7	12.5	13.7	12.5	13.7	14.9	15.5	16.1	15.5	15.5	18.5	15.5	14.9	14.3	13.2	18.5	7.8
12	15.5	19.7	19.7	16.7	17.3	14.3	15.5	21.5	21.5	26.2	23.3	23.3	16.7	22.7	15.5	15.5	13.1	13.7	14.3	16.1	16.1	14.9	12.5	11.9	17.4	26.2	11.9
13	21.5	26.8	27.4	39.9	37.0	31.0	26.2	23.3	25.6	23.9	23.9	25.1	33.4	28.6	18.5	18.5	14.9	11.9	7.8	6.0	7.2	8.4	9.6	10.8	21.1	39.9	6.0
14	9.6	8.4	6.6	13.1	9.6	13.7	13.7	15.5	25.1	20.3	23.9	27.4	29.8	28.6	28.0	29.2	27.4	31.0	35.8	33.4	28.0	34.0	16.7	17.9	21.9	35.8	6.6
15	19.1	25.1	23.9	20.9	24.5	20.9	22.1	19.1	24.5	18.5	20.3	22.7	17.9	12.5	8.4	13.1	13.1	9.6	11.9	10.2	13.7	11.4	12.5	8.4	16.8	25.1	8.4
16	7.8	11.9	9.6	8.4	9.0	5.4	5.4	6.0	4.8	4.8	7.2	8.4	14.3	17.3	18.5	14.3	16.7	21.5	23.3	13.7	13.7	11.4	14.9	15.5	11.8	23.3	4.8
17	13.1	7.2	10.2	9.0	13.1	13.7	10.8	11.9	13.7	12.5	13.7	15.5	14.9	12.5	13.7	13.7	11.4	10.8	11.4	10.8	9.0	10.8	9.0	8.4	11.7	15.5	7.2
18	7.8	6.6	7.2	7.2	7.2	6.6	6.0	7.8	7.8	7.8	7.2	9.6	10.2	9.6	9.0	10.2	8.4	7.2	7.8	7.2	5.4	3.6	4.2	0.6	7.2	10.2	0.6
19	0.6	0.6	0.6	0.6	0.6	0.6	4.8	6.6	7.8	13.1	14.9	16.1	17.3	17.3	17.3	20.3	19.1	17.3	17.9	17.3	16.7	20.3	22.1	20.3	12.1	22.1	0.6
20	19.7	21.5	22.1	22.7	19.7	18.5	19.1	28.0	24.5	23.3	20.9	15.5	17.9	14.9	19.1	18.5	16.1	14.9	11.9	10.8	10.8	6.6	2.4	0.6	16.7	28.0	0.6
21	5.4	4.2	7.2	6.6	3.6	6.0	4.8	9.0	7.2	10.2	10.2	13.7	10.8	10.2	11.9	7.2	9.6	16.7	16.1	13.1	9.0	9.0	8.4	9.0	9.1	16.7	3.6
22	8.4	9.0	7.2	7.2	9.0	7.2	7.2	14.9	9.6	16.1	16.7	16.7	16.1	19.1	17.3	20.3	25.1	20.3	15.5	11.9	11.4	10.8	15.5	16.7	13.7	25.1	7.2
23	14.9	17.3	16.1	14.9	13.1	11.4	12.5	20.3	18.5	24.5	27.4	20.3	22.1	19.7	17.9	16.1	20.3	15.5	9.6	4.8	4.2	9.0	12.5	17.3	15.8	27.4	4.2
24	16.1	13.1	12.5	12.5	9.6	11.9	16.1	19.1	20.3	18.5	21.5	22.7	25.1	19.7	20.3	22.1	26.2	25.6	25.1	26.8	19.7	17.3	12.5	13.7	18.7	26.8	9.6
25	11.4	11.4	14.3	11.9	11.9	11.9	14.9	16.7	17.3	20.9	17.9	19.7	25.6	28.6	29.8	28.0	32.8	34.0	28.0	22.7	16.1	10.8	11.4	12.5	19.2	34.0	10.8
26	16.1	13.1	11.4	10.2	11.9	10.2	9.6	9.0	9.0	10.8	9.0	11.4	11.4	11.4	11.9	11.4	11.4	13.1	9.6	7.8	22.1	22.1	19.7	16.7	12.5	22.1	7.8
27	19.1	17.9	17.9	10.8	10.2	8.4	10.8	13.7	13.1	10.2	14.3	13.1	12.5	14.9	17.3	16.7	16.1	14.3	11.4	31.0	16.7	16.7	14.3	10.2	14.7	31.0	8.4
28	14.3	11.9	9.6	7.8	8.4	7.8	11.4	14.3	16.1	13.7	19.1	16.1	8.4	13.1	19.7	19.7	19.1	19.1	11.9	12.5	13.7	11.4	9.6	7.2	13.2	19.7	7.2
29	5.4	5.4	4.2	6.0	7.2	8.4	10.2	9.6	10.8	7.8	10.8	10.8	11.9	12.5	12.5	11.9	11.4	11.4	9.0	9.6	10.8	5.4	5.4	4.8	8.9	12.5	4.2
30	3.6	3.6	3.6	3.0	2.4	4.2	6.0	6.0	8.4	11.4	10.8	10.2	13.1	17.3	33.4	16.1	20.9	17.9	9.0	11.9	8.4	9.6	9.0	6.0	10.2	33.4	2.4
MEAN	11.4	11.9	12.0	12.1	12.1	11.7	12.8	14.0	14.9	15.4	15.9	15.8	16.5	16.3	16.1	15.7	16.2	16.4	14.2	13.6	12.5	11.9	11.3	10.7	13.8		
MAX	21.5	31.0	27.4	39.9	37.0	31.0	26.2	28.0	26.8	26.2	27.4	27.4	33.4	28.6	33.4	29.2	32.8	34.0	35.8	33.4	28.0	34.0	22.1	20.3		39.9	
MIN	0.6	0.6	0.6	0.6	0.6	0.6	4.8	6.0	4.8	4.8	7.2	7.8	8.4	9.0	8.4	7.2	7.2	7.2	7.8	4.8	4.2	3.6	2.4	0.6			0.6

POSSIBLE NUMBER OF OBSERVATIONS = 720

ACTUAL NUMBER OF OBSERVATIONS = 717

DATA RECOVERY RATE = 99.6%

MONTHLY MEAN = 13.8 mph

MAXIMUM 10M WIND GUST = 39.9 mph

DATE OF OCCURRENCE = 6/13 AT 0400

MAXIMUM DAILY MEAN = 21.9 mph

DATE OF OCCURRENCE = 6/14

MINIMUM 10M WIND GUST = 0.6 mph

DATE OF OCCURRENCE = 6/18 AT 2400

MINIMUM DAILY MEAN = 7.2 mph

DATE OF OCCURRENCE = 6/18

MEANS REQUIRE 75% VALID DATA

MISSING DATA DENOTED BY ---