APPENDIX

A

DEPARTMENT OF PUBLIC HEALTH
CITY OF CHICAGO

May 3, 2017

Steven Caudle, Facility Manager
Kinder Morgan/Chicago Arrow Terminal
2926 E. 126th Street
Chicago, IL 60633

RE: Kinder Morgan/Chicago Arrow Terminal, 2926 E. 126th Street
Request for Variances from Air Pollution Control Rules and Regulations for Control of Emissions from Handling and Storage of Bulk Material Piles

Dear Mr. Caudle,

The Chicago Department of Public Health ("CDPH") is in receipt of the June 11, 2014 submission from Kinder Morgan/Chicago Arrow Terminal ("Kinder Morgan"), requesting six variances from requirements of CDPH's Rules and Regulations for Control of Emissions from the Handling and Storage of Bulk Material Piles ("Bulk Material Regulations"), and supplemental materials in support of the variance request provided by Kinder Morgan dated August 25, 2014, March 2, 2015, April 1, 2015, and May 1, 2015. Pursuant to the Bulk Material Regulations, CDPH accepted written comments on the variance request during a comment period which was extended, upon request of the public, to September 2, 2014, as further described below.

In the March 2, 2015 letter, Kinder Morgan withdrew one of the six initial requests. The five remaining variance requests relate to the following regulations:

1. Fugitive Dust Monitoring: Kinder Morgan requested a variance from Section 3.0(4) of the Bulk Material Regulations, which requires the installation, operation, and maintenance of permanent, continuous Federal Equivalent Method (FEM) real-time PM10 monitors around the perimeter of the facility in accordance with specified requirements. Specifically, Kinder Morgan requested an extension of time until June 2016 to establish that its operations do not result in off-site fugitive dust emissions.

2. Wind Monitoring: Kinder Morgan requested a variance from Section 3.0(5) of the Bulk Material Regulations, which requires the installation, operation, and maintenance of a weather station or other permanent device to monitor and log wind speed and wind direction at the Facility. Specifically, Kinder Morgan requested permission to use aviation wind socks in place of a wind monitoring device.

3. High Wind Events: Kinder Morgan requested a variance from Section 5.0(4) of the Bulk Material Regulations, which requires that disturbance of outdoor piles be suspended during "high wind conditions." Pursuant to Section 2.0(12), "high wind conditions" are "when average wind speeds exceed 15 miles per hour over two consecutive five minute intervals of time." Kinder Morgan requested that the definition be changed to "15 knots," in conjunction with its request to use aviation wind socks to detect wind speed and direction.

4. Transfer Points: Kinder Morgan requested a variance from Section 3.0(7) of the Bulk Material Regulations which requires all material transfer points to a) be totally enclosed; b) be operated with a water spray system; c) be vented to air pollution control equipment; or d) transfer only "moist material" in a manner that minimizes the exposed drop.

5. Dust Suppressant System – Freezing Weather Operations: Kinder Morgan requested a variance from Section 5.0(5)(b) of the Bulk Material Regulations, which requires facilities to apply chemical stabilizers and/or maintain and operate water spray bars, a misting system, water spray systems and/or water trucks to prevent fugitive dust emissions, and that when temperatures fall below freezing, the facility must use water heating systems and/or chemical stabilizers to ensure that dust suppression continues. Specifically, Kinder Morgan requested that this requirement not apply when temperatures fall below 32 degrees Fahrenheit.

SUMMARY OF CDPH VARIANCE DETERMINATIONS

As set forth in greater detail in subsequent sections of this document, following is a summary of CDPH's determinations for each of Kinder Morgan's variance requests:

1. Fugitive Dust Monitoring: With respect to Kinder Morgan's request regarding installation of dust monitors, for the reasons set forth below, CDPH finds that Kinder Morgan has failed to meet the requirements set forth in Sections 8.0(2) and 8.0(3)(a) of the Bulk Material Regulations for issuance of a variance, and the variance request is therefore denied. In summary, the basis for this determination includes, but is not limited to, CDPH's finding that Kinder

Morgan has not demonstrated that issuance of the variance will not create a public nuisance or adversely impact the surrounding area.

Importantly, CDPH found that Kinder Morgan's implementation of its current Fugitive Dust Plan has not ensured the suppression of fugitive dust as evidenced by a recent City inspection. Further, the EPA metals study, referenced below, found evidence of manganese-containing dust coming from Kinder Morgan's facility. This information, combined with deficiencies identified in Kinder Morgan's supporting materials, leads CDPH to conclude that Kinder Morgan has not established that the facility's operations do not result in off-site fugitive dust emissions. Accordingly, the monitors required by Section 3.0(4) of the Regulations must be installed within ninety (90) days from the date of this variance determination letter, consistent with the 90-day timeframe set forth in Section 6.0(2) of the Bulk Material Regulations.

2. Wind Monitoring and High Wind Events: With respect to Kinder Morgan's request regarding wind monitors and the associated definition of "high wind conditions," for the reasons set forth below, CDPH finds that Kinder Morgan has failed to meet the requirements set forth in Sections 8.0(2) and 8.0(3)(a) of the Bulk Material Regulations for issuance of a variance, and the variance request is therefore denied. In summary, the basis for this determination includes, but is not limited to, CDPH's finding that, because of their limitations, wind socks are not an adequate substitute for a permanent, electronic wind monitoring device. Accordingly, Kinder Morgan must install a wind monitoring device that meets the requirements of Section 3.0(5) of the Bulk Material Regulations, within ninety (90) days from the date of this variance determination letter, consistent with the 90-day timeframe set forth in Section 6.0(2) of the Bulk Material Regulations.

3. Transfer Points: In consideration of the facility's best management practices, and given that the PM-10 monitors will verify the effectiveness of its dust control measures, CDPH conditionally grants Kinder Morgan's variance request with regard to transfer points. CDPH grants the variance subject to the following conditions pursuant to Section 8.0(3)(c):

1) Kinder Morgan must always load silicon manganese and other moisture-sensitive alloys indoors, i.e. inside a four-walled, roofed building;

2) Kinder Morgan must ensure that a water source is always available for outdoor loading and unloading of non-moisture sensitive products, during non-freezing conditions; and

3) Kinder Morgan must ensure that all staff working at transfer points will watch for visible dust and adhere to the dust control procedures set forth in the facility's Fugitive Dust Plan[1], including the requirement to "cease operation if opacity or visible emission limits are reached and/or in question" as stated in Kinder Morgan's "Incremental Dust Control Procedures Decision Tree" document.

4. Dust Suppression System: As set forth below, and in consideration of the fact that PM-10 monitors will verify the effectiveness of Kinder Morgan's alternate dust controls, CDPH finds that any adverse impacts resulting from the suspension of dust suppressant application during freezing weather can be minimized with the addition of certain reasonable conditions. Therefore, CDPH grants Kinder Morgan's variance request regarding dust suppression system operation during freezing weather, subject to the following condition pursuant to Section 8.0(3)(c): Beginning November 1st and continuing through March 31st each year that bulk materials are stored or transferred outdoors, Kinder Morgan must assign on-site personnel to monitor for visible dust at all transfer points during freezing weather operations, and in the event visible dust is observed, immediately shut down such operations that are causing the visible dust, unless dust can be effectively suppressed in another manner in accordance with the approved Fugitive Dust Control Plan.

DETAILED DISCUSSION

I. Requirements for Issuance of a Variance

Under Section 8.0 of the Bulk Material Regulations, the burden of proof is upon the applicant for the variance to demonstrate that issuance of the requested variance will not create a public nuisance or adversely impact the surrounding area, the surrounding environment, or surrounding property uses. In the event that the applicant does not meet this burden, the variance request will be denied. Pursuant to Section 8.0(2), a variance request must be in writing and must set forth, in detail, all of the following (in pertinent part): [2]

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[1] Please note that references to the Fugitive Dust Plan in this letter are not intended to imply that CDPH approves Kinder Morgan's Dust Plan in its entirety. CDPH will respond to the Dust Plan in a separate correspondence and notes that, in any event, the Dust Plan will need to be updated based on the terms in this variance response letter.

[2] Because the variance requests under review do not involve a request for an extension of time for full enclosure, requirement 8.0(2)(i) is not relevant to this discussion, and is therefore omitted.

a) A statement identifying the regulation or requirement from which the variance is requested;

b) A description of the process or activity for which the variance is requested, including pertinent data on location, size, and the population and geographic area affected by, or potentially affected by, the process or activity;

c) The quantity and types of materials used in the process or activity in connection with which the variance is requested, as appropriate;

d) A demonstration that issuance of the variance will not create a public nuisance or adversely impact the surrounding area, surrounding environment, or surrounding property uses;

e) A statement explaining:

   i. Why compliance with the regulations imposes an arbitrary or unreasonable hardship;

   ii. Why compliance cannot be accomplished during the required timeframe due to events beyond the Facility Owner or Operator's control such as permitting delays or natural disasters; or

   iii. Why the proposed alternative measure is preferable.

f) A description of the proposed methods to achieve compliance with the regulations and a timetable for achieving that compliance, if applicable;

g) A discussion of alternate methods of compliance and of the factors influencing the choice of applying for a variance;

h) A statement regarding the person's current status as related to the subject matter of the variance request[.]

In addition, Section 8.0(3) of the Bulk Material Regulations sets forth the criteria for reviewing applications:

a) In determining whether to grant a variance, the Commissioner [of CDPH] will consider public comments received pursuant to 8.0(4) and will evaluate the information provided in the application to meet the requirements of 8.0(2).

Particular consideration will be given to the following information:

i. Inclusion of a definite compliance program;

ii. Evaluation of all reasonable alternatives for compliance;

iii. Demonstration that any adverse impacts will be minimal.

b) The Commissioner may deny the variance if the application for the variance is incomplete or if the application is outside the scope of relief provided by variances.

c) The Commissioner may grant a variance in whole or in part, and may attach reasonable conditions to the variance to ensure minimization of any adverse impacts.

d) Issuance of a variance is at the sole discretion of the Commissioner. A variance may be revoked at any time if the Commissioner finds that operation of the Facility is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses.

II. Variance Process and Public Comments

In addition to the requirement that the Commissioner of CDPH ("Commissioner") consider public comments, as set forth in Section 8.0(3)(a) of the Bulk Material Regulations, Section 8.0(5) also provides that the Commissioner will not grant any variance until members of the public have had an opportunity to submit written comments on the variance application. This section further provides that public notice will be provided by publication in a newspaper of general circulation published within the City and by publication on the City's website, and that the Commissioner will accept written comments for a period of not less than thirty (30) days from the date of the notice.

On June 20, 2014, public notice of Kinder Morgan's variance request was provided by publication in the Chicago Sun-Times and on the City's website at www.cityofchicago.org/environmentalrules. This notice stated that, to be considered, written comments must be received by CDPH on or before July 21, 2014. On July 16, 2014, a subsequent public notice was published in the same manner, notifying the public that the comment period had been extended upon request of members of the public. The new deadline for public comments was September 2, 2014. During the public comment period, CDPH received two written submission from the public, which are posted on the website referenced above.

One of the comment letters was submitted on behalf of the Chemical Industry Council of Illinois ("CICI") in support of the variance request. CICI stated that: "Almost all of the products handled at the terminal are stored indoors and do not create a risk for fugitive dust emissions. The primary product stored outdoors is pig iron, which poses a very small risk of fugitive dust emissions." CICI further noted that Kinder Morgan offered alternative measures to control fugitive emissions and "rightly explained, for example, that there are technical limitations based on the types of products handled at the terminal and the configuration of the loading and unloading points."

The other public comment letter, dated September 2, 2014, was submitted jointly by the Natural Resources Defense Council ("NRDC") and the Southeast Environmental Task Force ("SETF") (hereafter collectively referred to as "NRDC and SETF"). On March 10, 2017, NRDC submitted a supplement to the comments. The supplementary submissions are also posted on the above-referenced website.

In the September 2, 2014 letter, NRDC and SETF stated that the Kinder Morgan application was incomplete and failed to demonstrate that the requested variances would not have an adverse impact on the community and environment. In particular, NRDC and SETF stated that Kinder Morgan's request to forego PM monitoring was premature since the company has not established that there are no off-site fugitive dust emissions. With regard to Kinder Morgan's request to install a wind sock instead of a wind monitoring station, NRDC and SETF pointed out that a wind sock is not an acceptable substitute, as it "is not as protective of human health and the environment because it is incapable of detecting high wind events and deploying responsive measures at the mandated 15 mph wind speed." Further, they stated that Kinder Morgan provided no cost estimates for installing a wind monitoring station, nor any financial information to demonstrate any hardship it would experience in order to comply. Finally, NRDC and SETF objected to Kinder Morgan's request for a variance from dust suppression requirements when temperatures drop below 32 degrees, noting that the applicant did not explain why it cannot employ alternative dust suppression systems during freezing temperatures, especially because the highest average wind speed in Chicago occurs over the winter months.

As a supplement to these comments, NRDC submitted 1) an air quality monitoring study prepared by the United States Environmental Protection Agency ("EPA"), dated September 10, 2015, and 2) a copy of joint comments submitted on January 11, 2017 by NRDC, SETF, and the

Southeast Side Coalition to Ban Petcoke in opposition to S.H. Bell Company's variance application. Both of these documents are posted on the above-referenced website.

In the air quality monitoring study, EPA conducted a "Semi-continuous Ambient Metals Investigation" in Southeast Chicago with a particular focus on lead and toxic metals. While the study found no elevated lead concentrations, it did note a potential concern regarding manganese (Mn). EPA's report found that:

> "Measured Mn concentrations were double the health comparison value previously used by EPA (108 ng/m^3 as compared with the Reference Concentration of 50 ng/m^3). However Mn was below the ATSDR Minimal Risk Level of 300 ng/m^3 currently recommended by EPA. Follow-up monitoring closer to the fenceline of the main Mn-contributing facility (Kinder Morgan) may be useful to characterize the maximum exposure level in the community. There are residences and a park immediately south of Kinder Morgan that may be experiencing metals concentrations significantly higher than what was measured in this study." [EPA Xact Metals Study: Southeast Chicago, p. 2.]

III. Variance Requests and Determinations Detailed Analysis

1. Fugitive Dust Monitoring.

A. Detailed Fugitive Dust Monitoring Variance Request: Kinder Morgan requested a variance from Section 3.0(4) of the Bulk Material Regulations, which requires installation and operation of permanent, continuous Federal Equivalent Method (FEM) real-time PM10 monitors around the perimeter of all bulk material facilities. The company stated, "...based on the nature of the operations, the products handled, and the control measures that have been implemented to date, that fugitive dust emissions do not leave the property as a result of operational activities at the site." (June 11, 2014 Kinder Morgan Variance Request, p. 11.) Kinder Morgan further stated that "[r]ecognizing the difficulty of proving that no fugitive dust leaves the property, we request a variance in the form of a timeline extension of two (2) years to June 11, 2016," during which time the company would install additional control measures and monitor compliance through the use of visible observations. *Id.*

Following CDPH's request for additional information, Kinder Morgan noted that neither federal nor state law requires the installation of monitors and stated that it "believes in good faith

that it will be able to establish that its operations do not result in off-site fugitive dust emission" by June 2016. (May 1, 2015 Kinder Morgan Additional Information, p. 2.)

B. Analysis of Variance Request:

i. Minimization of Adverse Impacts. Section 8.0(2)(d) of the Bulk Material Regulations requires a demonstration that issuance of a variance will not create a public nuisance or adversely impact the surrounding area, environment, or property uses. In this case, as pointed out by NRDC and SETF, more than 3,700 residents live within a one-mile radius of Kinder Morgan's facility. Furthermore, densely populated residential streets and youth baseball fields are located directly to the south of the facility on the other side of 126th Street.

In its variance application, Kinder Morgan stated: "The properties of the products handled at the Chicago Arrow Terminal are the primary reason why the facility does not create the amount of fugitive dust as compared to Pet Coke and/or coal facilities." (June 11, 2014 Kinder Morgan Variance Request, p. 12.) The company went on to provide information about the size and weight of some of its products. For example, with pig iron, the company stated that the "increased weight greatly reduces the potential for fugitive dust. The potential for fugitive dust will only occur when physically handling the product and controls are currently in place to address that process." *Id.*

To control dust, the facility employs measures such as watering storage piles of "non-moisture sensitive" products, such as pig iron and aggregates (weather permitting), slow and careful loading and unloading operations, regular cleaning of roadways, storing material either indoors or, if outside, within 3-sided bins that are more than 50 feet from the property line, and other best management practices. *Id* at 18-19. Products that cannot be watered are stored indoors. As Kinder Morgan stated, "Indoor storage is required for the majority of products handled at Chicago Arrow Terminal because these commodities must remain dry in order to maintain their value," among other reasons. *Id.* at 9.

With regard to the request for a two-year extension, Kinder Morgan explained that it planned to pave all unpaved roads and install a baghouse in the truck loading building by June 11, 2016. (May 1, 2015 Kinder Morgan Additional Information, p. 3.) The company further stated that, "Because Arrow Terminal already uses the best available control measure, and

because Arrow terminal invested so much capital and time in controlling fugitive dust at the site, the PM-10 monitors are a poor use of its remaining capital resources and are unnecessary." *Id.*

ii. Alternative Compliance Program. Instead of installing air monitors, Kinder Morgan stated that it would evaluate the effectiveness of its control measures using USEPA Method 9 and Method 22 visible emissions observations by trained and certified readers. As stated by Kinder Morgan, "Observations will be conducted at least quarterly as required by CDPH's regulations and on a basis frequent enough to evaluate each new measure implemented." (May 1, 2015 Kinder Morgan Additional Information, p. 3-4.)

C. CDPH Determination:

Upon review, CDPH finds that Kinder Morgan has not demonstrated that its dust control methods are effective to prevent fugitive dust from leaving the site. Therefore, this variance request is denied.

With regard to pig iron, while ingots may be heavier than other materials, CDPH disagrees that this material produces "almost no dust." Indeed, it is commonly understood that pig iron has the potential to produce dust, which is why it is routinely watered during transport, handling, and storage. One of the concerns with pig iron is its tendency to corrode. As Kinder Morgan noted: "Greater corrosion means the product will create more dust." (March 2, 2015 Kinder Morgan Additional Information, p. 6.)

In addition, in the variance request, Kinder Morgan acknowledged the potential for fugitive dust from pig iron "when physically handling the product." (June 11, 2014 Kinder Morgan Variance Request, p. 12.) To reduce this dust, Kinder Morgan applies water to the stockpiles. (In the caption to a photo in the variance request, Kinder Morgan noted the difference in color between a pile that was being sprayed and a dry pile in the background. *Id.* at 18). The company also applies water prior to disturbing the materials during loading and unloading operations to reduce the potential for fugitive dust. *Id.* at 14-17.

Besides pig iron, the variance request described other materials stored outdoors as "certain aggregates." (May 1, 2015 Kinder Morgan Additional Information, p. 2.) However, neither the request nor the supplemental materials explained what these aggregates are, what their properties are, and why they are purported to create very little dust.

With respect to the outdoor materials, Kinder Morgan noted that no water or other dust suppression is applied when temperatures fall below 32 degrees. During such conditions, the only means of dust control are operational practices such as "reduc[ing] the speed at which the product is handled." *Id.* at 17. However, the variance request materials did not establish the effectiveness of these practices. In addition, there is some uncertainty about the consistency with which operator-controlled measures are employed. At a recent inspection (which occurred when temperatures were above 32 degrees and water, therefore, could be used), a CDPH inspector observed that the "access roads were very dry and dusty" and noted "track-out on 126th Street." The inspector also recorded that "I observed truck wheels driving through, picking up and dispersing dust." In addition, the inspector stated, "I did not observe any sweeper nor water truck in operation as at the time of this inspection.... According to the daily street sweeper/water truck log obtained from the facility; between January 2016 to August 2016, there was no indication or record that water was applied on the roads (the log only indicated sweeping)." (See the CDPH inspection report dated December 2, 2016, attached hereto as Exhibit A.)

With regard to ferroalloys, including ferro silicon and silicon manganese, Kinder Morgan noted that these materials are moisture sensitive and, therefore, cannot be watered as a means of dust control. These materials are stored indoors. However, they are routinely unloaded from barges outdoors before being transported to the storage buildings. Therefore, there is still a potential for dust to be released from the handling of these materials.

In fact, as noted by NRDC, the United States EPA conducted dust monitoring in Southeast Chicago from December 12, 2014 to July 23, 2015. In the September 10, 2015 report describing the results of the study, EPA noted elevated levels of manganese. (A copy of the EPA Report is attached hereto as Exhibit B.) Based on an analysis of wind direction and wind speed, the report specifically identified Kinder Morgan as "the main Mn-contributing facility." (EPA Report, p. 2.) The report further stated, "There appear to be two distinct hot spots: one around Kinder Morgan...." *Id.* at 8. Further, "Kinder Morgan stores and processes ferro-alloys on site. Material unloading occurs during typical business hours, which is consistent with peak Mn values shown on Figure 7." *Id.*

Thus, the presence of manganese-containing dust in areas directly downwind of Kinder Morgan's facility is a strong indication that fugitive dust is leaving the facility's property.

Manganese-containing materials are of particular concern given the potential health hazard from inhalation of manganese-containing dust.

The Bulk Material Regulations require monitors to confirm compliance with the regulations. As stated in Section 3.0(4) of the Bulk Material Regulations, installation of the specified monitors is required "[u]nless, pursuant to the Variance procedure set forth in 8.0 below, the Facility Owner or Operator establishes that the Facility's operations do not result in off-site fugitive dust emissions." For example, if a facility establishes that the material it handles is uniquely dust resistant when handled properly, or that the dust emissions are effectively contained, captured, or controlled, then a variance might be appropriate. In this case, the information submitted in support of the variance application did not include such evidence.

With regard to Kinder Morgan's proposal to demonstrate compliance through visible emissions monitoring, CDPH notes that the Bulk Material Regulations require both perimeter air monitors and quarterly opacity and visibility observations. (See Section 3.0(f)(ii) of the Bulk Material Regulations.) Routine visible monitoring is important in order to ensure that dust controls are working on a localized level. However, it does not take the place of permanent fence line monitors which operate continuously, regardless of weather conditions or the hour of the day or night.

As expressed in CDPH's Official Response to Public Comments on the Proposed Bulk Material Regulations, on March 13, 2014:

> The requirement for fugitive dust monitoring is a critical component of the regulations to ensure that the facility's dust control measures are working. City inspectors cannot observe facility operations on a daily basis. And facility workers who are occupied in doing their jobs may not always realize when there is a dust problem. Therefore, the PM monitors are important for alerting facility operators when there might be an issue with their dust control systems. They are also important to ensure compliance with the fugitive dust prohibition, as well as to give neighbors a level of comfort in knowing that the air is being monitored. [p. 23.]

Thus, Kinder Morgan's proposal to rely solely on visible monitoring is not an adequate substitute for permanent PM10 monitors.

For the reasons set forth above, with respect to its request not to be required to install continuous FEM PM10 dust monitors, CDPH finds that Kinder Morgan has failed to meet the

requirements set forth in Sections 8.0(2) and 8.0(3)(a) of the Bulk Material Regulations for issuance of a variance, and the variance request is therefore denied. Accordingly, Kinder Morgan must submit a dust monitoring plan to CDPH, and install dust monitors in accordance with the requirements of Section 3.0(4) of the Bulk Material Regulations, within ninety (90) days from the date of this variance determination letter, consistent with the 90-day timeframe set forth in Section 6.0(2) of the Bulk Material Regulations.

2. Wind Monitoring and High Wind Events:

A. Detailed Wind Monitoring and High Wind Events Variance Request: Kinder Morgan requested a variance from Section 3.0(5) of the Bulk Material Regulations, which requires the installation, operation, and maintenance of a weather station or other permanent device to monitor and log wind speed and wind direction at the Facility. Specifically, Kinder Morgan requested permission to use aviation wind socks as a visual indicator of wind speed rather than installing an electronic monitoring system.

Because aviation windsocks are rated to 15 knots, which is equal to approximately 17.3 miles per hour, Kinder Morgan also requested a variance from Section 5.0(4) of the Bulk Material Regulations, which requires that disturbance of outdoor piles be suspended during "high wind conditions," unless alternate measures are implemented to effectively control dust in accordance with the approved Fugitive Dust Control Plan. Pursuant to Section 2.0(12), "high wind conditions" are "when average wind speeds exceed 15 miles per hour over two consecutive five minute intervals of time." Thus, Kinder Morgan requested that a high wind event be defined as wind speeds in excess of 15 knots instead of 15 miles per hour.

B. Analysis of Variance Request:

i. Minimization of Adverse Impacts. Section 8.0(2)(d) of the Bulk Material Regulations requires a demonstration that issuance of a variance will not create a public nuisance or adversely impact the surrounding area, environment, or property uses. Kinder Morgan stated that using wind socks instead of an electronic weather station "provides greater protection to the environment than the City's regulations," because facility personnel will immediately know when a high wind event occurs, rather than needing to wait for two subsequent five-minute intervals. (June 11, 2014 Kinder Morgan Variance Request, p. 22.) Kinder Morgan further

stated that using an alternate form of measuring and recording wind speed and direction will not create a public nuisance or adversely impact the surrounding area because: "The processes and procedures already in place at Chicago Arrow Terminal reduce the risk of off-site fugitive dust emissions." *Id.* at 12. Kinder Morgan also noted that it will still be required to comply with other local, state, and federal environmental regulations. *Id.* at 11.

ii. Alternative Compliance Program. As stated above, Kinder Morgan proposes installing aviation wind socks in place of a wind monitoring device. Kinder Morgan stated that: "This method of measuring wind speed is preferable for our operations, because it would allow any employee anywhere on the property to immediately assess the wind conditions and determine whether it is necessary to utilize heightened control measures." *Id.* at 21. The company also noted that "wind socks are more convenient, more accurately reflect wind speed, and are easier for supervisors and operators to check throughout the facility." (April 1, 2015 Kinder Morgan Additional Information, p. 2.) Kinder Morgan provided information from the Federal Aviation Administration regarding specifications for the wind socks. *Id.* The company also provided a sample Supervisor Wind Speed Monitoring log to show how a supervisor will note wind speed and direction four times throughout each shift. (June 11, 2014 Kinder Morgan Variance Request, p. 46.)

C. CDPH Determination:

While CDPH appreciates the convenience and immediacy of using wind socks as a visible indicator of wind speed and direction, CDPH finds that, because of their limitations, wind socks are not an adequate substitute for permanent, electronic weather devices. For one, the proposed wind socks can indicate only one wind speed: 15 knots. As pointed out in a public comment letter, changing the high wind event trigger to 15 knots is not as protective of human health and the environment because this speed is less than the 15-miles-per-hour standard set forth in the regulations. Secondly, there is no digital reader or other device to automatically record and preserve the information detected by the wind socks. Manual documentation of high wind conditions is not as reliable as continuous electronic data gathering since it is subject to human error. Moreover, it is not clear that there is any reliable way to verify the accuracy of information noted on a handwritten daily shift log.

In addition, verifiable and permanent documentation of wind direction and speed is needed to inform the placement of the PM-10 monitors. The Bulk Material Regulations provide, in Section 3.0(4)(b), that, after the first year of monitoring:

> "During the second and subsequent years of monitoring, monitors shall be placed in accordance with an approved dust monitoring plan that shall be based on the data observed in the first year, with monitors located at a minimum of two upwind and two downwind locations and additional monitors as appropriate depending on the size of the facility and other relevant factors such as variability of wind direction at the site and the proximity of neighborhoods."

Furthermore, in its objection to installing PM-10 monitors, Kinder Morgan argued that "the monitors will not accurately reflect PM-10 on the property because there are multiple major fugitive dust emission sources within one mile of the facility." (May 1, 2015 Kinder Morgan Additional Information, p. 5.) However, with detailed wind information, the facility will be able to compare data from upwind and downwind monitors and, thus, will know when and if dust has blown onto its site from off-site locations.

Kinder Morgan is free to utilize wind socks for on-the-spot information as a supplement to a permanent weather station if it chooses to do so. However, CDPH finds that Kinder Morgan has not demonstrated that its proposal will not result in adverse impacts and, thus, has not met the requirements set forth in Sections 8.0(2) and 8.0(3)(a) of the Bulk Material Regulations. Therefore, the variance request is denied. Accordingly, Kinder Morgan must install a wind monitoring device that meets the requirements of Section 3.0(5) of the Bulk Material Regulations, within ninety (90) days from the date of this variance determination letter, consistent with the 90-day timeframe set forth in Section 6.0(2) of the Bulk Material Regulations.

3. Transfer Points:

A. Detailed Transfer Points Variance Request: Kinder Morgan requested a variance from Section 3.0(7) of the Bulk Material Regulations which requires all material transfer points to meet one of four requirements. They must: a) be totally enclosed; b) be operated with a water spray system; c) be vented to air pollution control equipment; or d) transfer only "moist material" in a manner that minimizes the exposed drop. Kinder Morgan stated that: "Given the

nature of the products handled and the configuration of the Terminal, we cannot comply with Subpart 7." (June 11, 2014 Kinder Morgan Variance Request, p. 24.) Instead, the company stated it would use alternative measures to control emissions from transfer points, reiterating that the "dense nature of the products we handle combined with administrative and engineering controls will allow us to mitigate the possibility of fugitive dust." *Id.* With regard to alloys, Kinder Morgan stated that: "Wetted alloys are a major safety concern for the customers, primarily steel mills, because the potential for molten melt splash which can lead to catastrophic explosions." (March 2, 2015 Kinder Morgan Additional Information, p. 4.) In response to CDPH's request for additional information, the company provided documentation that these products cannot become wet. *Id.*

B. Analysis of Variance Request:

Minimization of Adverse Impacts and Alternative Compliance Program. Section 8.0(2)(d) of the Bulk Material Regulations requires a demonstration that issuance of a variance will not create a public nuisance or adversely impact the surrounding area, environment, or property uses. As mentioned above, Kinder Morgan stated that it can successfully control fugitive emissions at all transfer points through the use of the best management practices described in its Fugitive Dust Plan and as highlighted below.

Kinder Morgan identified the following transfer points at its facility: 1) barge unloading; 2) railcar loading; and 3) truck loading, and stated that barge loading and railcar and truck unloading occur very infrequently. (March 2, 2015 Kinder Morgan Additional Information, p. 3.) The company stated that "truck loading operations for all alloys and other moisture-sensitive materials are performed indoors." *Id.* at 4. However, later the company stated that "these products are *almost always* loaded indoors." *Id.* (Emphasis added.) Kinder Morgan did not provide any reason why said materials cannot always be loaded indoors.

With regard to pig iron and aggregates, Kinder Morgan stated that it "ensures that the product is wet, either by wetting with the water truck or by natural means, before truck loading operations begin or before the product is moved within the facility." *Id.* Further, unless dust is "suppressed by other natural factors (snow and ice), the pig iron will be wetted as part of the unloading process, before it is placed on the outdoor pad." *Id.* at 4-5.

With regard to barge unloading and railcar loading of moisture-sensitive materials, the company stated it implements comprehensive fugitive dust control measures, including "closing all but three barge lids during barge unloading operations during all weather conditions, even during low wind conditions, filling the unloading bucket only part way during barge unloading operations, closing all port holes except one to the railcar during railcar loading operations, and employing trained opacity readers on site." *Id.* at 3. In addition, Kinder Morgan stated that it installed a cover on the railcar conveyor. *Id.*

Notably, Kinder Morgan also submitted a document entitled "Chicago Arrow Terminal – Incremental Dust Control Procedures and Decision Tree for Bulk Products." (March 2, 2015 Kinder Morgan Additional Information, Exhibit E.) Among other steps, this document provides that, at any wind speed, workers are to "Utilize 'You Can Stop' when visible emissions and/or opacity are in question." *Id.* Further: "Any transfer point will cease operation if opacity or visible emission limits are reached and/or in question, until corrective actions are taken." *Id.*

C. CDPH Determination:

Based on Kinder Morgan's description of its loading and unloading activities in its March 2, 2015 letter, it appears that most transfer operations at the facility do meet the requirements of the Bulk Material Regulations in that the transfers either occur indoors (in the case of moisture-sensitive materials) or they are subject to a watering system (in the case of pig iron and aggregates). Therefore, it appears a variance is needed only for barge unloading and occasional train loading of alloys and other "moisture-sensitive materials."

In consideration of the facility's best management practices, and given that the PM-10 monitors will verify the effectiveness of the dust control measures, CDPH conditionally grants the variance request with regard to transfer points. CDPH grants the variance subject to the following conditions pursuant to Section 8.0(3)(c):

1) Kinder Morgan must always load silicon manganese and other moisture-sensitive alloys indoors, i.e. inside a four-walled, roofed building;

2) Kinder Morgan must ensure that a water source is always available for outdoor loading and unloading of non-moisture sensitive products, during non-freezing conditions; and

3) Kinder Morgan must ensure that all staff working at transfer points will watch for visible dust and adhere to the dust control procedures set forth in the facility's Fugitive Dust

Plan, including the requirement to "cease operation if opacity or visible emission limits are reached and/or in question" as stated in Kinder Morgan's "Incremental Dust Control Procedures Decision Tree" document.

In accordance with Section 8.0(3)(d) of the Bulk Material Regulations, CDPH reserves the right to revoke this variance if the Commissioner finds that operation of the facility is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses.

4. Dust Suppression System – When temperatures fall below 32 degrees:

A. Detailed Dust Suppression System Variance Request: Kinder Morgan requested a variance from Section 5.0(5)(b) of the Bulk Material Regulations, which requires facilities to apply chemical stabilizers and/or maintain and operate water spray bars, a misting system, water spray systems and/or water trucks to prevent fugitive dust emissions, and that when temperatures fall below freezing, the facility must use water heating systems and/or chemical stabilizers to ensure that dust suppression continues. Specifically, Kinder Morgan requested that this requirement not apply when temperatures fall below 32 degrees Fahrenheit.

As mentioned above, Kinder Morgan handles moisture-sensitive alloys which are generally stored and loaded indoors. Regarding materials that are stored outdoors, pig iron and aggregates, Kinder Morgan stated that: "During the winter months the application of water as a suppressant would create a potential safety hazard to our operators and third party truck drivers coming on site due to the creation of ice and subsequent reduction in traction. Chemical additives cannot be used for items destined for steel mills, as it can compromise the product and create health hazards when introduced to the mill." (June 11, 2014 Kinder Morgan Variance Request, p. 29.)

In response to CDPH's request for additional information, Kinder Morgan further stated that it "cannot use chemical dust suppressants when the temperature falls below freezing for several reasons. First, certain chemical dust suppressants contain salt, which will cause the pig iron to corrode much faster. … Second, certain chemical dust suppressants are crusting agents, which will cause the pig iron ingots to stick together," making it infeasible and unsafe to load. "Third, the chemical dust suppressants will change the chemical make-up of the pig iron." (March 2, 2015 Kinder Morgan Additional Information, p. 6.)

With regard to the possibility of installing a watering system with heated water, Kinder Morgan noted that this "would require major changes to our infrastructure, including diverting water to the city water district, building a boiler/steam room in order to heat the pipes during the winter and applying for new permits in order to handle water potentially contaminated with chemicals to reduce the freezing point. This boiler/steam room would have to be powered and run 24/7 throughout the winter creating noise pollution combined with increased consumption of fossil fuels." (June 11, 2014 Kinder Morgan Variance Request, p. 29-30.)

B. Analysis of Variance Request:

i. Minimization of Adverse Impacts and Alternative Compliance Program. Section 8.0(2)(d) of the Bulk Material Regulations requires a demonstration that issuance of a variance will not create a public nuisance or adversely impact the surrounding area, environment, or property uses. Kinder Morgan stated that it will "utilize a water truck to spray outdoor storage piles in order to minimize fugitive dust during periods of warmer temperatures," and that it will otherwise employ a number of best management practices. *Id.* at 30. The best management practices include minimizing the amount of product handled per scoop or bucket while discharging barges, slowly and gently maneuvering the excavator bucket when loading dump trucks, and storing pig iron in six-foot-high 3-sided concrete bins. *Id.* at 18-19.

The company also follows a decision tree which provides that non-moisture sensitive products will be loaded indoors if weather does not permit water suppression and the material is not already snow-covered of frozen, and further notes that activities will cease if opacity or visible emissions are in question. (March 2, 2015 Kinder Morgan Additional Information, Exhibit E.)

C. CDPH Determination:

Based on the considerations set forth above, and given that the PM-10 monitors will verify the effectiveness of its dust control measures, CDPH conditionally grants Kinder Morgan's variance request regarding the application of dust suppressants during freezing conditions. CDPH grants the variance subject to the following condition pursuant to Section 8.0(3)(c): Beginning November 1st and continuing through March 31st each year that bulk materials are stored or transferred outdoors, Kinder Morgan must assign on-site personnel to

monitor for visible dust at all transfer points during freezing weather operations, and in the event visible dust is observed, immediately shut down such operations that are causing the visible dust, unless dust can be effectively suppressed in another manner in accordance with the approved Fugitive Dust Control Plan.

In accordance with Section 8.0(3)(d) of the Bulk Material Regulations, CDPH reserves the right to revoke this variance if the Commissioner finds that operation of the facility is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses.

CONCLUSION

CDPH's determinations regarding Kinder Morgan's variance requests will be effective as of the date of this letter, and will be posted, along with appendices and supporting materials, on CDPH's website at www.cityofchicago.org/environmentalrules. Please be advised that if Kinder Morgan fails to comply with the Bulk Material Regulations within the timeframes provided above, Kinder Morgan will be subject to enforcement action including daily fines in the amount of $1,000 to $5,000 per violation as provided by Section 11-4-810(a)(7) of the Chicago Municipal Code. Furthermore, CDPH may issue a summary abatement order pursuant to Section 11-4-025(c) of the Chicago Municipal Code, requiring Kinder Morgan to correct any violations within a timeframe prescribed by the Commissioner.

Finally, in accordance with Section 8.0(3)(d) of the Bulk Material Regulations, CDPH reserves the right to revoke the variances granted herein if the Commissioner finds that operation of the facility pursuant to a variance is creating a public nuisance or otherwise adversely impacting the surrounding area, surrounding environment, or surrounding property uses.

Please contact Assistant Commissioner Dave Graham at (312) 745-4034 if you have any questions regarding the above.

Sincerely,

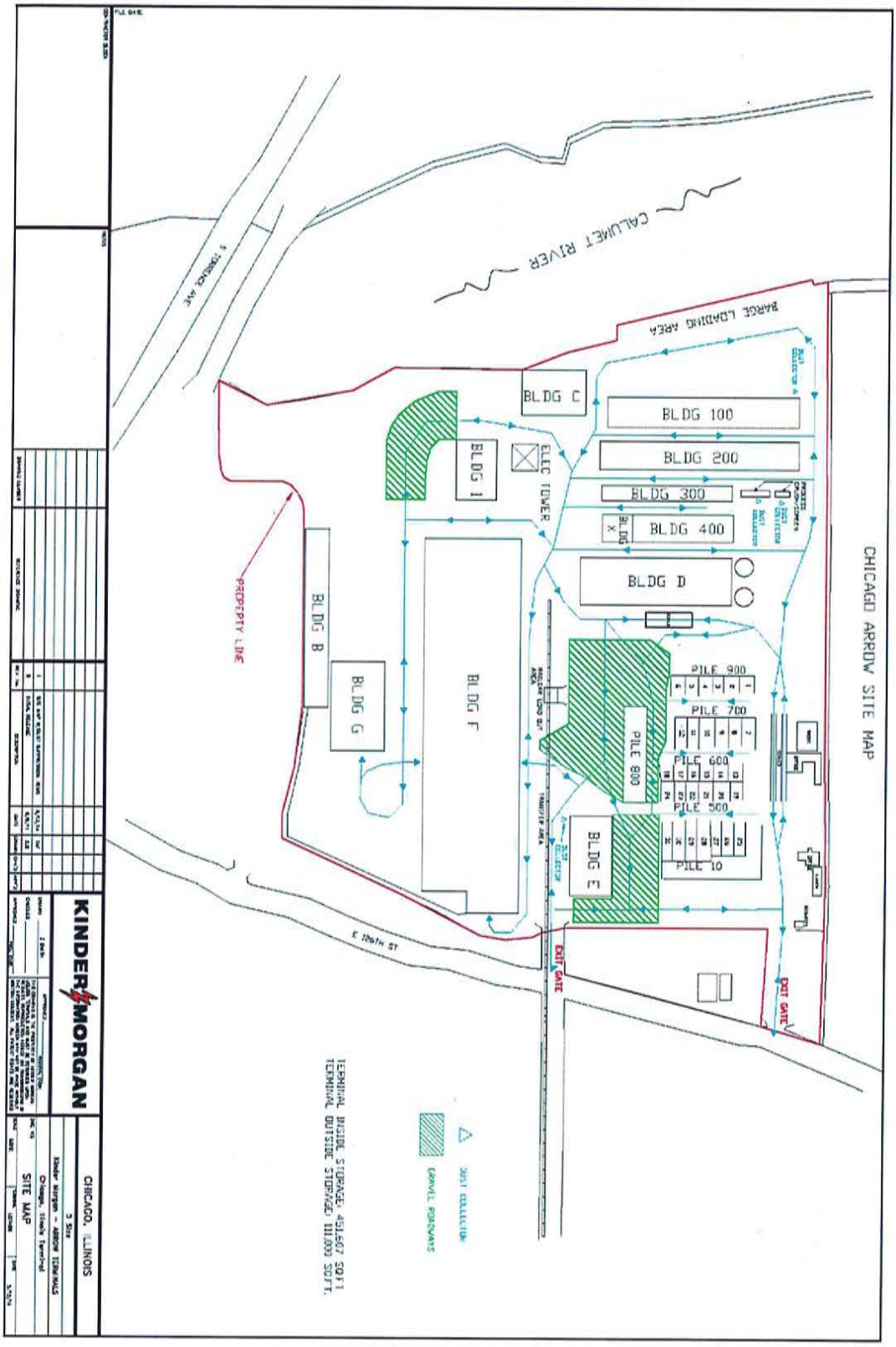
Julie Morita, M.D.
Commissioner

cc: Mort Ames, DOL

Attachments
Exhibit A - CDPH inspection report, December 1, 2016
Exhibit B – EPA Study ("Xact Metals Study: Southeast Chicago), September 10, 2015

APPENDIX
B

Chicago Arrow Terminal –General Facility Site Arrangement Diagram



APPENDIX
C

Storage Calculations

Chicago Arrow Terminal
2926 126th Street
Chicago, IL 60633

Storge Capacity Calculations.

Inside Storage

Storage Locations	Length, ft	Width, ft.	Toatal Sq. Feet Area	Approximate Height	Maximum Heights	Total # of Bays or Bins	Maximum Density, lbs/cu.feet	Normal Storage Tons/ Bin	Total Normal Stoarge, Tons	Total Area, Cubic feet	Maximum Average Storage At 20 feet	Comments
Building B	401	53	21253	N/A	30	0	N/A	0	0			Pkg material not bulk
Buiding C dockside Coil Bldg	120	100	12000	20	30	12	280	800	9600	75360	10550	
Building D Clearspan	300	100	30000	20	30	24	280	833	19992	471000	65940	
Building E Packaging Building	160	90	14400	N/A	N/A	0	N/A	0	0			No Storage only Packaging
Buildinf F (90 Bins)	840	200	168000	20	30	90	280	1500	135000	3692640	516970	
Building G	200	100	20000	20	30	18	280	740	13320	209333	29307	
Building H (Bagging Room)	95	64	6080	N/A	N/A	0	N/A	0	0			No Storage only Packaging
Building I	120	100	12000	20	30	10	280	800	8000	75360	10550	
Building X	75	60	4500	N/A	N/A	0	N/A	0	0			No Bulk Material in Building
100 Bin Building	285	64	18240	20	30	32	280	570	18240	425078	59511	
200 Bin Building	400	64	25600	20	30	40	280	640	25600	837333	117227	
300 Small Lot Bin Building	265	30	7950	20	30	34	280	200	6800	367511	51452	
400 Bin Building	181	64	11584	20	30	18	280	644	11592	171449	24003	
		Total Square feeet	351607					Total Inside Storage	248144		885509	

Outside Storage

Storage Locations	Length, ft	Width, ft.	Toatl Sq. Feet Area	Approximate Height	Maximum Heights	Total # of Bays or Bins	Maximum Density, lbs/cu.feet	Normal Storage Tons/ Bin	Total Normal Stoarge, Tons			Comments
500 Pads	200	100	20000	20	30	7	280	1429	10003	209333	29307	Pig Iron
600 Pads	200	100	20000	20	30	12	280	1111	13332	209333	29307	Pig Iron
700 Pads	200	100	20000	20	30	14	280	952	13328	209333	29307	Pig Iron
800 Pads	220	50	11000	20	30	1	120	13200	13200	253293	15198	Aggregate Stoarge
900 Pads	200	100	20000	20	30	8	280	1250	10000	209333	29307	Pig Iron
10 Pads	200	100	20000	20	30	1	280	1250	1250	209333	29307	Pig Iron
		Total Square feeet	111000					Total Outside Storage, Tons	61113		161731	

APPENDIX
D

Xact Metals Study: Southeast Chicago

Report Prepared by:

Motria Caudill
Region 5 Air and Radiation Division

Field Work Conducted by:

Scott Hamilton, Chad McEvoy, Bilal Qazzaz, & Anthony Ross
Region 5 Air and Radiation Division

Field monitoring requested by:

Enforcement and Compliance Branch
Region 5 Air and Radiation Division

Dates of field monitoring:

December 12, 2014 to July 23, 2015

Report Authorized by: _____ _____

Michael Compher, Chief — Date
Air Monitoring and Analysis Section
Region 5 Air and Radiation Division

Southeast Chicago, Illinois, Semi-continuous Ambient Metals Investigation

Principal Investigator, Motria Caudill, PhD

September 10, 2015

Executive Summary and Background

The main objective of this study was to determine whether residents of the South Deering neighborhood are potentially exposed to lead (Pb) above the National Ambient Air Quality Standard (NAAQS) or toxic metals above acute and chronic health comparison levels. There is a long-term Pb and toxic metals monitor operated by Illinois EPA at Washington High School in this community. The station has shown that Pb concentrations are well below the NAAQS. Historic concentrations of manganese (Mn) have exceeded health comparison values and multiple industrial sources are potentially contributing Mn emissions.

The EPA metals trailer was deployed at Rowan Park, directly south of Washington High School, from December 12, 2014 to July 23, 2015. Pb concentrations during the study averaged 16 ng/m^3, which is well below the NAAQS. Arsenic (As) was measured with a peak 8-hour concentration of 15 ng/m^3, which is equal to California EPA's Reference Exposure Level (REL). The full-study As concentration was below the chronic health benchmark. It does not appear that As is a significant issue in this area.

Measured Mn concentrations were double the health comparison value previously used by EPA (108 ng/m^3 as compared with the Reference Concentration of 50 ng/m^3). However Mn was below the ATSDR Minimal Risk Level of 300 ng/m^3 currently recommended by EPA. Follow-up monitoring closer to the fenceline of the main Mn-contributing facility (Kinder Morgan) may be useful to characterize the maximum exposure level in the community. There are residences and a park immediately south of Kinder Morgan that may be experiencing metals concentrations significantly higher than what was measured in this study.

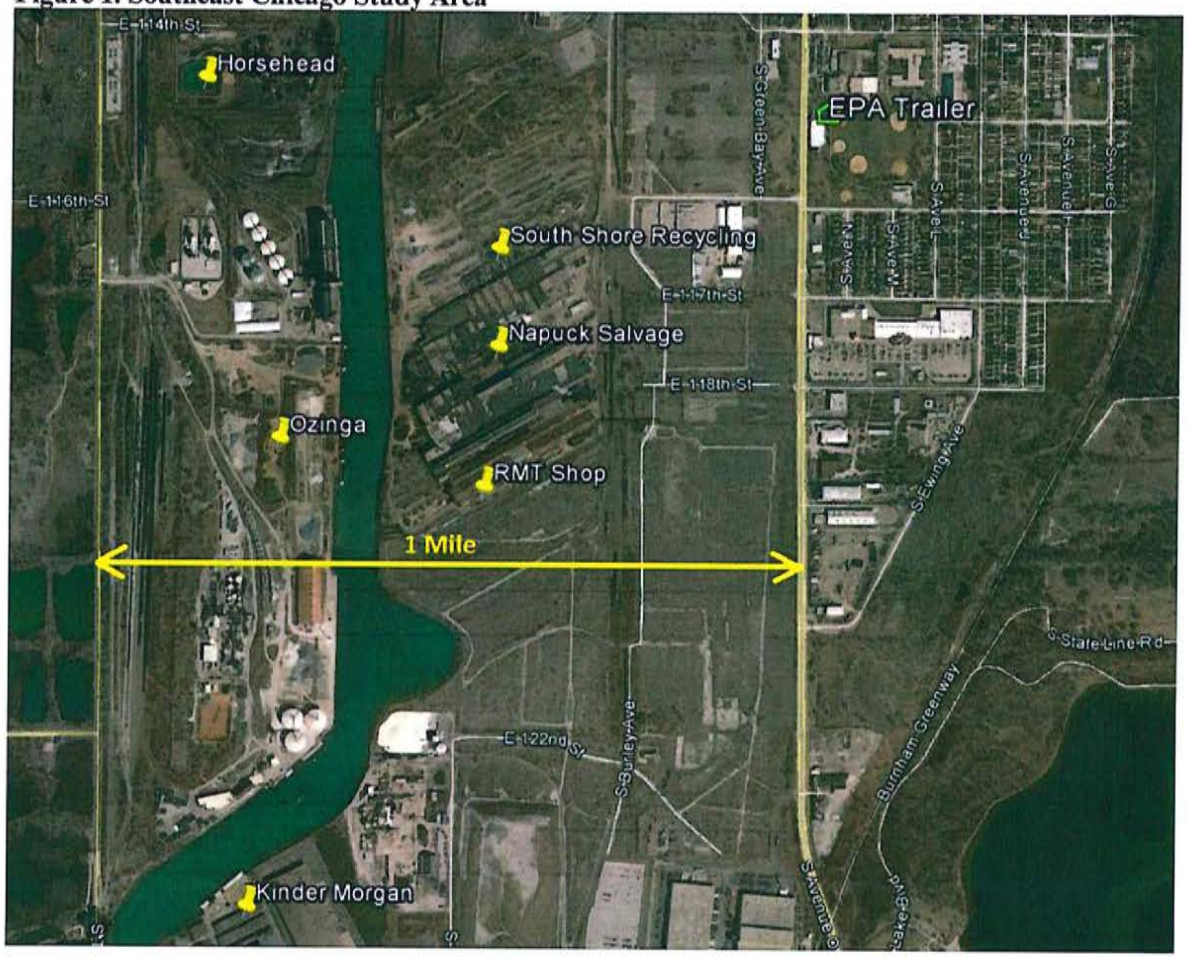
Study Design

Study background and methodology are documented in the Quality Assurance Project Plan "Southeast Chicago, Illinois, Semi-continuous Ambient Metals Investigation" version 1.0 dated December 11, 2014. The EPA trailer was deployed on Chicago Park District property in Rowan Park. See map on Figure 1. Several metallurgic industries and bulk storage facilities are located between 0.5 and 1.5 miles west, southwest, and northwest of the monitoring station.

Quality Assurance Review

Metals measurements were of sufficient quantity and quality for project objectives. Results from each individual sample hour were quality-checked according to the EPA Xact Standard Operating Procedures and study QAPP. Specific quality assurance criteria and findings are described below.

Figure 1. Southeast Chicago Study Area



1) Data completeness should be ≥75%, or 1620-2160 samples, over a 90 day period;

- The EPA metals trailer operated from December 12, 2014 through July 23, 2015. There were 15 hours of data invalidated because the sample flow rate was below acceptable limits. The metals monitor was offline briefly during routine field visits for equipment maintenance and due to occasional technical issues. No data were collected between March 20 and May 12, 2015 because of an electrical problem that was subsequently corrected. A total of 3932 valid samples were collected over a period of 223 days or 5344 possible samples. Completeness was 3932/5344 * 100% = 73.6%.

2) The lowest non-zero values reported in this study should be equal to or lower than the detection limits (DLs) specified in the instrument manual. DLs and lowest reported values are shown below on Table 1.

- Lead and toxic metals were measured well below expected DLs during this study.

Table 1. Metals DLs and lowest reported concentration of toxic metals in Chicago study, ng/m^3

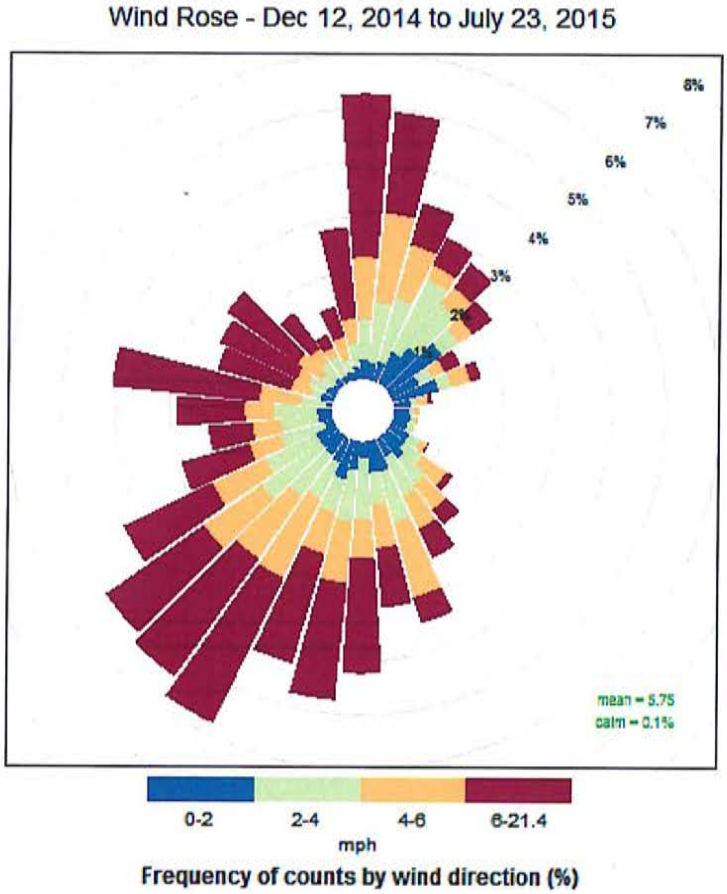
Metal	DL	Lowest Reported
Arsenic	0.051	0.001
Lead	0.099	0.547*
Manganese	0.077	0.219
Nickel	0.083	0.001
Chromium	0.092	0.003
Cadmium	1.138	0.049
Mercury	0.0912	0.001

* There were no nondetects for Pb in this study.

3) Sufficient samples should be collected when the predominant wind direction is from the target source(s).

- West, southwest, and northwest winds were the most desirable for this study because they resulted in the metals trailer being downwind of various industries along the Calumet River. A wind rose is shown on Figure 2. Winds were predominantly from the southwest, south, and north. The monitor site was directly downwind of target industries about 50% of the study period.

Figure 2. Study period wind rose



Study Findings

Concentrations for 20 metals monitored as TSP are summarized below on Table 2. These metals had nondetect rates between zero and 79%, which is acceptable for data analysis. Antimony, cobalt, and thallium had nondetect rates over 95% and thus were not included in the data analysis.

Table 2. SE Chicago, Illinois, metals data summary

Element, Symbol	Nondetect rate, %	Average, ng/m^3	Health Comparison Value, ng/m^3
Arsenic, As	73	0.46	2.3[b]
Barium, Ba	10	11	
Bromine, Br	0	7.0	
Cadmium, Cd	0	4.0	5.6[b]
Calcium, Ca	0	3665	
Chromium, Cr	11	8.9	42[bc]
Copper, Cu	0	19	
Iron, Fe	0	1760	
Lead, Pb	0	16	(see NAAQS)
Manganese, Mn	0	108	300[d]
Mercury, Hg	39	0.18	300[d]
Molybdenum, Mo	0	22	
Nickel, Ni	2	2.4	42[b]
Potassium, K	0	224	
Rubidium, Rb	14	0.61	
Selenium, Se	10	0.61	20,000[d]
Strontium, Sr	0	9.8	
Thorium, Th	79	0.27	
Titanium, Ti	0	48	
Zinc, Zn	0	192	
a) Averages calculated using zeroes in place of nondetects.			
b) Concentration equivalent to 10-in-1-million excess cancer risk.			
c) Assuming 2% of chromium is in most toxic hexavalent form.			
d) Reference concentration (RfC) for noncancer health effects.			

The Pb NAAQS is violated when any 3-month rolling average is higher than 150 ng/m^3 meter. EPA defines the ***potential*** to exceed the NAAQS as short-term monitoring or modeling with results greater than 50% of the NAAQS (75 ng/m^3). For air toxics, monitoring data are compared against health screening values for long-term (full study average) and short-term (1-hour, 8-hour, 24-hour, and 14-day peaks) health effects, as described on the below EPA website "Dose-Response Assessment for Assessing Health Risks Associated With Exposure to Hazardous Air Pollutants". Full-study averages and the long-term health comparison values are shown above in Table 2. There are a short-term health comparison values for only three toxic

metals: 1) Arsenic has California EPA Reference Exposure Levels (RELs) for 1-hour peaks (200 ng/m^3) and 8-hour peaks (15 ng/m^3); 2) Cadmium has an ATSDR acute Minimum Risk Level (MRL) for 1-14 days (30 ng/m^3); and 3) Nickel has an intermediate MRL for 14-365 days (200 ng/m^3).
http://www2.epa.gov/fera/dose-response-assessment-assessing-health-risks-associated-exposure-hazardous-air-pollutants

Metals risk screening results

Lead concentrations over the full study averaged 16 ng/m^3, which is notably lower than 50% of the NAAQS (75 ng/m^3). According to the data reported at IEPA's adjacent Washington High School site, the highest Pb 3-month average in 2011-13 was 50 ng/m^3. Also, the 24-hour averages of EPA's Pb monitoring were found to correlate well with IEPA's findings for samples collected between December 2014 and June 2015. For matching sample dates, the relative percent difference (RPD) was 39% with IEPA's results higher. This amount of discrepancy is to be expected for a pollutant with concentrations that are not much higher than the detection limits. In contrast, the RPD for Mn was 13% higher at the IEPA site during the study period.

Short-term and intermediate health comparison values were not exceeded for cadmium and nickel. The highest 24-hour cadmium average was 6 ng/m^3, compared with the 30 ng/m^3 MRL. The highest 14-day nickel concentration was 5 ng/m^3, compared with the 200 ng/m^3 MRL.

Arsenic (As) concentrations did not exceed the 1-hour REL (200 ng/m3), however there was a 1-hour measurement at 1 PM on January 27th of 93 ng/m^3. When averaged over 8 hours, the concentration was 15 ng/m^3, equal to the 8-hour MRL. The wind direction at this time was from the northeast. The area north and east of the monitor is not industrialized and there is no apparent explanation for the spike. Other elevated As concentrations tended to emanate from the industrial areas southwest of the monitor station.

The average manganese concentration was 108 ng/m3, which is one-third of the health comparison value currently used by EPA, the ATSDR MRL of 300 ng/m^3. The manganese average is twice as high as the EPA RfC previously used for health screening (50 ng/m^3). The measured levels are consistent with historic data reported at the Washington High School station.

Metals source contributions

The arsenic frequency distribution plot on Figure 3 shows the approximate location of the January spike northeast of the monitor station (in red), the less extreme values to the southwest (in yellow), and lowest values elsewhere (in blue). This type of plot displays the total contribution of a pollutant measured at the monitor site, distributed by wind direction and wind speed.

Arsenic concentrations on Figure 4 are displayed on a polar plot, where values are averaged by wind direction and wind speed. In contrast to the previous frequency plot, the polar plot is less influenced by short-term spikes and gives a more comprehensive view of the areas of pollutant contribution. The January arsenic spike area shows up as a faint yellow zone, whereas the more consistent area of arsenic emissions (in red) is the site of various recycling facilities southwest of the monitor.

Figure 3. Arsenic frequency plot, percent contribution binned by wind direction and speed

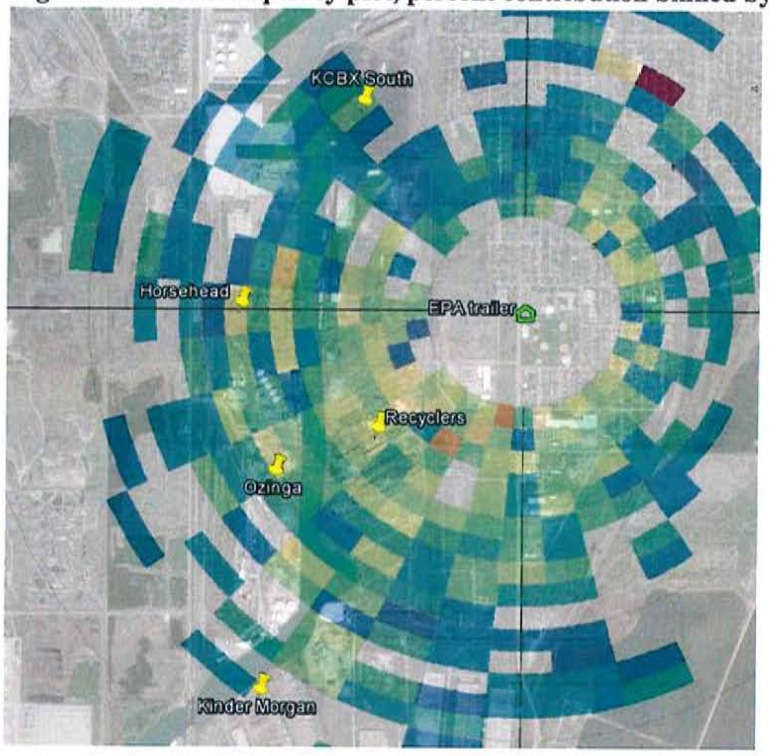
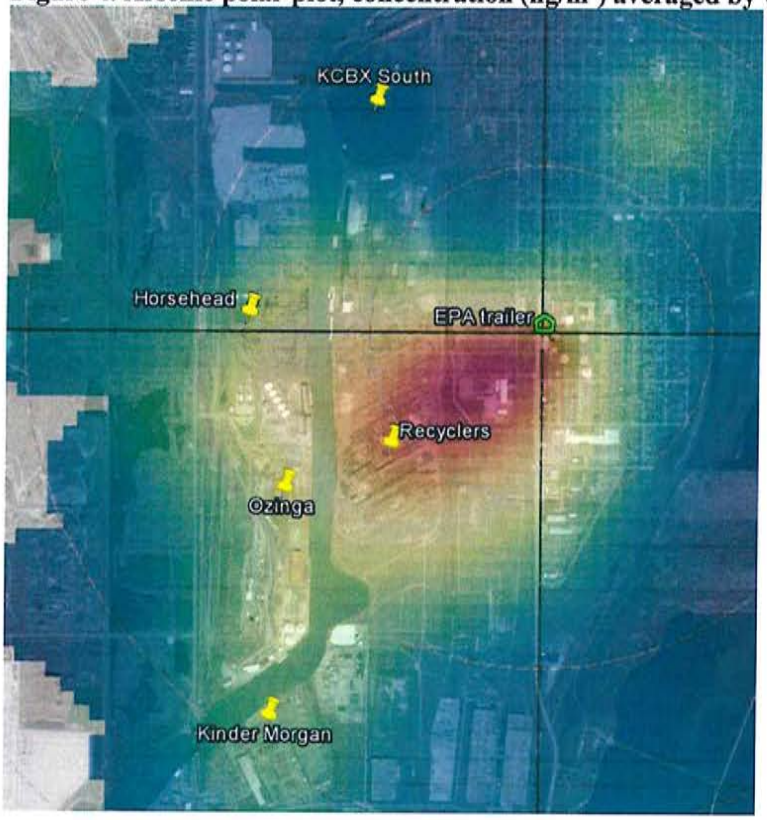


Figure 4. Arsenic polar plot, concentration (ng/m^3) averaged by wind direction and speed



The manganese (Mn) frequency distribution on Figure 5 and the polar plot on Figure 6 both point toward the southwest as the area of most significant and consistent emissions. There appear to be two distinct hot spots: one around Kinder Morgan and the second including Ozinga, the area over the Calumet River, and possibly the recycling facilities. The hour-of-day (diurnal) pattern and day-of-week patterns on Figure 7 show that Mn concentrations are highest during typical industry business hours, i.e. 8 AM to 4 PM, Monday through Friday. Mn levels drop down overnight and on the weekend.

To distinguish between temporal patterns at Kinder Morgan and Ozinga, Figure 8 contains month-to-month and day-of-week patterns only when wind direction is from these two specific source areas. The peak Mn values that emanate from Kinder Morgan are highest on Mondays and Tuesdays, with a secondary spike on Fridays. These levels were highest February to March. The peaks from Ozinga happen Tuesday-Thursday with a distinct spike in May.

Kinder Morgan, Ozinga, and the various recyclers at Reserve Marine Terminal (RMT) were all recently inspected by EPA air enforcement engineers. Kinder Morgan stores and processes ferro-alloys on site. Material unloading occurs during typical business hours, which is consistent with peak Mn values shown on Figure 7. Ozinga is also believed to handle some manganese-containing product(s) on their site, but less is known about the facility's operations schedule. Both Kinder Morgan and Ozinga may be required by the City of Chicago to develop new fugitive dust plans, which could lessen metals emissions into the community.

Figure 5. Manganese frequency plot, percent contribution binned by wind direction and speed

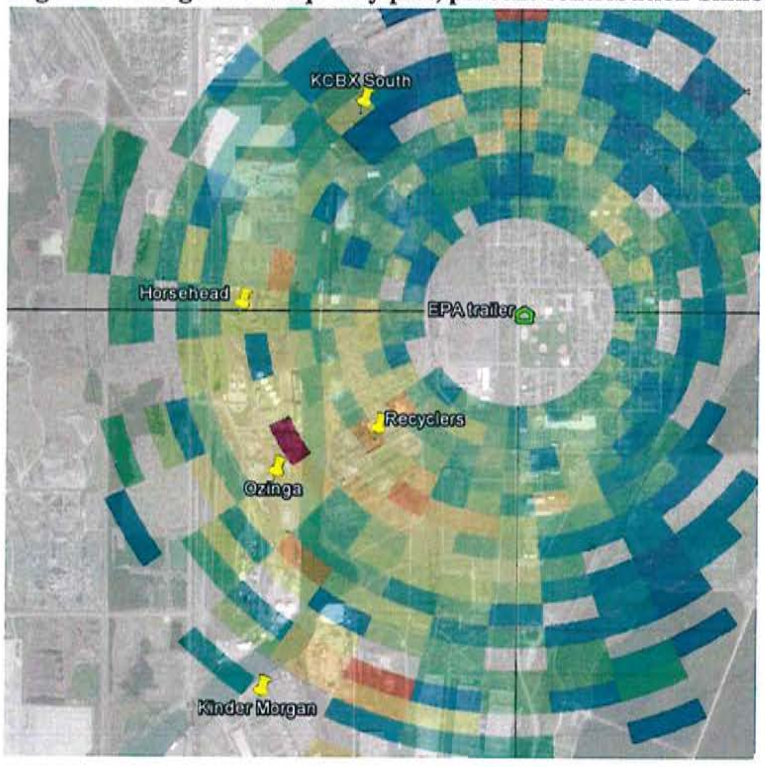


Figure 6. Manganese polar plot, concentration (ng/m^3) averaged by wind direction and speed

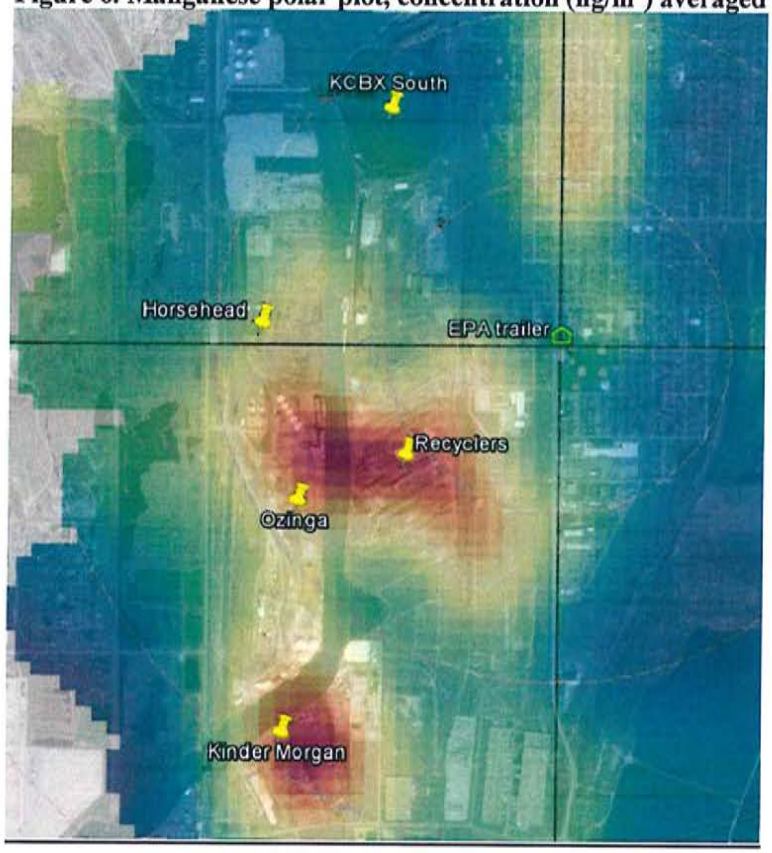


Figure 7. Manganese concentrations (ng/m^3) averaged by hour-of-day and day-of-week.

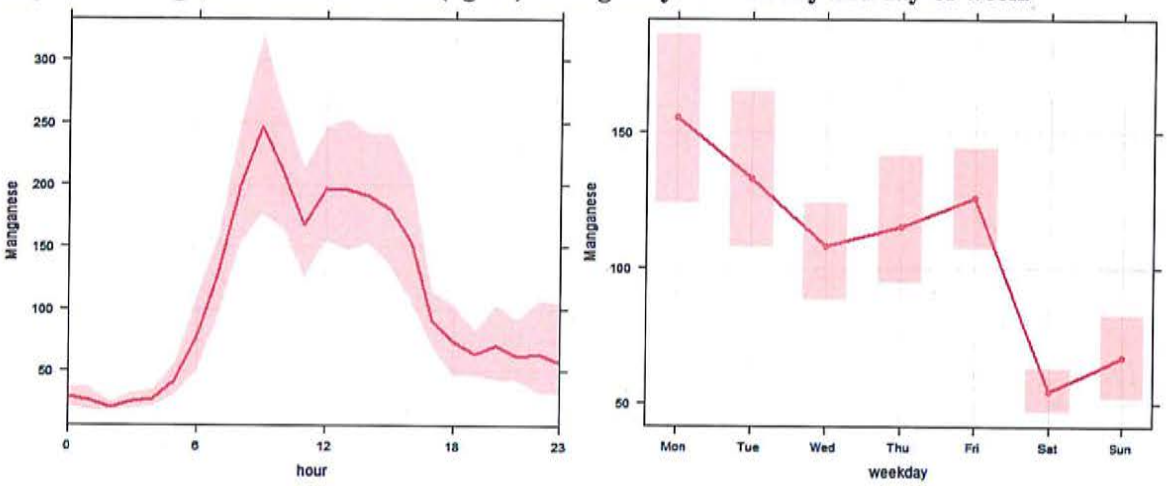
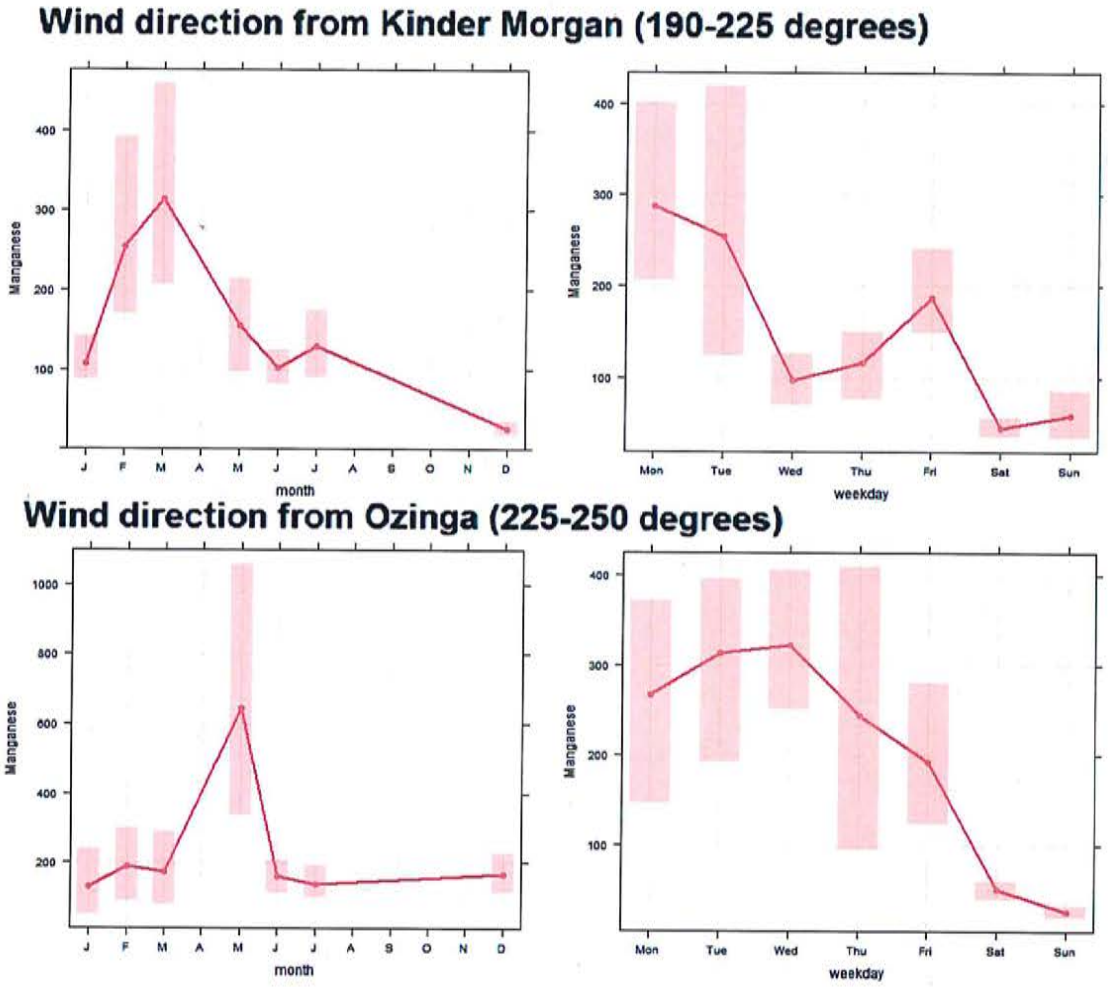


Figure 8. Manganese concentrations (ng/m^3) averaged by month and day-of-week when wind direction is from direction of Kinder Morgan as compared with Ozinga.



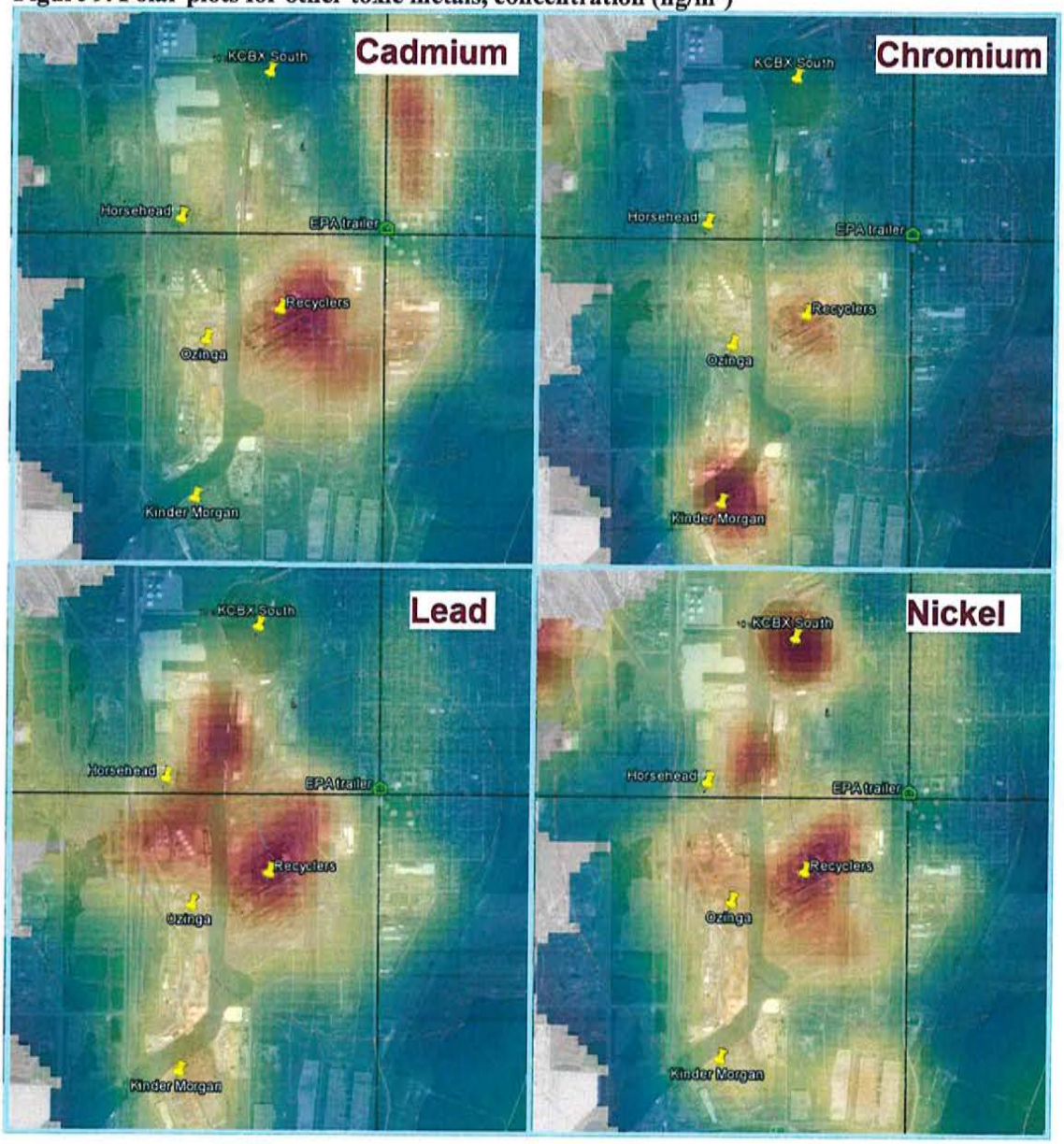
Peak manganese periods are shown on Table 3. These are the 34 hours when manganese was more than ten times the average concentration, i.e. the top 1% of data. The majority of these peak periods had winds emanating from the area of Kinder Morgan.

Table 3. Details of Peak Manganese Periods (ng/m^3)

Date	Day	Time	Mn	WD	WS
23-Dec-14	Tues	2:00 PM	1151	190	4.9
23-Dec-14	Tues	3:00 PM	1155	187	4.2
31-Dec-14	Weds	11:00 AM	1313	234	6.6
31-Dec-14	Weds	12:00 PM	1223	224	6.8
31-Dec-14	Weds	1:00 PM	2033	223	6.9
31-Dec-14	Weds	3:00 PM	1114	209	7.3
31-Dec-14	Weds	5:00 PM	1126	208	7.6
2-Jan-15	Fri	11:00 AM	1601	184	2.4
15-Jan-15	Thurs	4:00 PM	3685	199	4.8
15-Jan-15	Thurs	5:00 PM	3338	204	4.8
13-Feb-15	Fri	10:00 AM	1148	215	6.6
13-Feb-15	Fri	3:00 PM	1141	205	6.6
14-Feb-15	Sat	10:00 AM	1807	324	8.8
17-Feb-15	Tues	5:00 PM	2313	247	5.7
24-Feb-15	Tues	7:00 AM	1863	204	7.8
24-Feb-15	Tues	8:00 AM	1710	205	8.8
24-Feb-15	Tues	9:00 AM	2775	206	9.3
24-Feb-15	Tues	10:00 AM	4353	212	8.0
24-Feb-15	Tues	11:00 AM	1255	222	7.9
24-Feb-15	Tues	12:00 PM	1441	217	7.6
24-Feb-15	Tues	3:00 PM	1465	229	5.9
5-Mar-15	Thurs	6:00 PM	1373	231	4.0
5-Mar-15	Thurs	9:00 PM	2247	239	2.3
9-Mar-15	Mon	9:00 AM	2860	174	2.1
9-Mar-15	Mon	10:00 AM	2902	176	3.3
13-Mar-15	Fri	10:00 AM	1723	199	2.6
15-Mar-15	Sun	8:00 PM	1151	215	7.5
16-Mar-15	Mon	11:00 AM	1796	216	4.9
16-Mar-15	Mon	12:00 PM	2018	201	6.1
16-Mar-15	Mon	1:00 PM	3273	205	6.5
16-Mar-15	Mon	2:00 PM	3086	200	6.2
16-Mar-15	Mon	3:00 PM	1516	190	6.5
16-Mar-15	Mon	4:00 PM	1463	201	7.3
16-Mar-15	Mon	5:00 PM	2350	204	5.3

Polar plots for the remaining toxic metals, which did not exceed levels of potential health concern, are shown on Figure 9. Cadmium appears to emanate mainly from the RMT recycling facilities east of the Calumet River. Chromium peaks come from the area of Kinder Morgan. Lead seems to be emitted by a combination of the nearby recycling facilities and Horsehead. Nickel emissions emanate from KCBX's South Terminal, Horsehead, and the recycling facilities.

Figure 9. Polar plots for other toxic metals, concentration (ng/m^3)



Summary and Conclusions

1. This short-term investigation showed that Pb concentrations are well below 50% of the NAAQS.

2. Arsenic (As) was equal to the short-term health comparison level, the California EPA's 8-hour REL (15 ng/m^3) on one day, January 27th. This high 8-hour average was driven by a 1-hour peak of 93, which itself did not cause an exceedance of the 1-hour REL (200 ng/m^3).

3. Data trends analyses show that dominant As emission are from the southwest, i.e. the area of various recyclers east of the Calumet River. However, the January 27th date peak value happened during a period when winds were from the northeast, where industrial sources are not present.

4. The full-study average for Arsenic is well below the chronic health comparison value. This study does not suggest that there is a long-term issue with As health risks.

5. Ambient concentrations of other toxic metals were below EPA's long-term and short-term health comparison levels.

6. The ambient manganese (Mn) concentration was higher than EPA's previously used comparison value (the RfC of 50 ng/m^3) in this study. The Mn average was 108 ng/m^3, consistent with data reported at the Illinois EPA station at Washington High School.

7. Peak Mn levels correspond to wind direction from the area of the Kinder Morgan facility. Secondary peaks are from the vicinity of Ozinga and RMT.

8. The monitoring trailer was sited about one mile away from the Ozinga and Kinder Morgan properties. Follow up metals monitoring may be useful in the residential area south of Kinder Morgan to determine whether Mn concentrations are significantly higher in this area.

9. Mn and other toxic metal trends at the Washington High School monitor should be evaluated over the next year to determine whether new fugitive dust controls at local industries have reduced metals emissions into ambient air.

APPENDIX
E

Customer First Safety Always

SSP ID: 2926-14
Title: CHFT Street/Sweeper & Water Truck
Issue Date: 05-22-2014
Revision Date:

TERMINALS O&M PROCEDURE

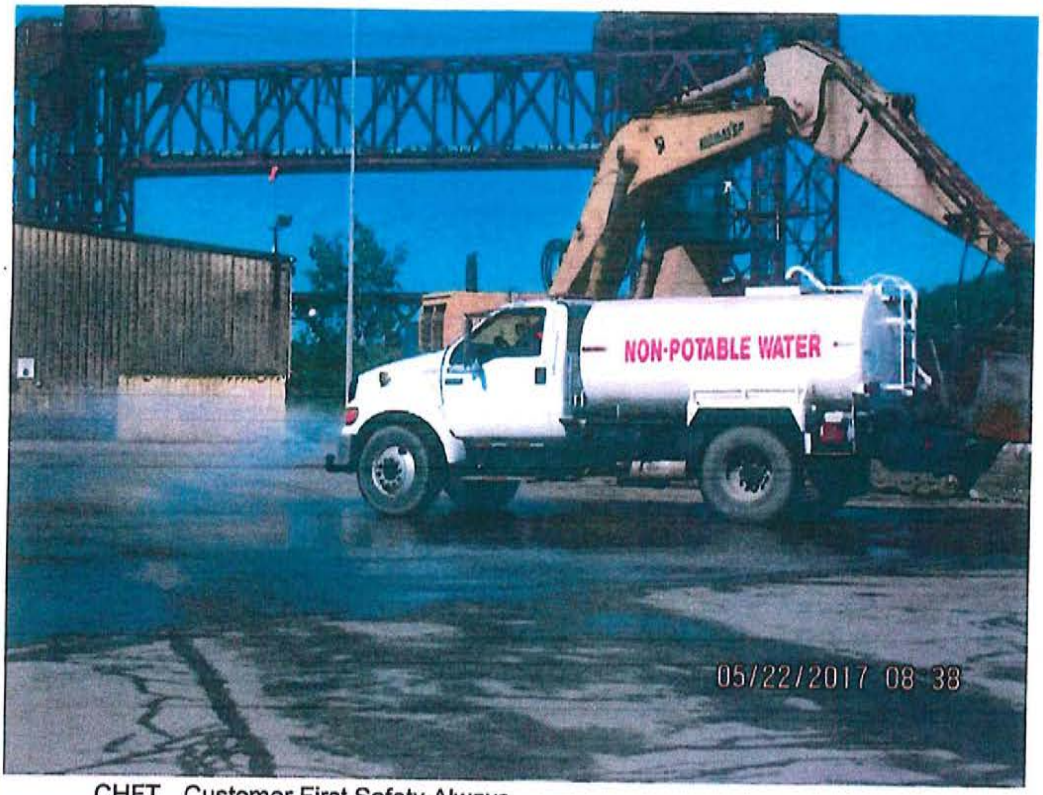
Table of Contents

1. Applicability

☒ Bulk Terminals

2. Scope

This document provides the Standard Operating Procedure (SOP) for safe operations of Street Sweeper and Water Truck at Watco Compainies Chicago Ferro Facility.



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TERMINALS O&M PROCEDURE

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TERMINALS O&M PROCEDURE

SQE Statement

This procedure follows Best Management Practices (BMPs), and is one of the steps necessary in establishing and implementing Watco Companies Terminal Safety, Quality, and Environmental (SQE) programs and culture.
SQE program elements were developed through aggregating best management practices and lessons learned across our organization. The elements of SQE are intended to help develop a culture where all Teammates perform their daily tasks in a manner that upholds our commitment to running safe, environmentally compliant, quality focused, efficient operations.

3. PPE Requirments and tools needed.

1 Hard hat
2. Safety glasses
3. Gloves
4. Reflective uniform
5. Steel toe shoes
6. Respirator protection

EHS/Quality Precautions

1. Pre-use inspection of this equipment is required.
2. Only Properly trained employees are authorized to operate equipment.
3. No equipment will be placed in service if identified unsafe.
4. No Safety devices may be bypassed in order to operate this equipment.
5. Operating perameters must be monitored continually during operation of this equipment.
6. All terminal traffic and safety regulations shall be followed at all times.

Water Truck Procedures:

1. Enter cab and ensure its free of all debris.
2. Adjust seat position as necessary, fasten seat belt.
3. Start machine up and ensure all gauges and controls operate properly.
4. Fill machine up with water to max capacity (2,000 gallons).
5. Turn pumps on and start watering the pavement following the traffic pattern list below.
    - Section 1 start with the front entrance, wetting down pavement completely up to truck scales.
    - Section 2 start with main drive area just North of the truck scales all the way north stopping at the dock.
    - Section 3 continue East to West watering the entire drive way along the dock side of the 100 building and continuing the same between the 200building, 300building, 400 building and north side of building D.
    - Section 4 continue West to East watering the roadway South of building D until you run back into the main drive watering the area infront of the processor.
    - Section 5 water the pavement to the North of building F,and North to South along both sides of building F, finishing at the South area of building G.
    - Section 6 work the road ways between all the Pig Pads and the Front (North side) of Building E.
    - Last make sure the Dock is watered down completely, note that the dock might have to be watered down anytime in-between the sequence listed above based on barge traffic.

(9)

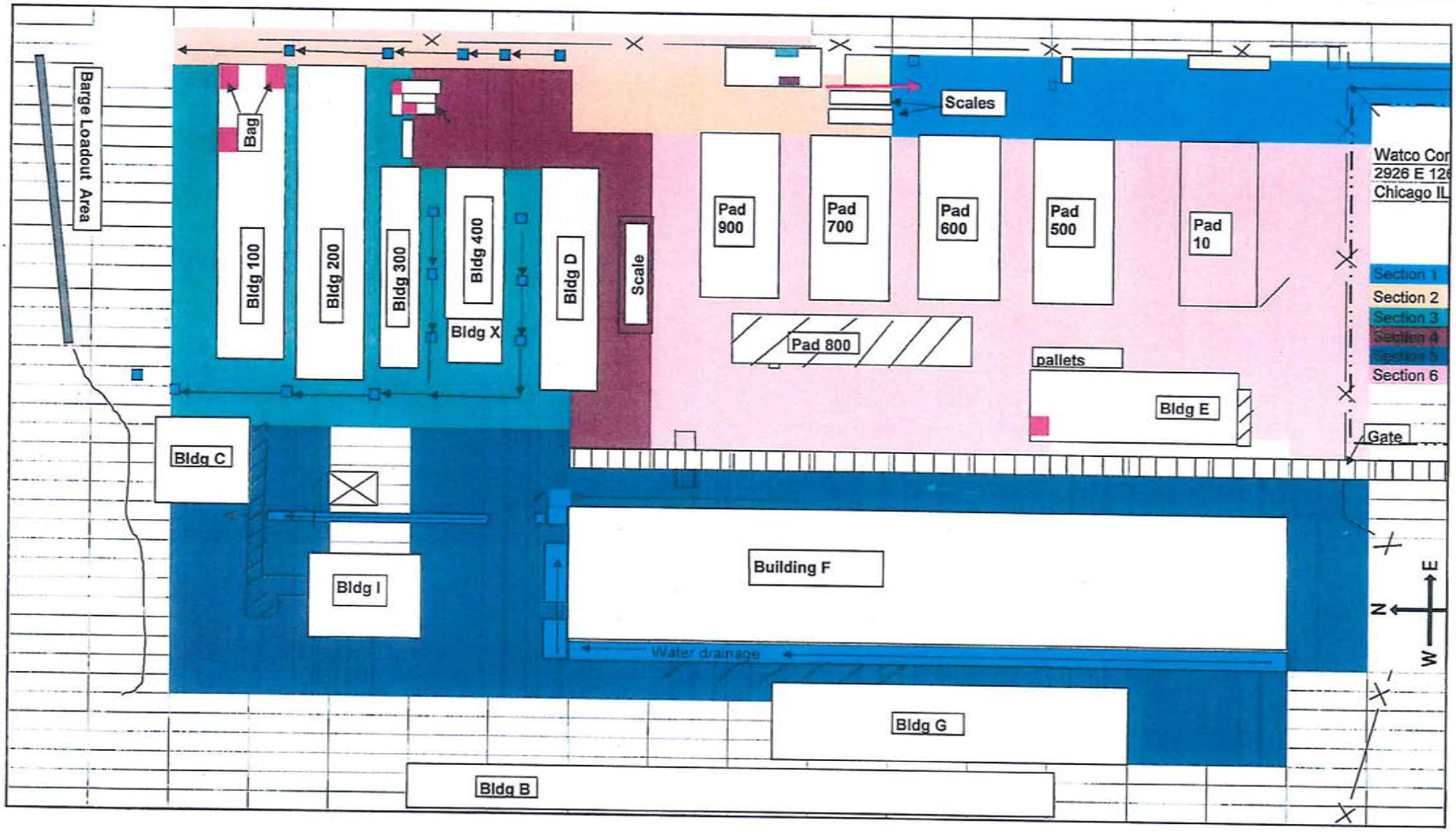
Street Sweeper procedures

1. Enter cab and ensure its free of all debris.
2. Adjust seat position as necessary, fasten seat belt.
3. Start machine up and ensure all gauges and controls operate properly.
4. Fill machine with water to max capacity.

- Section 1 start with the front entrance, sweeping the pavement completely up to truck scales.
- Section 2 start with main drive area just North of the truck scales and all the way north stopping at the dock.
- Section 3 continue East to West sweeping the entire drive way along the dock side of the 100 building and continuing the same between the 200building, 300building, 400 building and north side of building D.
- Section 4 continue West to East sweeping the roadway South of building D until you run back into the main drive sweeping the area infront of the processor.
- Section 5 sweep the pavement to the North of building F,and North to South along side of building F all the way up to the South area of building G.
- Section 6 work the road ways between all the Pig Pads and the Front (North side) of Building E.
- Last make sure the Dock is swept down completely, note that the dock might have to be swept down anytime in-between the sequence listed above based on barge traffic.

Training

All Team members who will perform such task shall be trained, and shall be able to satisfactorily demonstrate their understanding, through an assessment of this and the Site-Specific Operating Procedures by a competent person or subject matter expert. Retraining and testing shall be conducted following unsatisfactory/unsafe performance of job assignments. Operators shall be trained on this procedure at least once every three years, not to exceed 36 months, or when operational changes warrant.


Barge Loadout Area
Bag
Bldg 100
Bldg 200
Bldg 300
Bldg 400
Bldg X
Bldg D
Scale
Scales
Pad 900
Pad 700
Pad 600
Pad 500
Pad 10
Pad 800
pallets
Bldg E
Gate
Watco Cor
2926 E 12
Chicago IL
Section 1
Section 2
Section 3
Section 4
Section 5
Section 6
Bldg C
Bldg I
Building F
Water drainage
Bldg G
Bldg B
E
N
W