



South St. Paul

MAYOR/COUNCIL WORKSESSION
SSP City Hall
125 3rd Avenue North

Monday, November 28, 2016
7:00 p.m.

AGENDA:

1. Counties Transit Improvement Board (CTIB) Discussion and Update for East-West Transit Corridor Study
2. Odor monitoring results for 2016
3. Discussion Financial Policies: Airport Revenue and Allowable Uses of Airport Revenue.



COUNCIL WORKSESSION REPORT

DATE: NOVEMBER 28, 2016

DEPARTMENT: Engineering

ADMINISTRATOR: JPKsa

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AGENDA ITEM: Counties Transit Improvement Board (CTIB) Discussion and Update for East-West Transit Corridor Study

ACTION TO BE CONSIDERED:

Information item only; no action required

COUNTIES TRANSIT IMPROVEMENT BOARD (CTIB) DISCUSSION:

To promote safety and efficient transportation through development of the regional transitway system, Dakota County has participated as a member of the Counties Transit Improvement Board (CTIB) since April 1, 2008. Revenue for the CTIB is raised through a one-quarter percent sales tax and \$20 excise tax enacted by the five CTIB member counties under the statutory authority of the Metropolitan Transportation Area Sales Tax (Minn. Stat. §297A.992). Although the importance and value of the regional transitway system is recognized, questions have arisen whether Dakota County is receiving a sufficient return on the portion of the CTIB sales tax generated by Dakota County. At the January 19, 2016 Transportation Legislative Policy Workshop, the Board requested that staff research impacts and parameters of withdrawal from CTIB.

On June 14, 2016, the Physical Development Committee of the Whole considered options for CTIB membership including maintaining the status quo, improving the return on investment as a CTIB member and parameters and impact of withdrawal. The Committee affirmed that Dakota County remains committed to the transitways in and serving Dakota County, but the CTIB investment in Dakota County transitway represented only forty percent (40%) of the sales tax generated by Dakota County. In order to meet the growing highway and regular service needs, and to provide fiscal equity for Dakota County tax payers, the Committee directed staff to prepare a resolution officially notifying the CTIB of Dakota County withdrawal from the CTIB.

On June 21, 2016, the Dakota County Board of Commissioners notified CTIB of their intent to withdraw with an effective date of withdrawal from CTIB of January 1, 2019. Staff from Dakota County will present the decision to withdraw from the CTIB at the November 28, 2016, City Council Work Session.

UPDATE FOR EAST-WEST TRANSIT CORRIDOR STUDY:

In June 2016, Dakota County started the East-West Transit Service Study to evaluate possible transit service improvements within Dakota County with an emphasis on east-west transit options (<http://www.dakotaeastwesttransit.com>). Oversight and management of the study is the responsibility of a steering committee consisting of staff from Dakota County, Minnesota Valley Transit Authority, Metro Transit, and the Metropolitan Council. A technical advisory committee

City Council WS Report – Counties Transit Improvement Board (CTIB) Discussion and Update
for East-West Transit Corridor Study

Date: November 28, 2016

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(TAC) consisting of staff from the aforementioned agencies as well as neighboring counties, cities and townships within the study area are responsible for guiding the evaluation process and commenting on study findings and recommendations. The outcome of this study will be to produce a final report describing financial and policy decisions needed to provide service improvements to expand the regional transit network that primarily address east-west travel needs. Staff from Dakota County will present an update on East-West Transit Corridor Study at the November 28, 2016, City Council Work Session.

SOURCE OF FUNDS:

No fiscal impact.



COUNCIL WORKSESSION REPORT

DATE: November 28, 2016
DEPARTMENT: Community Development
ADMINISTRATOR: SAK

2

AGENDA ITEM:

ACTION TO BE CONSIDERED:

Review of 2016 Odor Monitoring

ODOR MONITORING OVERVIEW:

The City Council adopted an odor ordinance on July 7, 2014 to provide a mechanism to deal with odor issues in the community. Short Elliot Hendrickson, Inc. (SEH) was retained as the City's consultant on these odor issues and has provided testing of odors at various businesses and odor complaint response. The attached reports review odor monitoring studies conducted this year for five of the businesses previously identified through odor studies by Trinity Consultants and SEH as being possible sources of odor.

TWIN CITY TANNING, TWIN CITY HIDE, LONG CHENG, CONCORD MEATS:

Monitoring of these four facilities has detected some odors at or above the level of a nuisance, however, these businesses have not consistently had nuisance level odors and have not reached levels necessary to be designated as Significant Odor Generators (SOG). Generally, the average odor levels have decreased at most of these facilities.

SANIMAX:

Sanimax was previously identified as a business that met the definition under the Odor Ordinance of a Significant Odor Generator (SOG). During the 2016 odor monitoring SEH noted a decrease in average odor levels, however odor levels were still at a level that would allow the City to designate the business a SOG. If the business is designated as a SOG the process would likely trigger an appeal, however if no appeal was filed then the SOG would be required to develop an odor mitigation plan. The odor neutralizer misting system, which is only operated during warmer weather months, was damaged in June and was Sanimax was not able to repair the system to have it in operation for the latter part of the summer. The misting system was intended to combat fugitive odors coming from trucks before they were able to unload the raw material to be processed and does not control stack emissions. Sanimax also provided an update to the Council in June about process improvements that they are undertaking at their plant. A copy of their PowerPoint from that meeting has also been attached.

ODOR COMPLAINT RESPONSE MAP

A copy of an odor complaint map indicating wind direction and detected odor levels is also attached. Complaint responses are separate from the odor monitoring of odor generating companies. However, we have included the attached map to help visualize areas where in the community we are noticing issues (complaints) and the wind direction and odor levels at those complaint sites. The number of arrows indicates the number of complaints while the direction of the arrow is the wind direction and the color relates to the measured odor level at the site.

SOURCE OF FUNDS:

N/A

2016 Odor Survey Report for Twin City Tanning

South St. Paul Odor Monitoring
South St. Paul, MN

SEH No. 136019

October 20, 2016

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2016 Odor Survey Report for Twin City Tanning

City of South St. Paul Odor Monitoring

Prepared for the City of South St. Paul

1.0 Background

The City of South St. Paul (the "City") has retained Short Elliott Hendrickson Inc. ("SEH") to conduct odor monitoring to support the enforcement of the City's Odor Pollution Ordinance. Previous monitoring has been conducted by both Trinity Consultants and SEH. In July 2013, a report titled, "A Summary of Odor Monitoring, Modeling and Complaints in South St. Paul" was completed by Trinity Consultants documenting odor monitoring on several facilities located in the City. Two additional monitoring events were completed by SEH in 2014, as well as a third in 2015 to supplement those initial findings and identify facilities that may not be meeting the Odor Pollution Ordinance.

As stated in the SEH 2014 Odor Monitoring Survey Report to the City, Twin City Tanning caused odor observations that were consistent with significant odor values in the City Odor Ordinance. Although there were not enough significant odor observations to deem the facility a significant odor generator (SOG) in 2014, it was determined that it would be beneficial to continue monitoring the facility. Monitoring in 2015 showed a slight improvement in average downwind odor strengths. Despite the improvement, the frequency of downwind observations at or above 7 odor units stayed consistent with previous monitoring in 2014. There were also issues separating odors for a neighboring facility due to wind directions blowing across both buildings. Again, not enough significant odor observations were recorded to deem Twin City Tanning as a SOG in 2015 and monitoring continued in 2016.

During this most recent round of monitoring (June 2016), a minimum of eight observations were made from June 16 to June 30 to try and determine if the facility has reduced odors or if it may still be generating odors deemed significant. Monitoring locations varied with wind direction and are described in the table below. A map view of the locations is also provided in **Figure 1**.

Twin City Tanning Monitoring Locations

Location	Location Description
(a)	Near corner of Malden St. and Clinton Ave.
(b)	Northeast corner of the River Country Co-op's property.
(c)	South side of Malden Street. South of Twin City Tanning facility. Exact location along the street varied depending on wind direction.
(d)	Along Hardman Avenue South. Location varied depending on wind direction.
(e)	Northeast of the Twin City Tanning and Twin City Hide facilities in overgrown grassy area. Close to railroad tracks.
(f)	West of Twin City Tanning along Clinton Ave. Exact location along street varied.
(g)	On top of berm directly to the north of the facilities in overgrown area.

2.0 Methods

Consistent with previous monitoring outlined in the 2014 and 2015 reports, odor strengths were observed using a Nasal Ranger field olfactometer rented from St. Croix Sensory by the City. Field olfactometers are portable odor detecting and measuring devices. These devices measure ambient odor and give a quantitative value to the odor as a dilution-to-threshold ratio, commonly called a dilution ratio or odor unit (OU). The dilution-to-threshold (D/T) ratio is calculated by:

$$\frac{\text{Volume of Carbon Filtered Air}}{\text{Volume of Odorous Air}} = \text{Dilution Ratio}$$

The Nasal Ranger has 6 dilution settings: 60, 30, 15, 7, 4 and 2. The number given to each setting refers directly to the dilution ratio of air being inhaled through the device. For example, when using the number 15 dilution setting, 15 parts of carbon filtered (odor free) air are mixed with 1 part of odorous air. As the setting number decreases, a larger ratio of odorous air is being mixed with the filtered air. At the number 2 setting, the ratio is 2 parts filtered air mixed with 1 part odorous air. Therefore, stronger odors will be detected at high number settings and higher dilution, while weak odors require less dilution to be detected and thus lower number settings. If all settings are observed and no odor is detected, there is no observed odor value. According to St. Croix Sensory and Huey et. al. 1960, each D/T ratio odor level can be described by the following:

- 2 D/T – Noticeable
- 4 D/T – More Noticeable
- 7 D/T – Objectionable
- 15 D/T – Nuisance
- 30 D/T and above – Nauseating

A variety of parameters were recorded during the odor monitoring. Both the detection and recognition thresholds (in D/T or OU) using the Nasal Ranger were recorded at each monitoring location. The detection threshold is the D/T setting at which an odor is first detected, whereas the recognition threshold is the D/T setting at which the odor had an identified descriptor associated to the odor. Recognized odors were assigned a descriptor that provides a description of the odor that can be connected to the odor source. The descriptors are used to assess and confirm the source of the odors. Several descriptors were identified during this monitoring including animal, dead/rotting animal, manure, hay, exhaust, and grass. During every monitoring event, both upwind and downwind odor observations were recorded to confirm the facility as the source of observed odors.

In addition, ambient temperature and wind readings (speed/direction) were taken both in the field with a portable weather meter and compared to recorded weather information from the South St. Paul Airport (Fleming Field). Precipitation occurred before or during some of the monitoring observations.

3.0 Previous Results

SEH conducted two initial rounds of monitoring during the summer of 2014, the first taking place from July 21 to July 24 and the second from August 12 to August 19. During these two rounds of monitoring, odor observations were taken at several sites in the South St. Paul area to determine possible sources of potentially "offensive" odors. Each monitoring round consisted of a minimum of 8 separate observations at each of the suspected facilities. Additional data was collected for the facility during the 2015 monitoring event that took place between May 20 and June 19.

From these previous monitoring results, it was found that although Twin City Tanning caused odor observations that were consistent with significant odor values in the City Odor Ordinance, there were not enough significant odor observations to deem the facility a significant odor generator. As stated in the background section above, monitoring in 2015 showed improvement in average odor values. Comparing the two, a decrease from 8.1 to 7.1 odor units at the detection threshold was observed, but despite the improvement, a number of downwind observations still recorded odors as high as 7 odor units and it was determined that Twin City Hide still has the ability to generate significant odor without the evidence to be considered an SOG as defined by the City Ordinance. A summary of these results can be found in the tables below.

Because of the potential for Twin City Tanning to generate significant odors that could negatively impact residents downwind, it was not ruled out as a possible significant odor generator and subsequent odor monitoring has continued.

2014 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
8/13/2014	13:27	Downwind	NE	2.8-4.1	N-NE	5.8	15 **	7	Grease, Burnt, Dead Animal
8/14/2014	11:07	Downwind	SE	2.3-4.6	E-SE	6.9	15	7	Dead Animal, Rotten Egg
8/14/2014	14:15	Downwind	SW	1.5-1.9	SE	5.8	7	4	Dead Animal
8/18/2014	10:12	Downwind	S	0-1.4	S-SE	3.5	7 **	4	Dead Animal
8/19/2014	10:20	Downwind	N-NE	1.7-2.8	N-NW	8.1	7 **	4	Dead Animal

** Due to wind direction, could not differentiate between Twin City Tanning and Twin City Hide

2015 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
5/20/2015	10:38	Downwind	W	2.1-3.9	W	4.6	7	4	Rotten Egg, Dead Animal
5/26/2015	09:50	Downwind	NE**	0.0-1.2	N	3.5	7**	2	Dead Animal, Rotten, Burnt
5/27/2015	13:27	Downwind	W-SW	1.7-4.2	W-SW	8.1	7	4	Dead Animal, Rotten
6/12/2015	10:15	Downwind	NE-E	3.2-6.4	NE	7.0	15	4	Dead Animal, Rotten Egg
6/12/2015	15:38	Downwind	E	3.9-6.8	E/NE	8.3	15	4	Dead Animal, Rotten Egg

** Due to wind direction, could not differentiate between Twin City Tanning and Twin City Hide

4.0 2016 Results

As part of continued monitoring of potential significant odor generators, Twin City Tanning was included in the 2016 odor survey. Results of this most recent round of monitoring produced slightly improved results compared to those recorded during 2014 and 2015 monitoring rounds and are shown in the table below.

2016 Monitoring near Twin City Tanning

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/16/2016	15:15	Downwind	ESE	5.7-6.3	NE	10.4	4	2	Dead Animal
6/16/2016	15:30	Upwind	E	3.4-4.4	E	8.1	No Detect	--	N/A
6/21/2016	8:50	Downwind	W-SW	3.0-4.6	W	10.4	7	4	Chemical (Rotten Egg), Burnt
6/21/2016	9:00	Upwind	W-SW	5.5-8.5	W	10.4	No Detect	--	N/A
6/21/2016	14:00	Downwind	W-NW	6.1-10.5	WNW	10.4	7	4	Chemical (Rotten Egg), Dead Animal
6/21/2016	14:10	Upwind	W-NW	3.8-4.3	WNW	9.2	No Detect	--	N/A
6/24/2016	9:48	Upwind	S	4.8-6.0	S	6.9	No Detect	--	N/A
6/24/2016	9:54	Downwind	S	3.5-6.1	SE	5.8	7**	4	Dead Animal
6/28/2016	11:50	Downwind	SSE	3.2-4.7	Calm	Calm	4**	2	Dead Animal
6/28/2016	12:00	Downwind	NE	INT	SSE	5.8	4**	4	Dead Animal, Cut Grass, Exhaust
6/28/2016	12:13	Upwind	N-E	2.4-3.8	Calm	Calm	<2	--	Truck Exhaust
6/29/2016	14:20	Downwind	S	2.8-3.2	SE	5.8	2**	--	Grass/Flowers
6/29/2016	14:25	Downwind	S	2.4-3.1	SSE	3.5	4**	2	Dead Animal
6/29/2016	14:33	Upwind	SSE	0.9-1.9	SSE	3.5	No Detect	--	N/A
6/30/2016	13:48	Downwind	NNW	5.5-10.7	NW	11.5	7	4	Dead Animal, Rotten
6/30/2016	14:04	Upwind	NNW	5.0-12.3	NNW	11.5	No Detect	--	N/A
6/30/2016	15:23	Downwind	NW	4.2-5.4	N	11.5	4	4	Dead Animal, Rotten

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/30/2016	15:40	Upwind	N	6.1-8.5	N	11.5	No Detect	--	N/A
Downwind Detection Average							5.0	3.3	

** Due to wind direction, could not differentiate between Twin City Tanning and Twin City Hide

Dead animal, rotten, chemical (rotten egg), and exhaust odors were detected regularly downwind during the 2016 study. These potentially “offensive” odors are similar with previous descriptions recorded in 2014 and 2015 and are typical of those associated with a tanning facility. The dead animal, rotten, and chemical (rotten egg) odors likely reflect odors generated at the facility, while the exhaust odor is from truck traffic on road near monitoring locations. A burnt odor was identified downwind on June 21, but no source was confirmed. Due to wind direction and monitoring location, it may have been Twin City Tanning, but also could have been Sanimax.

Comparing these results to data from 2014 and 2015, there is improvement in averaged odor strengths of all downwind detections for 2016. Detections at or above 7 odor units has continued to decrease with only four observations recorded at 7 odor units and no observations above 15 odor units in 2016. The average detection of all observations decreased from 7.1 odor units in 2015 to 5.0 odor units in 2016. During three observations this round (June 24, 28, and 29), wind directions made separating Twin City Tanning and the neighboring Twin City Hide facility difficult. No distinction was made between the two facilities and the observations were treated as detections for both. Additional monitoring was performed to get a minimum of eight downwind observations from TCT alone for this round of monitoring.

Upwind monitoring recorded no odors consistent with those recorded downwind. Common odors such as truck exhaust, were detected at low dilution levels. These upwind detections can likely be attributed to monitoring locations in parking lots and along truck hauling routes. No upwind observations were considered to be offensive.

Weather conditions at the odor observation locations were fairly comparable to the concurrent weather data recorded at the South St. Paul airport. Generally, the wind speed is higher at the airport compared to the industrial portion of the City to the north where Twin City Tanning is located.

5.0 Summary

After ten downwind observations during this round of monitoring, and comparing them with the data collected from previous monitoring rounds in 2014 and 2015, Twin City Tanning once again did not have odors consistent with those of a SOG as defined by the City Ordinance.

Some improvement was noted in both the average odor values and the number of detections at or above 7 odor units from the 2016 monitoring event. Four detections were still observed at or above 7 odor units downwind from the facility but average detection values decreased from 7.1 to 5.0 odor units between 2015 and 2016. With decreases in downwind detection

averages since the initial monitoring in 2014, but continued odor observations at or above 7 odor units this round, it is likely that more monitoring would generate additional odor observations of 7 odor units or above. At this time, it can be determined that Twin City Tanning still has the ability to generate significant odor, but without enough significant odor observations during the 2016 odor survey to deem the facility a SOG as defined by the City Ordinance.

2016 Significant Odor Summary for Twin City Tanning

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
6/21/2016	8:50	Downwind	W-SW	3.0-4.6	W	10.4	7	4	Chemical (Rotten Egg), Burnt
6/21/2016	14:00	Downwind	W-NW	6.1-10.5	WNW	10.4	7	4	Chemical (Rotten Egg), Dead Animal
6/24/2016	9:54	Downwind	S	3.5-6.1	SE	5.8	7**	4	Dead Animal
6/30/2016	13:48	Downwind	NNW	5.5-10.7	NW	11.5	7	4	Dead Animal, Rotten

** Due to wind direction, could not differentiate between Twin City Hide and Twin City Tanning

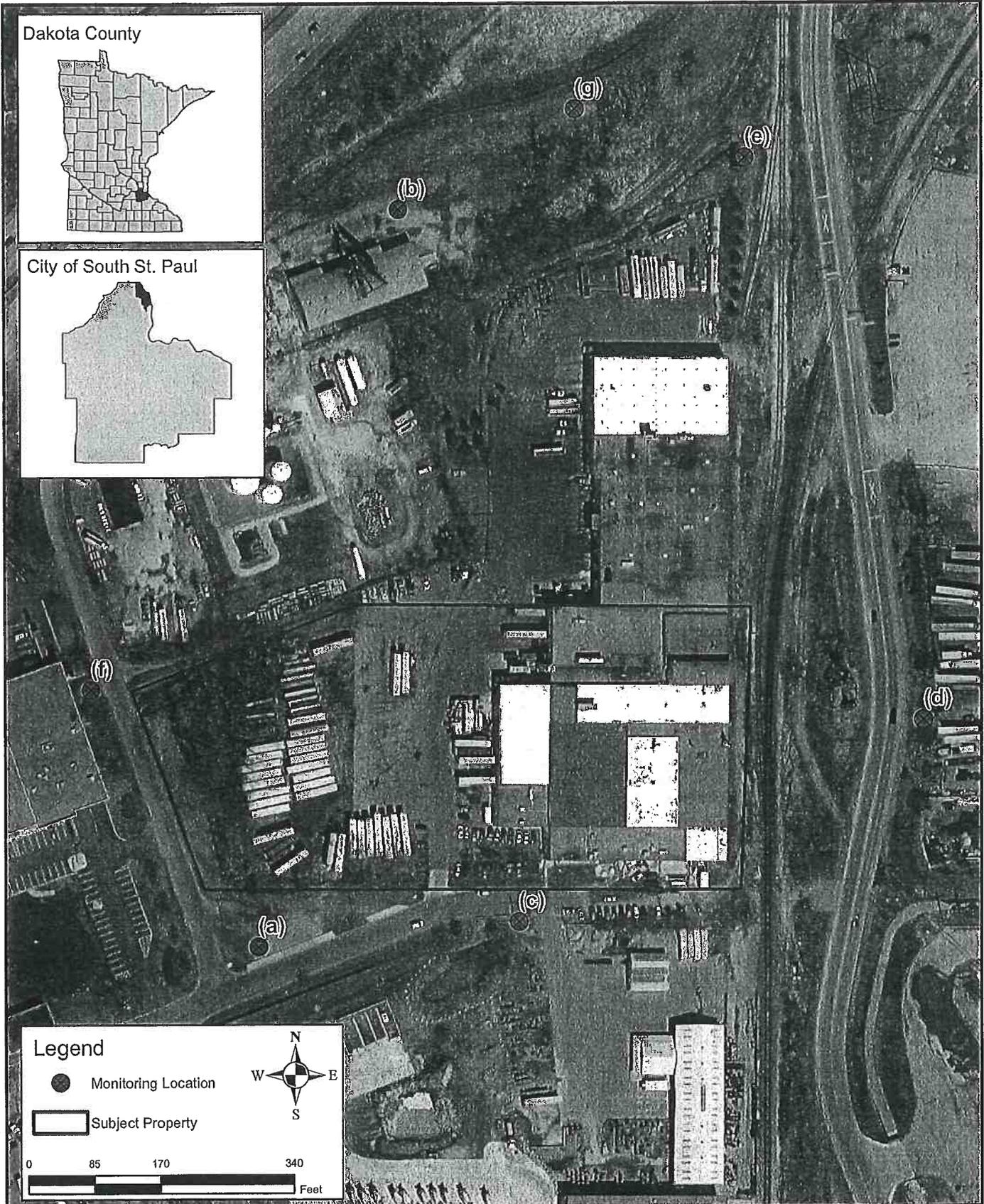
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Figure 1 – Monitoring Locations

Dakota County



City of South St. Paul



Legend

- Monitoring Location
- ▭ Subject Property



Path: S:\P\T\GIS\Mapa1\96019\GIS\MonitoringLocations\Mapa\Figure01_LongCheng.mxd



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Project: SSTPA 136019
 Print Date: 8/1/2016

Map by: akutz
 Projection: NAD83 UTM 15N
 Source: ESRI, SEH
 MnGeoFSA2015Aerial

Monitoring Locations
 2016 Twin City Tanning Odor Survey Report
 South St. Paul Odor Monitoring
 South St. Paul, MN

Figure 1

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

Appendix A
Field Data Sheets



Short Elliott Hendrickson Inc.
3335 Vadnais Center Drive
St. Paul, MN 55110-5196
651.490.2000 main | 888.508.8166 fax
800.325.2055 toll free
sehinc.com

5 LOCATIONS

ODOR MONITORING DATA SHEET

Date: 6/16/2016
Inspector Code: _____
Signature: Aaron Kotz
Name: Aaron Kotz

Time	Location	WS/I	D.H. (60-2)	R.H. (60-2)	<	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
								1	2	3	4	5								
14:45	SANIMAX	1	2	2	WW		2	weeds/grass, garbage												Upwind, pine path
15:00	"	3-4	7	4			-7	Rotten, grease, sour												Downwind, just northeast extreme on headwind
15:15	TC TANNING	3	4	2			-5	Dead Animal												Downwind, near
15:20	TC HIDE	3	4	2			-5	Dead Animal, burnt												Downwind ← Along Clinton Ave.
15:38	TC HIDE				X		-1	Exhaust												UPWIND, DANNE, INC
15:30	TC TANNING					X	0	N/A												Along headwind
15:55	Long Chen/Concord					X	0	N/A												Upwind, UFCW PARKING Lot
16:10	"	3	4	2			-4	Animal, Hay/manure												Downwind, directly west across Concord Ave.

Additional comments:
 → misting system Active, some stack activity at SANIMAX
 → see note about concord and long Chen to wind direction could not separate

WS: WS is Wind Oler Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3282 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

I/s Binned Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Fairly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (Calm); Light Breeze (1-5 mph); Moderate Wind (6-15 mph); Strong Wind (16-25 mph)



Short Elicke Henriksen Inc.
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sehinc.com

ODOR MONITORING DATA SHEET

Date: 6/21/2016

Inspector Code: _____
Signature: Aaron Kutz
Name: Aaron Kutz

Time	Location	WSR	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5								
8:40	TC Hide	4	15	7		-7	Dead Animal, Scur					Sunny	None	WSW	4.5-6.8	72.7	50.6	29.79	Downwind, DANNER Inc. lot
8:50	TC TANNING	3-4	7	4		-6	chemical (rotten eggs), burst					"	"	WSW	3.0-1.6	77.5	48.1	"	Upwind, MADC front & back lot
9:00	"	0			X		N/A					"	"	WSW	3.5-8.5	74.0	47.1	29.75	Upwind, MADC front & back lot
9:08	TC Hide	0			X		N/A					"	"	WSW	3.1-6.0	73.3	45.9	"	Upwind, poll; off Hardman & Hardman bike path
9:20	SANIMAX	1-2			X	-3	Garbage					"	"	W	5.8-6.3	75.3	43.0	29.76	Downwind, Behind Pellet Company
9:40	"	5	30	15		-10	Scur, Rotten, grease					Sunny	None	W	4.2-6.8	76.8	43.2	29.74	Upwind, post office lot
10:00	Long Clean/cond	2	2	-		-1	wood, burst, manure/animal					"	"	W	4.0-7.5	77.5	42.2	29.75	Upwind, post office lot
10:15	"	0			X		N/A					"	"	NW	5.5-7.2	77.9	37.9	29.23	Upwind, post office lot
11:45	"	0			X		N/A					"	"	NW	5.6-7.8	81.0	35.2	29.21	Downwind, UWFC back lot
12:55	"	2-3	4	2		-4	Animal/manure, wood					"	"	NW	3.5-4.7	84.1	30.8	29.22	Downwind, bike path
13:10	SANIMAX	4-5	15	7		-7	Grease, rotten, sour, chemical					"	"	NW	5.8-10.6	83.3	31.5	29.20	Upwind, corner of Hardman & Armore
13:35	"	1-2			X	-2	Exhaust					Sunny	None	NW	8.1-11.9	84.9	29.8	"	Downwind
13:48	TC Hide	4-5	7	4		-6	Dead Animal, exhaust					"	"	NW	4.7-8.3	84.2	29.3	29.19	Downwind
14:00	TC TANNING	4	7	4		-7	chemical (rotten egg), Dead Animal					"	"	NW	6.1-10.5	83.3	30.8	"	Downwind
14:10	"	9			X		N/A					"	"	WNW	3.8-4.3	83.5	30.6	29.18	Upwind
14:15	TC Hide	1-2			X	-1	Asphalt					"	"	W	3.5-4.4	82.4	31.5	"	SAME AS AM
17																			
18																			
19																			
20																			

Additional comments:
 → Missing system active and stock activity at sanimax for both observations → Long Chen/cond combine because
 → Daring A.M., Garbage truck drove by during upwind reading → could not separate due to wind

Key: WS is West Other Scales: 1. Very Weak, 2. Weak, 3. Moderate, 4. Strong, 5. Very Strong
 or WS is German VDI 3382 Scale: 0, 1, 2, 3, 4, 5, 6 OR A, B, C, D, E, F, G

1 is Baromet Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1.5-3 mph); Moderate Wind (3.5-15 mph); Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6/24/2016 Inspector Code: _____
 Signature: _____ Name: AARON KUTZ

Time	Location	WSR	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5								
9:34	SANJIMAX	3-4	15	7		-6	Grass/Rotten					Sun	None	45-36	55	64.6	29.3	Downwind,	
9:40		1	2	-		0	grass					Sun	None	52-37	77.1	60.5	29.8	upwind	
9:58	TC HIDE/TANINA				X							Sun	None	49-60	76.8	58.6	29.20	upwind	
9:54		3-4	7	4		-5	Dead animal					Sun	None	35-61	77.2	52.1	29.89	downwind	
10:07	Concord		14		X							Sun	None	32-65	75.9	59.4	29.89	upwind	
10:14	longshere	2-3	4	2		-4	Grass/Rotten (Sweet chemical)					Sun	None	42-89	74.5	60.2	29.3	upwind	
10:10	longshere	2-3	4	2		-3	animal					Sun	None	19-41	82.7	47.2	29.29	downwind	
10:23	Concord	2	4	2		-3	animal/Burnt hair					Sun	None	46-83	80.6	51.8	29.29	downwind	
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

water/odors
 penetrating lot

Additional comments:

Key: WS is Wind Color Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3882 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

I is Relative Intensity Scale: 1,2,3,4,5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, SSE, SE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1), Light Breeze (1-5 mph), Moderate Wind (5-15 mph), Strong Wind (>15 mph)



ODOR MONITORING DATA SHEET

Date: 6/28/2016 Page 1 of 1

Inspector Code: _____ Signature: Aaron Kutz
 Name: AARON KUTZ

Time	Location	WSR	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5								
10:50	SANITIMAX	3-4	7	7		-5	Grease	Cotton	Sour										Downwind, Armour & Hardman
11:02	"	1			X		Grease												UPWIND, Vanderson Ave.
11:50	TC Hides/Tanning	2-3	4	2		-4	Dead Animal												park lot of Natural gas Co of
12:00	TC Hides/Tanning	3	4	4		-4	Dead Animal, Cattle	Exhaust											corner of Malton and Clinton
12:13	TC Hides/Tanning	1-2			X	-1	Exhaust												vacant lot S of facility
12:28	Concord Meats	3-	4	4		-4	Animal Odors												on fence line behind holding pen
12:36	Long Cheng	4-5	15	7		-6	Manure	Animal											gravel lot at end of facility
12:45	"	0			X		N/A												of facility
12:55	Concord Meats	0			X		N/A												parking lot of QSC

Additional comments:
 → Misty system active & stack/vent activity during observations (see pics)
 → Wind swirling during TC Hides/Tanning observation

X=1: WS & Wnd Color Scales: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS & German VDI 3522 Scale: 0/1, 2/3, 4/5 OR AB, CD, EF, G
 1= Barium Intensity Scale: 1, 2, 3, 4, 5
 Weather: Mostly Sunny, Partly Cloudy, Mostly Cloudy, Overcast, Hazy
 Precipitation: None, Fog, Rain, Sleet, Snow
 Wind Direction (blowing from): N, NE, E, SE, S, SW, W, NW, W, NNW, NW, NNW
 Wind Speed: Calm (C), Light Breeze (L), Moderate Wind (M), Strong Wind (S), Very Strong (VS)



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ODOR MONITORING DATA SHEET

Date: 6-29-16 Page 1 of 1

Inspector Code: _____ Signature: AARON KUTZ
 Name: AARON KUTZ

Time	Location	WSI	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments	
							1	2	3	4	5									
1:53	Sprinkler	1			X			grass				PC	None	S	3-4	74.5	40.5	29.3	upwind	
2:01	Sprinkler	4	7	4		-5		rotten / govt				PC	None	SSW	21-3	78.5	41.2	29.3	downwind	
2:20	TC Hide/Hanging	1-2	2			+2		grass / flowers				PC	None	S	2.8-3.2	77.9	40.9	29.3	downwind	
2:25	TC Hide/Hanging	3	4	2		-4		dead animal				PC	None	S	2.7-3.7	79.8	40.7	29.3	downwind	
2:33	TC Hide/Hanging				X							PC	None	SSE	2.1-9	82.1	34.9	29.3	upwind	
2:41	Concord mints				X							PC	None	SSE	4-5.2	83.3	34.4	29.3	upwind	
2:46	Langbehen	1-2						wood				PC	None	ESE	2.1-3	84.2	34.8	29.3	upwind	
2:55	Langbehen	2-3	4	2		-4		animal / manure / barn				PC	None	ESE	4.1-6.6	77.8	38.3	29.3	downwind	
2:59	Concord mints	2-3	4	2		-3		animal / manure				PC	None	SE	2.6-2.9	80.1	36.1	29.3	downwind	
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				

Key: WSI is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WSI is German VDI 3082 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G
 1 is Bitter Intensity Scale: 1, 2, 3, 4, 5
 Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy
 Precipitation: None; Fog; Rain; Street Snow
 Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (C); Light Breeze (L-B); Moderate Wind (M-W); Strong Wind (S-W)



ODOR MONITORING DATA SHEET

Date: 6/30/16 Inspector Code: _____ Signature: AARON KUTZ Name: _____

Time	Location	WS/1	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Temp	RH	BP	Comments
							1	2	3	4	5				
19:44	Concord	1-2			X	-4	Sweet	Baked				73.6	70.9	29.19	UPWIND, vacant lot S of facility parking lot
7:51	Long Cheney	1-2	2	2		-4	Sweet	Baked	sunburn			75.8	67.8	"	UPWIND, Long dring lot
10:00	Concord	2-3	2	2		-4	Animal	Burnt				78.2	62.5	"	Downwind
10:13	Long Cheney	3	4	2		-5	Animal	Mandite				77.9	65.4	29.19	Downwind
10:37	SANIMAX	4	7	4		-6	Rotten	Grease				79.7	58.4	29.15	Downwind, like path
10:34	"	1-2			X	0	Grass					80.4	61.3	29.17	UPWIND, Along Vandross Ave
11:05	TC Hill	2	4	2		-5	Dead Animal					80.5	65.0	"	Downwind, Abbey Clinton Ave
	→ No	UPWIND	at	4		-6	of other vation	due to				downpour			UPWIND
13:48	TC TANNING	4	7	4		-6	Dead Animal	Rotten				75.8	61.7	29.16	Downwind, Along main St.
14:04	"	0			X		N/A					78.2	55.6	29.17	UPWIND, Along Clinton Ave
14:15	Concord	3	2	2		-4	Animal	Hx/measure				76.5	61.5	"	Downwind, vacant lot south of facility
14:17	Long Cheney	3	2	2		-4	Animal	Pa/measure				77.4	57.2	"	Downwind, parking lot along Vandross Ave
14:34	"	1			X	0	Grass/weeds					78.9	56.1	"	UPWIND, lot on edge of property
14:43	Concord	1			X	0	Grass					79.1	54.3	29.16	UPWIND, Truck repair parking lot
15:15	TC Hill	4-5	4	2		-5	Dead Animal					79.7	53.1	"	Downwind, Along Vandross Ave
15:23	TC Tanning	4-5	4	4		-6	Dead Animal	Rotten				79.6	52.9	"	Downwind, Along Vandross Ave
15:30	TC Hill	0			X		N/A					79.5	47.9	29.16	UPWIND, over storm area N of facility
15:40	TC Tanning	0			X		N/A					78.7	50.0	29.17	UPWIND, over storm area N of facility
15:45	SANIMAX	5	7	4		-6	Sour	Churn	(Bench)			80.0	43.4	"	Downwind, west side of facility
15:55	"	0			X		N/A					78.9	44.6	"	UPWIND, Vandross Ave and Abbey

Additional comments:

WS is Wind Order Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
or WS is Guzman YDI 3302 Scale: 0,1,2,3,4,5 OR A,B,C,D,E,F,G

1 is Relative Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, SSE, SE, S, SSW, SW, WSW, W, WNW, NW, NNW
Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)

2016 Odor Survey Report for Twin City Hide

South St. Paul Odor Monitoring

South St. Paul, MN

SEH No. 136019

October 20, 2016

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Appendix A Field Data Sheets

2016 Odor Survey Report for Twin City Hide City of South St. Paul Odor Monitoring

Prepared for the City of South St. Paul

1.0 Background

The City of South St. Paul (the "City") has retained Short Elliott Hendrickson Inc. ("SEH") to conduct odor monitoring to support the enforcement of the City's Odor Pollution Ordinance. Previous monitoring has been conducted by both Trinity Consultants and SEH. In July 2013, a report titled, "A Summary of Odor Monitoring, Modeling, and Complaints in South St. Paul" was completed by Trinity Consultants documenting odor monitoring on several facilities located in the City. Two additional monitoring events were completed by SEH in 2014, as well as a third in 2015 to supplement those initial findings and identify facilities that may not be meeting the Odor Pollution Ordinance.

As stated in the SEH 2014 Odor Monitoring Survey Report to the City, Twin City Hide caused odor observations that were consistent with significant odor values in the City Odor Ordinance. Although there were not enough significant odor observations to deem the facility a significant odor generator (SOG) in 2014, it was determined that it would be beneficial to continue monitoring the facility. Monitoring in 2015 showed a slight improvement in both average downwind odor strengths, as well as fewer downwind observations at or above 7 odor units. Despite the improvement, a number of downwind observations still recorded odors as high as 7 odor units. There were also issues separating odors for a neighboring facility due to wind directions blowing across both buildings. Again, there were not enough significant odor observations to deem Twin City Hide as a SOG and monitoring was continued for 2016.

During this most recent round of monitoring (June 2016), a minimum of eight observations were made from June 16 to June 30 to determine if the facility has reduced odors or if it continues to generate odors deemed significant. Monitoring locations varied with wind direction and are described in the table below. A map view of the locations is also provided in **Figure 1**.

Twin City Hide Monitoring Locations

Location	Location Description
(a)	Just northeast of the Twin City Hide and Twin City Tanning facilities in overgrown grassy area. Close to railroad tracks.
(b)	Along Hardman Avenue South. Location varied depending on wind direction.
(c)	South side of Malden Street. South of Twin City Hide facility. Exact location along the street varied depending on wind direction.

Location	Location Description
(d)	West of Twin City Hide along Clinton Ave. Exact location along street varied.
(e)	On top of berm directly to the north of the TCH/TCT facilities in overgrown area.
(f)	Near corner of Malden St. and Clinton Ave.
(g)	Northeast corner of the River Country Co-op's property.
(h)	Near southeast corner of the facility.

2.0 Methods

Consistent with previous monitoring outlined in the 2014 and 2015 reports, odor strengths were observed using a Nasal Ranger field olfactometer rented from St. Croix Sensory by the City. Field olfactometers are portable odor detecting and measuring devices. These devices measure ambient odor and give a quantitative value to the odor as a dilution-to-threshold ratio, commonly called a dilution ratio or odor unit (OU). The dilution-to-threshold (D/T) ratio is calculated by:

$$\frac{\text{Volume of Carbon Filtered Air}}{\text{Volume of Odorous Air}} = \text{Dilution Ratio}$$

The Nasal Ranger has 6 dilution settings: 60, 30, 15, 7, 4 and 2. The number given to each setting refers directly to the dilution ratio of air being inhaled through the device. For example, when using the number 15 dilution setting, 15 parts of carbon filtered (odor free) air are mixed with 1 part of odorous air. As the setting number decreases, a larger ratio of odorous air is being mixed with the filtered air. At the number 2 setting, the ratio is 2 parts filtered air mixed with 1 part odorous air. Therefore, stronger odors will be detected at high number settings and higher dilution, while weak odors require less dilution to be detected and thus lower number settings. If all settings are observed and no odor is detected, there is no observed odor value. According to St. Croix Sensory and Huey et. al. 1960, each D/T ratio odor level can be described by the following:

- 2 D/T – Noticeable
- 4 D/T – More Noticeable
- 7 D/T – Objectionable
- 15 D/T – Nuisance
- 30 D/T and above – Nauseating

A variety of parameters were recorded during the odor monitoring. Both the detection and recognition thresholds (in D/T or OU) using the Nasal Ranger were recorded at each monitoring location. The detection threshold is the D/T setting at which an odor is first detected, whereas the recognition threshold is the D/T setting at which the odor had an identified descriptor associated to the odor. Recognized odors were assigned a descriptor that provides a description of the odor that can be connected to the odor source. The descriptors are used to assess and confirm the source of the odors. Several descriptors were

identified during this monitoring including animal, dead/rotting animal, manure, hay, exhaust, and grass. During every monitoring event, both upwind and downwind odor observations were recorded to confirm the facility as the source of observed odors.

In addition, ambient temperature and wind readings (speed/direction) were taken both in the field with a portable weather meter and compared to recorded weather information from the South St. Paul Municipal Airport (Fleming Field). Precipitation occurred before or during some of the monitoring observations.

3.0 Previous Results

SEH conducted two initial rounds of monitoring during the summer of 2014, the first taking place from July 21 to July 24 and the second from August 12 to August 19. During these two rounds of monitoring, odor observations were taken at several sites in the South St. Paul area to determine possible sources of potentially "offensive" odors. Each monitoring round consisted of a minimum of 8 separate observations at each of the suspected facilities. Additional data was collected for the facility during the 2015 monitoring event that took place between May 19th and June 19th.

From these previous monitoring results, it was found that although Twin City Hide caused odor observations that were consistent with significant odor values in the City Odor Ordinance, there were not enough significant odor observations to deem the facility a significant odor generator. As stated in the background section above, monitoring in 2015 showed improvement in average odor values. Comparing the two, a decrease from 7.0 to 4.0 odor units at the detection threshold was observed, but despite the improvement, a number of downwind observations still recorded odors as high as 7 odor units and it was determined that Twin City Hide still has the ability to generate significant odor without the evidence to be considered an SOG as defined by the City Ordinance. A summary of these results can be found in the tables below.

Because of the potential for Twin City Hide to generate significant odors that could negatively impact residents downwind, it was not ruled out as a possible significant odor generator and subsequent odor surveys have continued.

2014 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
8/13/2014	13:27	Downwind	NE	2.8-4.1	N-NE	5.8	15 **	7	Grease, Burnt, Dead Animal
8/14/2014	10:53	Downwind	SE	1.5-3.2	S-SE	6.9	7	4	Dead Animal
8/14/2014	14:15	Downwind	SW	1.5-1.9	SE	5.8	7 **	4	Dead Animal
8/18/2014	10:12	Downwind	S	0-1.4	S-SE	--	7 **	4	Dead Animal
8/19/2014	10:20	Downwind	N-NE	1.7-2.8	N-NW	8.1	7 **	4	Dead Animal

** Due to wind direction, could not differentiate between Twin City Hide and Twin City Tanning

2015 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
5/26/2015	09:50	Downwind	NE**	0.0-1.2	N	3.5	7 **	2	Dead Animal, Rotten, Burnt
6/12/2015	10:05	Downwind	NE-E	2.5-5.8	NE	10.4	7	4	Dead Animal, Exhaust
6/12/2015	15:43	Downwind	E	3.7-6.0	E	8.0	7	4	Dead Animal

** Due to wind direction, could not differentiate between Twin City Hide and Twin City Tanning, odors present

4.0 2016 Results

As part of continued monitoring of potential significant odor generators, Twin City Hide was once again included in the 2016 odor survey. Results of this most recent round of monitoring produced slightly improved results compared to those recorded during 2014 and 2015. The results from 2016 are shown in the table below.

2016 Monitoring near Twin City Hide

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/16/2016	15:20	Downwind	E	6.2-8.0	NE	10.4	4	2	Dead Animal, Burnt
6/16/2016	15:38	Upwind	ESE	2.7-4.7	E	8.1	<2	--	Exhaust
6/21/2016	8:40	Downwind	W-SW	4.5-6.8	W	10.4	15	7	Dead Animal, Sour
6/21/2016	9:08	Upwind	W-SW	3.1-6.4	WNW	10.4	No Detect	--	N/A
6/21/2016	13:48	Downwind	NW-W	4.7-8.3	WNW	10.4	7	4	Dead Animal, Exhaust
6/21/2016	14:15	Upwind	W	3.5-4.4	WNW	9.2	<2	--	Asphalt
6/24/2016	9:48	Upwind	S	4.8-6.0	S	6.9	No Detect**	--	N/A
6/24/2016	9:54	Downwind	S	3.5-6.1	SE	5.8	7**	4	Dead Animal
6/28/2016	11:50	Downwind	SSE	3.2-4.7	Calm	Calm	4**	2	Dead Animal
6/28/2016	12:00	Downwind	NE	INT	SSE	5.8	4**	4	Dead Animal, Grass, Exhaust
6/28/2016	12:13	Upwind	N-E	2.4-3.8	Calm	Calm	<2**	--	Truck Exhaust

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/29/2016	14:20	Downwind	S	2.8-3.2	SE	5.8	2**	--	Grass/Flowers
6/29/2016	14:25	Downwind	S	2.4-3.1	SSE	3.5	4**	2	Dead Animal
6/29/2016	14:33	Upwind	SSE	0.9-1.9	SSE	3.5	No Detect**	--	N/A
6/30/2016	11:05	Downwind	E	2.5-4.0	NNE	8.1	4	2	Dead Animal
6/30/2016	15:15	Downwind	NNW	4.8-7.9	NW	12.7	4	2	Dead Animal
6/30/2016	15:30	Upwind	N	4.2-5.4	N	11.5	No Detect	--	N/A
Downwind Detection Average							5.5	3.2	

** Due to wind direction, could not differentiate between Twin City Hide and Twin City Tanning

Dead animal, sour, and exhaust odors were detected regularly downwind during the 2016 study. These potentially "offensive" odors are similar with previous descriptions recorded in 2014 and 2015 and are typical of those associated with a hide processing facility. The dead animal and sour odors likely reflect odors generated at the facility, while the exhaust odor is from truck traffic on road near monitoring locations. A burnt odor was identified downwind on June 16, but no source was confirmed. Due to wind direction and monitoring location, it has been from Twin City Hide, but also could have been due to Sanimax.

Comparing these results to data from 2014 and 2015, there is an increase in odor strengths of averaged downwind detections for 2016. Detections at or above 7 odor units have remained comparable with 2 observations recorded at 7 odor units and a third as high as 15 odor units in 2016. The average detection of all observations increased slightly from 4.0 odor units in 2015 to 5.5 odor units in 2016. During this round of monitoring, extra effort was put into distinguishing potential odors generated for Twin City Hide from those generated at the neighboring Twin City Tanning facility. Despite the attempt, wind directions for three observations this round (June 24, 28, and 29) made separating Twin City Hide and the neighboring Twin City Tanning facility difficult. No distinction was made between the two facilities and the observations were treated as detections for both. One of these detections, observed on June 24, was recorded at 7 odor units. Odors previously attributed to the tanning process at Twin City Tanning (hydrogen sulfide/rotten eggs) were not recorded during any observations of Twin City Hide in 2016, so it was more likely the odors were from TCH only.

Upwind monitoring recorded no odors consistent with those recorded downwind. Common odors such as cut grass, exhaust, and asphalt were detected at low dilution levels. These upwind detections can likely be attributed to monitoring locations in overgrown areas, parking lots, and along truck hauling routes. No upwind observations were considered to be offensive.

Weather conditions at the odor observation locations were fairly comparable to the concurrent weather data recorded at the South St. Paul airport. Generally, the wind speed is higher at the airport compared to the industrial portion of the City to the north where Twin City Hide is located.

5.0 Summary

After ten downwind observations during this round of monitoring, and comparing them with the data collected from previous monitoring rounds in 2014 and 2015, Twin City Hide once again did not have odors consistent with those of a SOG as defined by the City Ordinance.

Improvements in average odor values were not seen in 2016. Three detections were again observed at or above 7 odor units downwind from the facility and average detection values increased from 4.0 to 5.5 odor units between 2015 and 2016. With fluctuations in downwind detection averages since the initial monitoring in 2014 and continued odor observations at or above 7 odor units this round, it is likely that more monitoring would generate additional odor observations of 7 odor units or above. At this time, it can be determined that Twin City Hide still has the ability to generate significant odor, but without enough significant odor observations during the 2016 odor survey the facility was not consistent with a SOG as defined by the City Ordinance.

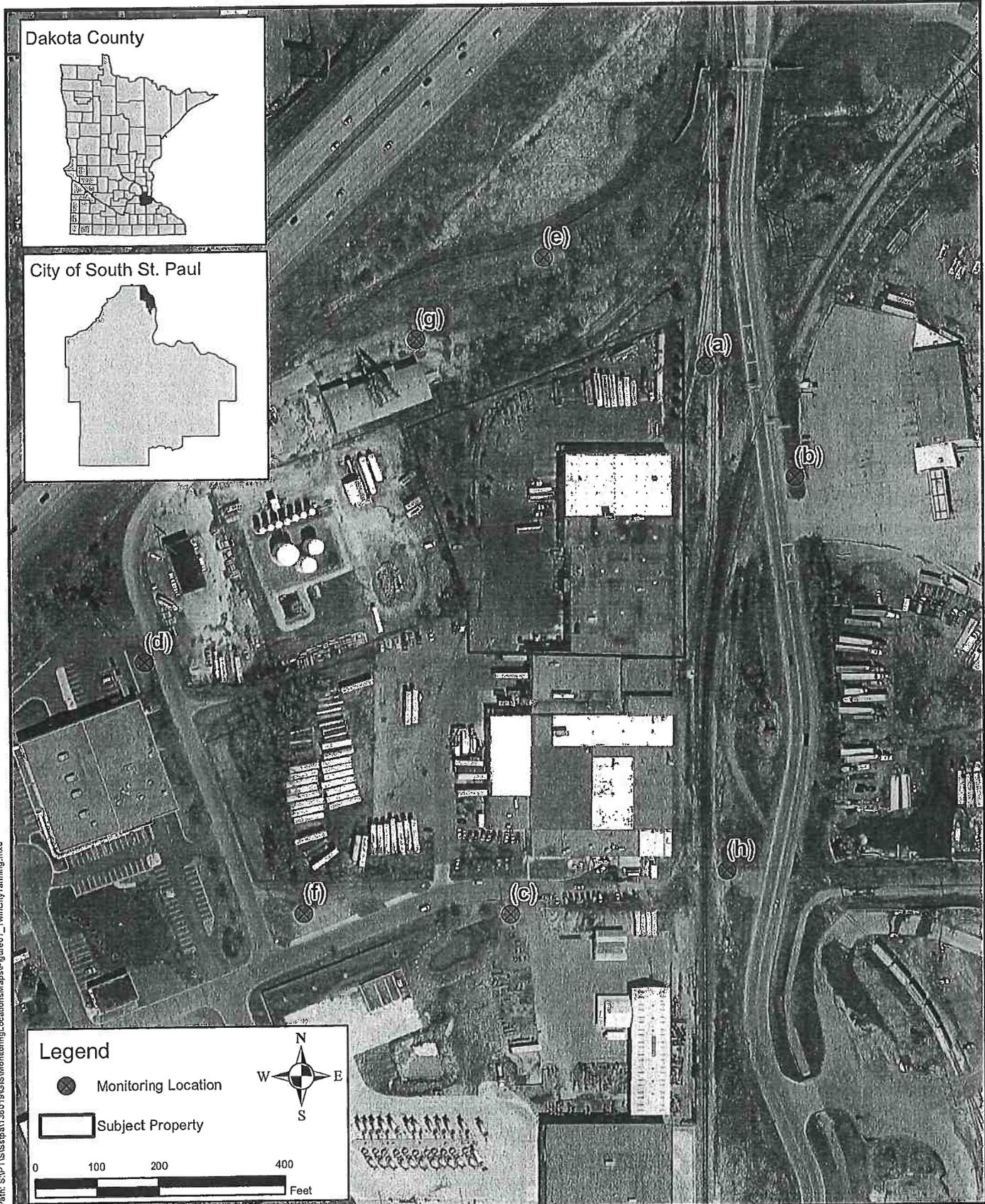
2016 Significant Odor Summary for Twin City Hide

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
6/21/2016	8:40	Downwind	W-SW	4.5-6.8	W	10.4	15	7	Dead Animal, Sour
6/21/2016	13:48	Downwind	NW-W	4.7-8.3	WNW	10.4	7	4	Dead Animal, Exhaust
6/24/2016	9:54	Downwind	S	3.5-6.1	SE	5.8	7**	4	Dead Animal

** Due to wind direction, could not differentiate between Twin City Hide and Twin City Tanning

List of Figures

Figure 1 – Monitoring Locations




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Project: SSTPA 136019
Print Date: 8/1/2016

Map by: akutz
Projection: NAD83 UTM 15N
Source: ESRI, SEH
MnGeoFSA2015Aerial

Monitoring Locations
2016 Twin City Hide Odor Survey Report
South St. Paul Odor Monitoring
South St. Paul, MN

Figure
1

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

Appendix A
Field Data Sheets



Short Elliott Hendrickson Inc.
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5 LOCATIONS

ODOR MONITORING DATA SHEET

Date: 6/16/2016 Inspector Code: _____ Name: Aaron Kotz Signature: *Aaron Kotz*

Time	Location	WSI	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Prec	Wind	Speed	Temp	RH	BP	Comments	
							1	2	3	4	5								
1 14:45	SANIMAX	1	2	2	WN			weeds/grass, garbage					Mon	ESE	6-7	75.8	56.3	29.17	Upwind, bike path
2 15:00	"	3-4	7	4		-7		Rotten, grease, sour					"	SE	2-3	80.9	53.5	29.18	Downwind, just north of entrance on treadmill
2 15:15	TC TANNING	3	4	2		-5		Dead Animal					"	ESE	5-7	80.1	51.7	29.17	Downwind, near <i>along</i> Clinton Ave.
7 15:20	TC HEIDE	3	4	2		-5		Dead Animal, joint					"	E	2-8	81.3	56.6	"	Downwind
3 15:38	TC HEIDE				X	-1		Exhaust					"	ESE	2-4	81.9	53.5	"	UPWIND, DANNE, INC
10 15:30	TC TANNING				X	0		N/A					"	E	3-4	82.0	56.9	"	Along Ardellman
13 15:55	Long Chem/Concord				X	0		N/A						SSE					UPwind, UFCW PARKING Lot
16 16:10	"	3	4	3		-4		Animal Hay/manure					"	ESE	4-5	77	58.7	29.17	Downwind, directly west across Concord Ave.

Additional comments:
 → mixing system active, some stack activity at SANIMAX
 → see note about concord and long chem Due to wind direction could not separate

WSI is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WSI is German VDI 3932 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G
 I is Burell Intensity Scale: 1,2,3,4,5
 Weather: Asstly Sunny, Partly Cloudy, Mostly Cloudy, Overcast, Hazy
 Precipitation: None, Fog, Rain, Sleet, Snow
 Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (15-25 mph)



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ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6/21/2016

Inspector Code:

Signature: Aaron Kutz

Name: AARON KUTZ

Time	Location	VSH	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Prec	Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5							
1 8:40	TC Hide	4	15	7		-7	Dead Animal, Scur					Sunny	None	WSW 4.5-6.8	72.9	50.6	29.78	Downwind, DANNER, Inc. lot
2 8:50	TC TANNING	3-4	7	4		-6	chemical (rotten eggs), burnt					"	"	WSW 3.0-4.0	72.5	48.1	"	Upwind, MDC front's back lot
3 9:00	"	0			X		N/A					"	"	WSW 3.5-4.5	74.0	47.1	29.75	Upwind, MDC front's back lot
4 9:08	TC Hide	0			X		N/A					"	"	WSW 3.1-6.9	73.3	45.9	"	Upwind, poll in hardwood pile path
5 9:20	SANIMAX	1-2				-8	Garbage					"	"	W 8.6-5.3	75.3	43.0	29.76	Downwind, Behind pallet Company
6 9:40	"	5	30	15		-10	Sour, Rotten, grease					Sunny	None	W 4.2-6.8	76.7	43.2	29.79	Downwind, post-office lot
7 10:00	Long Clean/covered	2	2	-		-1	worst, burnt, manure/animal					"	"	W 4.0-7.5	77.5	42.2	29.75	Upwind, post-office lot
8 10:15	"	0			X		N/A					"	"	WNW 5.5-7.7	77.9	37.4	29.73	Downwind, UNFC back lot
9 10:45	"	0			X		N/A					"	"	WNW 5.6-7.8	81.0	35.2	29.72	Downwind, bike path
10 12:55	"	2-3	4	2		-4	Animal/manure, wood					"	"	NW 3.5-4.7	84.1	30.8	29.28	Upwind, corner of hardwood's Arment
11 15:10	SANIMAX	4-5	15	7		-7	Grease, rotten, sour, chemical					"	"	NW 5.8-10.5	85.3	31.5	29.20	Downwind
12 13:35	"	1-2			X	-2	Exhaust					Sunny	None	NW 8.1-11.9	85.9	29.6	"	Downwind
13 13:48	TC Hide	4-5	7	4		-6	Dead Animal, exhaust					"	"	NW 4.7-8.3	87.7	29.3	20.19	Downwind
14 14:00	TC TANNING	4	7	4		-7	Chemical (rotten egg)					"	"	WNW 6.1-10.5	83.3	30.8	"	Downwind
15 14:10	"	9			X		N/A					"	"	WNW 3.8-4.3	83.5	30.6	29.13	Upwind
16 14:15	TC Hide	1-2			X	-1	Asphalt					"	"	W 3.5-4.4	86.4	31.5	"	Upwind

Additional comments:

→ Misty system active and stack activity at Sanimax for both observations → Long chery covered combine because could not separate due to wind
→ Dosing A.M., Garbage truck drove by during upwind reading

KEY: WS is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
or WS is Gorman VDI 3382 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1 is Baromet Intensity Scale: 1,2,3,4,5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
Wind Speed: Calm (<1); Light Breeze (4-5 mph); Moderate Wind (6-15 mph); Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6/24/2016 Inspector Code: _____ Signature: _____ Name: AARON KUTZ

Time	Location	WSI	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5								
1 9:34	SANJIMAY	3-4	15	7		-6	Grease / kofter					Sun	None	45-34	55	64.6	29.3	Downwind,	
2 9:40		1	2	-		0	grass					Sun	None	52-37	77.1	60.5	29.8	upwind	
3 9:58	TC Hide/Amma				X							Sun	None	49-60	76.2	58.6	29.20	upwind	
4 9:54		3-4	7	4		-5	Dead animal					Sun	None	35-61	77.2	52.1	29.89	downwind	
5 10:07	Concord		4		X							Sun	None	32-65	75.9	59.4	29.29	upwind	
6 10:14	Longdiner	2-3	4	2		-4	Grease / rotten (Sweet/chemical)					Sun	None	42-89	74.5	60.2	29.3	upwind	
7 10:10	Longdiner	2-3	4	2		-3	animal					Sun	None	39-11	82.7	47.2	29.28	downwind	
8 10:23	Concord	2	4	2		-3	animal / burnt hair					Sun	None	46-93	80.6	51.8	29.29	downwind	
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

Waterways
 processing lot

Additional comments:

Key: WSI is Worst Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WSI is German VDI 3222 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1 is Enhanced Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SW, W, WNW, NW, NNW, NWY
 Wind Speed: Calm (C), Light Breeze (L), Moderate (M), Strong (S), Very Strong (VS)



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ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6/28/2016

Inspector Code: _____

Signature: _____

Name: AARON KUTT

Time	Location	WSR	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wind	Speed	Temp	RH	BP	Comments	
							1	2	3	4	5							
10:50	SANIMAX	3-4	7	7		-5		Grease	Other	SOOP			SE	2-4	73.7	44.7	29.50	Downwind, Armour & Hardman
11:02	"	1			X			Grease					SE	4-5	76.3	43.0	29.48	UPWIND, Vanderosa Ave.
11:50	TC Hides/Tanning	3	4	2		-4		Dead Animal					SSE	3-4	73.4	45.6	29.49	park lot of Natural gas co of
12:00	TC Hide/Tanning	3	4	4		-4		Dead Animal	CVE	Grass			NE	INT	75.2	43.7	29.47	Downwind, corner of Malden and Clinton
12:13	TC Hides/Tanning	1-2			X	-1		Exhaust					NE	2-3		42.3	29.48	Upwind, Danner 107
12:28	Concord Meats	3	4	4		-4		Animal	Brent				NNW	3-4	71.8	47.7		Downwind, Vacant lot S of facility
12:36	Long Cheng	4-5	15	7		-6		Mammoth	Animal				N	1-3	78.2	38.8		Downwind, on fence line behind holding pen
12:45	"	0			X			N/A					N	3-4	72.8	46.2		pen gravel lot at end of facility
12:55	Concord Meats	0			X			N/A					NNE	3-5	76.6	41.1		Upwind, parking lot of QSC

Additional comments:
 → Misty system active & stack/vent activity during observations (see pics)
 → Wind shifting during TC Hide/Tanning observation

WSR is Wind Odr. Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3382 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1 to Bulbar Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ESE, E, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (6-45 mph); Strong Wind (>45 mph)



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ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6-29-16 Inspector Code: _____ Signature: AARON KUTZ Name: AARON KUTZ

Time	Location	WSR	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments		
							1	2	3	4	5										
1:53	Sarimuck	1			X							PC	None	S	32-4	76.5	40.5	29.3	upwind		
2:07	Sarimax	4	7	4								PC	None	SSW	21-3	76.5	41.2	29.3	downwind		
2:20	TC Hide/Harvey	1-2	2									PC	None	S	28-32	77.9	40.4	29.3	downwind		
2:25	TC Hide/Harvey	3	4	2								PC	None	S	27-31	79.8	40.7	29.3	downwind		
2:33	TC Hide/Harvey				X							PC	None	SSE	21.9	82.1	34.9	29.3	upwind		
2:44	Concord mills				X							PC	None	SSE	14-37	83.3	34.4	29.3	upwind		
2:46	Kongchen	1-2										PC	None	ESE	21-3	84.2	34.8	29.3	upwind		
2:55	longeater	2-3	4	2								PC	None	ESE	41-66	77.8	38.3	29.3	downwind		
2:59	Concordmills	2-3	4	2								PC	None	SE	16-42	80.1	36.1	29.3	downwind		
10																					
11																					
12																					
13																					
14																					
15																					
16																					
17																					
18																					
19																					
20																					
Additional comments:																					

Key: WSR is Worst Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WSR is Gorman MDI 3882 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1/2 Beaufort Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1-3 mph); Moderate Wind (3-5 mph); Strong Wind (5-15 mph)



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ODOR MONITORING DATA SHEET

Date: 6/30/16 Inspector Code: _____ Signature: _____
 Name: AARON KUTZ

Time	Location	WSI/ D.H. (60-2)	R.H. (60-2)	ND	H.T.	1	2	3	4	5	Wes	Prec	Wind	Speed	Temp	RH	BP	Comments
9:49	Concord	1-2	-	X	+4	Sweet	Baked				MC	None	SW	12-30	73.6	70.9	29.19	UPWIND, vacant lot S of facility
9:51	Long Cheney	1-2	2		+4	Sweet	Baked	SWAN			"	"	"	39-43	75.3	67.8	"	UPWIND, 2020 parking lot
10:00	Concord	2-3	2		-4	Animal	Burnt				"	"	"	38-42	78.2	62.5	"	Downwind, Long cheng lot
10:13	Long Cheney	3	4		-5	Animal	Mandor				"	"	"	27-35	77.9	65.4	29.19	Downwind,
10:37	SANIMAX	4	7		-6	Roten	Grease				"	"	"	17-27	78.2	58.4	29.17	Downwind, like path
10:54	"	1-2		X	0	Gross					"	"	"	35-48	80.4	61.3	29.17	Upwind, Along Vandross Ave
11:05	TC Hike	2	4		-5	Dead Animal					Over Rain	"	"	25-40	80.3	65.0	"	Downwind, Along Clinton Ave
11:05	→ No	Upwind	out	time		of other	vacation	due to										Upwind,
13:49	TC Hike	4	7		-6	Dead Animal	Roten				Sunny	None	SW	39-107	75.3	61.7	34.10	Downwind, Along maiden St.
14:04	"	0		X		N/A					"	"	"	50-23	78.2	55.6	39.17	Upwind, Along Clinton Ave
14:15	Concord	3	2		-4	Animal	Hay/wine				"	"	"	5-7.2	76.5	61.5	"	Downwind, vacant lot south of facility
14:27	Long Cheney	3	2		-4	Animal	Pat/messure				"	"	"	3-6.1	77.4	57.2	"	Downwind, parking lot along performance line
14:34	"	1	1	X	0	Gross/weds					"	"	"	19-7	79.9	56.1	"	Upwind, lot on edge of property
14:42	Concord	1		X	0	Gross					"	"	"	4.6-11.5	79.1	51.3	29.16	Upwind, Track repair parking lot
15:15	TC Hike	4-5	4		-5	Dead Animal					"	"	"	48-79	79.4	53.1	"	Downwind, Along iturhman
15:23	TC Hike	4-7	4		-6	Dead Animal	Roten				"	"	"	63-69	79.6	52.9	"	Downwind, Along Hordman
15:30	TC Hike	0		X		N/A					"	"	"	42-5	79.5	47.9	29.16	Upwind, other grown area N of facilities
15:40	TC Hike	0		X		N/A					"	"	"	4-11.5	78.7	50.0	29.17	Upwind, other grown area N of facilities
15:45	SANIMAX	5	7		-6	Sour	Roten	Chem			"	"	"	6.1-8.5	80.0	43.4	"	Downwind, vandross of facility
15:55	"	0		X		N/A					"	"	"	28-24	78.4	41.6	"	Upwind, Hordman and Ahear

Additional comments: _____
 Key: V/S is Worst Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3892 Scale: 0.1-2.4-4.5 OR A,B,C,D,E,F,G
 1 is Buzoni Intensity Scale: 1, 2, 3, 4, 5
 Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Fog
 Precipitation: None; Fog; Rain; Sleet; Snow
 Wind Direction (blowing from): N, NNE, NE, E, ESE, SE, SSE, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (C); Light Breeze (L-B); Moderate Wind (M-W); Strong Wind (S-W)

road 1
 road 2

2016 Odor Survey Report for Long Cheng Livestock & Meat Processing

South St. Paul Odor Monitoring
South St. Paul, MN

SEH No. 136019

October 20, 2016

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Appendix A Field Data Sheets

2016 Odor Survey Report for Long Cheng Livestock & Meat Processing

City of South St. Paul Odor Monitoring

Prepared for the City of South St. Paul

1.0 Background

The City of South St. Paul (the "City") has retained Short Elliott Hendrickson Inc. ("SEH") to conduct odor monitoring to support the enforcement of the City's Odor Pollution Ordinance. Previous monitoring has been conducted by both Trinity Consultants and SEH. In July 2013, a report titled, "A Summary of Odor Monitoring, Modeling and Complaints in South St. Paul" was completed by Trinity Consultants documenting odor monitoring on several facilities located in the City. Two additional monitoring events were completed by SEH in 2014, as well as a third in 2015 to supplement those initial findings and identify facilities that may not be meeting the Odor Pollution Ordinance.

As stated in the SEH 2014 Odor Monitoring Survey Report to the City, Long Cheng Livestock & Meat Processing (Long Cheng) caused odor observations that were consistent with significant odor values in the City Odor Ordinance. Although there were not enough significant odor observations to deem the facility a significant odor generator (SOG) in 2014, it was determined that it would be beneficial to continue monitoring the facility. Monitoring in 2015 showed a slight reduction in both average downwind odor strengths, as well as a fewer downwind observations at or above 7 odor units. Despite the improvement, a number of downwind observations still recorded odors as high as 7 odor units.

During the most recent round of monitoring (June 2016), eight observations were made from June 16 to June 30 to try and determine if the facility has reduced odors or if it continues to generate odors deemed significant. Monitoring locations varied with wind direction and are described in the table below. A map view of the locations is also provided in **Figure 1**.

Long Cheng Monitoring Locations

Location	Location Description
(a)	UFCW parking lot off of Hardman Ave.
(b)	Directly west of facilities, across Concord Ave. in the Post Office parking lot
(c)	Off of Hardman behind the pallet company
(d)	Near corner of Grand Ave E and Hardman Ave.
(e)	Gravel parking area on northern edge of the Long Cheng property
(f)	On fence line south of the facility. Directly downwind of the animal holding pens
(g)	Across Concord Ave. to the West of the facility, parking lot of the Big Discount Liquor store

2.0 Methods

Consistent with previous monitoring outlined in the 2014 and 2015 reports, odor strengths were observed using a Nasal Ranger field olfactometer rented from St. Croix Sensory by the City. Field olfactometers are portable odor detecting and measuring devices. These devices measure ambient odor and give a quantitative value to the odor as a dilution-to-threshold ratio, commonly called a dilution ratio or odor unit (OU). The dilution-to-threshold (D/T) ratio is calculated by:

$$\frac{\text{Volume of Carbon Filtered Air}}{\text{Volume of Odorous Air}} = \text{Dilution Ratio}$$

The Nasal Ranger has 6 dilution settings: 60, 30, 15, 7, 4 and 2. The number given to each setting refers directly to the dilution ratio of air being inhaled through the device. For example, when using the number 15 dilution setting, 15 parts of carbon filtered (odor free) air are mixed with 1 part of odorous air. As the setting number decreases, a larger ratio of odorous air is being mixed with the filtered air. At the number 2 setting, the ratio is 2 parts filtered air mixed with 1 part odorous air. Therefore, stronger odors will be detected at high number settings and higher dilution, while weak odors require less dilution to be detected and thus lower number settings. If all settings are observed and no odor is detected, there is no observed odor value. According to St. Croix Sensory and Huey et. al. 1960, each D/T ratio odor level can be described by the following:

- 2 D/T – Noticeable
- 4 D/T – More Noticeable
- 7 D/T – Objectionable
- 15 D/T – Nuisance
- 30 D/T and above – Nauseating

A variety of parameters were recorded during the odor monitoring. Both the detection and recognition thresholds (in D/T or OU) using the Nasal Ranger were recorded at each monitoring location. The detection threshold is the D/T setting at which an odor is first detected, whereas the recognition threshold is the D/T setting at which the odor had an identified descriptor associated to the odor. Recognized odors were assigned a descriptor that provides a description of the odor that can be connected to the odor source. The descriptors are used to assess and confirm the source of the odors. Several descriptors were identified during this monitoring including animal, manure, hay, exhaust, and grass. During every monitoring event, both upwind and downwind odor observations were recorded to confirm the facility as the source of observed odors.

In addition, ambient temperature and wind readings (speed/direction) were taken both in the field with a portable weather meter and compared to recorded weather information from the South St. Paul Municipal Airport (Fleming Field). Precipitation occurred before or during some of the monitoring observations.

3.0 Previous Results

SEH conducted two initial rounds of monitoring during the summer of 2014, the first taking place from July 21 to July 24 and the second from August 12 to August 19. During these two rounds of monitoring, odor observations were taken at several sites in the South St. Paul area to determine possible sources of potentially "offensive" odors. Each monitoring round consisted of a minimum of 8 separate observations at each of the suspected facilities. Additional data was collected for the facility during the 2015 monitoring event that took place between May 19 and June 12.

From these previous monitoring results, it was found that although Long Cheng caused odor observations that were consistent with significant odor values in the City Odor Ordinance, there were not enough significant odor observations to deem the facility a significant odor generator. As stated in the background section above, monitoring in 2015 showed improvement in average odor values. Comparing the two, a decrease from 9.1 to 5.0 odor units at the detection threshold was observed, but despite the improvement, a number of downwind observations still recorded odors as high as 7 odor units and it was determined that Long Cheng still has the ability to generate significant odor. A summary of these results can be found in the tables below.

Because of the potential for Long Cheng to generate significant odors that could negatively impact residents downwind, it was deemed a possible significant odor generator and odor monitoring continued.

2014 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor units	Recognition Threshold, Odor Units	Descriptors
7/21/2014	10:40	Downwind	S-SE	5-6	SE	5.8	7	4	Ammonia, Manure
7/21/2014	13:30	Downwind	E-SE	6-9	S-SE	9.2	7	4	Manure, Ammonia, Woody
7/22/2014	12:10	Upwind	NW	5.3-9.2	N-NW	12.7	15**	7	Rotten, Sour, Dead Animal
7/23/2014	12:07	Downwind	N-NW	1.4-2.6	N	6.9	7	4	Manure, Animal
8/14/2014	09:45	Downwind	SE	6.2-8.1	E-SE	5.8	7*	4	Manure, Animal, Dead Animal, Rotten
8/18/2014	08:49	Downwind	S	0-1.2	Calm	Calm	15	7	Dead Animal, Manure
8/18/2014	12:13	Downwind	W-SW	1.5-4.1	W	5.8	15	7	Dead Animal, Manure
8/19/2014	09:12	Downwind	NE	2.2-4.7	N-NW	9.2	15	7	Dead Animal, Manure

* Due to wind direction, could not differentiate between Long Cheng and Concord Meats as source of odor

** Sanimax truck with trailer parked directly upwind from where odor sampling was taken (Approximately 75 ft away). The truck may have been the source or contributor of the odor.

2015 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
5/20/2015	09:34	Downwind	E-SE	1.5-1.9	W	4.6	7	2	Animal, Manure
5/21/2015	14:03	Downwind	N-NW	1.3-3.9	W-NW	12.7	7	4	Animal, Hay, Manure
5/26/2015	10:55	Downwind	N-NE	1.4-2.6	N-NW*	5.8	7	4	Woody, Animal, Manure

4.0 2016 Results

As part of continued monitoring of potential significant odor generators, Long Cheng was once again included in the 2016 odor survey. Results of this most recent round of monitoring produced slightly improved results compared to those recorded during 2014 and 2015 monitoring events. The results from 2016 monitoring are shown in the table below.

2016 Monitoring near Long Cheng Livestock & Meat Processing

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/16/2016	15:55	Upwind	SSE	8.6-10.5	E	5.8	No Detect**	--	N/A
6/16/2016	16:10	Downwind	ESE	4.5-7.7	E	6.9	4**	2**	Animal, Hay/Manure
6/21/2016	10:00	Downwind	W	4.0-7.5	WSW	10.4	2**	--	Wood, Burnt Hair, Manure/Animal
6/21/2016	10:15	Upwind	N-NW	5.5-7.2	WSW	11.5	No Detect**	--	N/A
6/21/2016	12:45	Upwind	W-NW	5.6-7.8	W	15	No Detect**	--	N/A
6/21/2016	12:55	Downwind	NW	3.5-4.7	W	10.4	4**	2**	Animal/Manure, Wood
6/24/2016	10:14	Upwind	S	4.2-8.9	S	5.8	4	2	Grease, Rotten, Sweet (Chemical)
6/24/2016	10:20	Downwind	S	0.9-1.1	SSE	9.2	4	2	Animal/Manure
6/28/2016	12:35	Downwind	N	1.3-2.1	Calm	Calm	15	7	Manure, Animal
6/28/2016	12:45	Upwind	N	3.3-4.6	NNE	3.5	No Detect	--	N/A
6/29/2016	14:46	Upwind	ESE	2.1-3	SSE	3.5	<2	--	Wood
6/29/2016	14:55	Downwind	ESE	4.1-6.6	SSE	3.5	4	2	Animal, Manure, Burnt

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/30/2016	9:51	Upwind	SSW	3.9-4.3	S	4.6	2	--	Sweet, Baked, Earthy
6/30/2016	10:13	Downwind	SSW	2.7-3.5	SSW	3.5	4	2	Animal Manure
6/30/2016	14:21	Downwind	N	2.3-6.1	NNW	11.5	2	2	Animal, Hay/Manure
6/30/2016	14:39	Upwind	NNE	4.9-7.6	NNW	11.5	--	--	Grass/weeds
Downwind Detection Average							4.5	2.6	

** Due to wind direction, could not differentiate between Long Cheng and Concord Meats as source of odor

Animal, hay, manure, and burnt hair/burnt odors were detected regularly downwind during the 2016 study. These potentially "offensive" odors are consistent with descriptions previously recorded in 2014 and 2015 and are typical of those associated with a meat processing facility. The animal, hay, and manure odors likely reflect odors from the holding pens outside of the facility where the animals are kept, while the burnt hair/burnt odor is from processes inside the building. A wood odor was also detected during both upwind and downwind observations. Due to wind directions and monitoring locations during these detections, the odor was associated with the pallet company next door.

Comparing these results to data from 2014 and 2015, there is a slight improvement in odor strengths of averaged downwind detections for 2016. Detections at or above 7 odor units has continued to decrease with only one observation recorded above 7 odor units in 2016. The average detection of all observations decreased slightly from 5.0 odor units in 2015 to 4.5 odor units in 2016. During three observations this round (June 16 and 21), wind directions made separating Long Cheng and the neighboring Concord Fresh Meats facility difficult. No distinction was made between the two facilities and the observations were treated as detections for both.

Upwind monitoring recorded no odors consistent with those recorded downwind. Common odors such as cut grass, wood and weeds were detected at low dilution levels. Odors described as sweet, baked, and earthy were observed intermittently upwind on June 30 and was recorded at the detection threshold at a value of 2 odor units. Factoring in wind direction and location, the sweet, baked odor was thought to be coming from the Burger King, while the earthy soil odor was likely from a large soil stockpile in a vacant lot just to the east. Both potential sources were directly upwind of the monitoring location.

Only one upwind observation recorded odor that may be considered offensive. Monitoring data from June 24 recorded odor described as grease, rotten, and sweet/chemical during an upwind observation near the corner of Grand Avenue E. and Hardman Avenue. The grease, rotten odor was consistent with that of odors recorded downwind of the Sanimax facility regularly during monitoring events. Given that the wind was blowing out of the south that day and the observation location being to almost directly north, Sanimax was likely the source. The sweet, chemical odor was thought to be coming from the Waterous Company across the street and upwind of the observation location.

Weather conditions at the odor observation locations were fairly comparable to the concurrent weather data recorded at the South St. Paul airport. Generally, the wind speed is higher at the airport compared to the industrial portion of the City to the north where Long Cheng is located.

5.0 Summary

After eight downwind observations during this round of monitoring, and comparing them with the data collected from previous monitoring rounds in 2014 and 2015, Long Cheng did not have odors consistent with those of a SOG as defined by the City Ordinance.

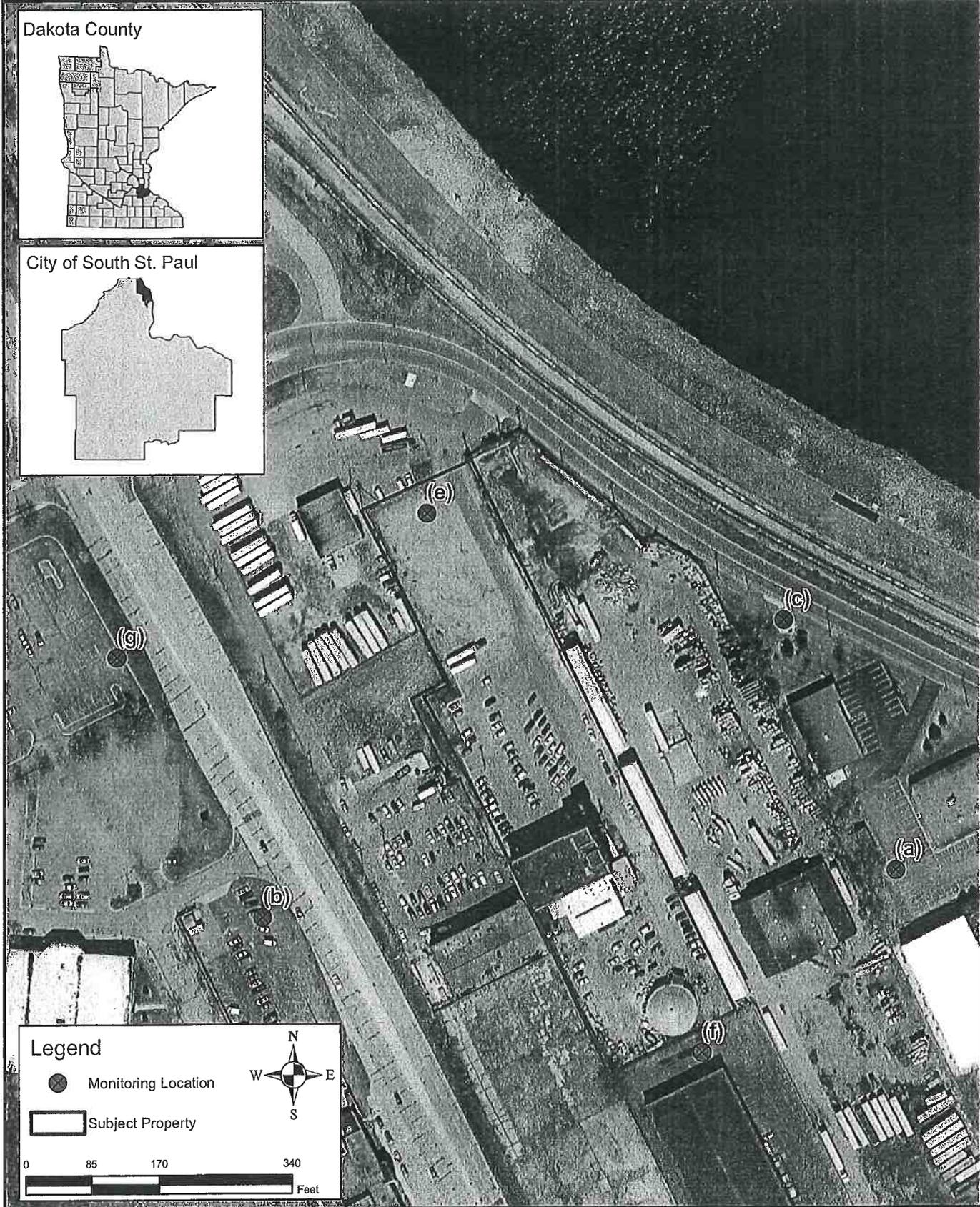
Improvements in average odor values were realized in 2016 with only one detected observation above 7 odor units downwind from the facility and an average detection of 4.5 odor units. With downwind detection averages decreasing since the initial monitoring in 2014 and only one odor observation at or above 7 odor units in 2016, it is unlikely that more monitoring would generate regular odor observations of 7 odor units or above. An increase in activity at the facility or intermittent odor events may cause elevated detections, but at this time Long Cheng Livestock and Meat Processing does not generate odors consistent with that of a Significant Odor Generator defined by the City.

2016 Significant Odor Summary for Long Cheng Livestock & Meat Processing

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
6/28/2016	12:35	Downwind	N	1.3-2.1	Calm	Calm	15	7	Manure, Animal

List of Figures

Figure 1 – Monitoring Locations



Legend

- Monitoring Location
- Subject Property

Path: S:\PT\GIS\spat136019\GIS\MonitoringLocations\Mapst\Figure01_LongCheng.mxd

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ST. PAUL, MN 55110
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Project: SSTPA 136019
Print Date: 7/15/2016

Map by: akutz
Projection: NAD83 UTM 15N
Source: ESRI, SEH
MnGeoFSA2015Aerial

Monitoring Locations
2016 Long Cheng Odor Survey Report
South St. Paul Odor Monitoring
South St. Paul, MN

Figure
1

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or prediction in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

Appendix A

Field Data Sheets



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sehinc.com

5 LOCATIONS

ODOR MONITORING DATA SHEET

Date: 6/16/2016 Inspector Code: _____ Signature: Aaron Kutz Name: AARON KUTZ

Time	Location	WSI	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5								
1 14:45	SANIMAX	1	2	2				wet grass, garbage											Upwind, bike path
2 15:00	"	3-4	7	4		-7		Rotten, grease, sour											Downwind, just north of entrance on treacher
3																			
4																			
5 15:15	TC TANNING	3	4	2		-5		Dead Animal											Downwind, near entrance
6 15:20	TC HIDE	3	4	2		-5		Dead Animal, point											Downwind ← Along Clinton Ave.
7																			
8 15:30	TC HIDE					-1		Exhaust											UPWARD, DANNE, INC
9 15:30	TC TANNING					0		N/A											Along Ardmore
10																			
11																			
12																			
13 15:55	Long Chag/Concord					0		N/A											Upwind, UJFCW PARKING Lot
14																			
15 16:10	"	3	4	2		-4		Animal Hay/Manure											Downwind, directly west across Concord Ave.
16																			
17																			
18																			
19																			
20																			

Additional comments:
 → Missing System Active, some stack activity at SANIMAX
 → See note about Concord and Long Chag Due to wind direction could not separate

Key: WS is Wind Color Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3382 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G
 1 is Burel Intensity Scale: 1, 2, 3, 4, 5
 Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy
 Precipitation: None; Fog; Rain; Sleet; Snow
 Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)



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sehinc.com

ODOR MONITORING DATA SHEET

Date: 6/21/2016

Inspector Code: _____
Signature: Aaron Kutz
Name: Aaron Kutz

Time	Location	WSEI	D.H. (60-2)	R.H. (60-2)	<2	ND	H.T.	Descriptors					Prec	Wind	Speed	Temp	RH	BP	Comments	
								1	2	3	4	5								
8:40	TC Hide	4	15	7			-7	Dead Animal, Scur					Sunny	None	WSW	4.5-6.8	72.7	50.6	29.76	Downwind, DANNER, Inc. lot
8:50	TC TANNING	3-4	7	4			-6	chemical (rotten eggs), burnt					"	"	WSW	3.0-4.6	72.5	51.8.1	"	Upwind, ANDC front of back lot
9:00	"	0				X		N/A					"	"	WSW	5.5-8.5	74.0	47.1	29.75	Upwind, pull in off Headman pile path
9:08	TC Hide	0				X		N/A					"	"	WSW	3.1-6.1	73.3	45.9	"	Downwind, Behind pallet company
9:20	SANIMAX	1-2			X		-2	Garbage					"	"	W	5.8-6.3	76.3	43.0	29.76	Upwind, post office lot
9:40	"	5	30	15			-10	Sour, Rotten, grease					Sunny	None	W	4.2-6.7	76.7	43.2	29.74	Upwind, post office lot
10:00	Long Clean/Conc'd	2	2	-			-1	wood, burnt, animal					"	"	W	4.0-7.5	77.5	42.2	29.73	Downwind, UNFC back lot
10:15	"	0				X		N/A					"	"	NNW	5.5-7.7	79.9	37.9	29.23	Downwind, corner of Headman & Amore
11:45	"	0				X		N/A					"	"	NNW	5.6-7.8	81.0	35.2	29.21	Downwind, bike path
12:55	"	2-3	4	2			-4	Animal/manure, wood					"	"	NW	3.5-4.7	84.1	30.9	29.22	Upwind, SAME AS AM
13:10	SANIMAX	4-5	15	7			-7	Grease, rotten, sour, chemical					"	"	NW	5.8-10.5	85.3	31.5	29.20	Downwind, bike path
13:35	"	1-2			X		-2	Exhaust					Sunny	None	NW	2.1-11.7	85.9	29.6	"	Upwind, corner of Headman & Amore
13:48	TC Hide	4-5	7	4			-6	Dead Animal, exhaust					"	"	NNW	4.7-8.3	87.7	29.3	29.19	Downwind
14:00	TC TANNING	4	7	4			-7	Chemical (rotten egg), Dead Animal					"	"	NNW	6.1-10.5	83.3	30.8	"	Downwind
14:10	"	9				X		N/A					"	"	NNW	3.8-4.3	83.5	30.6	29.18	Upwind
14:15	TC Hide	1-2				X		Asphalt					"	"	W	3.5-4.4	82.4	31.5	"	

Additional comments:
 → misting system active and stack activity at Sanimax for both observations
 → During A.M., garbage truck drove by during special reading
 could not separate due to wind

Key: WS is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3922 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1 is Odor Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Fairly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, W, WNW, NW, NNW
 Wind Speed: Calm (C); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)



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 sehinc.com

ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6/24/2016

Inspector Code: _____

Signature: _____

Name: AARON KUTZ

Time	Location	WSR	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments	
							1	2	3	4	5									
19:34	SANJIMAX	3-4	15	7		-6	Grease / Rotten					Sun	Above	45-30	SSW	58	64.6	29.3	Downward,	
19:40		1	2	-		0	grass					Sun	None	SSW	52-37	77.1	60.5	29.28	upwind	
19:48	TC Hole/Manure				X							Sun	None	S	49-60	76.2	58.6	29.70	upwind	
19:54		3-4	7	4		-5	Dead animal					Sun	None	S	35-61	77.2	52.1	29.29	downwind	
10:07	Concord		14		X							Sun	None	S	22-65	75.9	59.4	29.27	upwind	
10:14	longshero	2-3	4	2		-4	Grease / Rotten (Sweet chemical)					Sun	None	S	42-89	74.5	60.2	29.3	upwind	
10:10	longshero	2-3	4	2		-3	animal					Sun	None	S	9-11	82.7	47.2	29.28	downward	
10:13	Concord	2	4	2		-3	animal / burnt hair					Sun	None	S	46-83	80.6	51.8	29.29	downward	
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				

watercoos packing lot

Additional comments:

WSR is Wind Older Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WSR is German VDI 2262 Scale: 01,2,3,4,5,6,7 OR A,B,C,D,E,F,G

If is Bureau Intensity Scale 1, 2, 3, 4, 5

Weather: Mostly Sunny / Partly Cloudy / Mostly Cloudy / Overcast / Hazy

Precipitation: None / Fog / Rain / Sleet / Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (C); Light Breeze (L); Moderate Wind (M); Strong Wind (S); Very Strong (VS)



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ODOR MONITORING DATA SHEET

Date: 6/28/2016 Inspector Code: _____ Page 1 of 1
 Signature: [Signature] Name: AARON KUIZ

Time	Location	WSF	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Prec	Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5							
10:50	SANITMAX	3-4	7	7		-5	Grease	Other	Sour			None	SE	2-4	73.7	44.7	39.50	Downwind, Armour & Hardman
11:02	"	1			X		Grease					None	SE	4-5	76.5	43.0	41.48	UPWIND, Vanderson Ave. park lot of Natural gas Co of
11:50	IC Trailer	2-3	4	2		-4	Dead Animal					"	SSE	3-2-4	73.4	45.6	39.49	Downwind, corner of Madelon and Clinton
	TANNING											"	"					Downwind, corner of Madelon and Clinton
12:00	IC Trailer	3	4	4		-4	Dead Animal	COP	Grass			None	NE	INT	75.2	43.7	39.47	Downwind, corner of Madelon and Clinton
	TANNING						Truck Exhaust					"	NSE	3-4				Downwind, corner of Madelon and Clinton
12:10	IC Trailer/Tanning	1-2			X	-1	Exhaust					"	N-E	2-3		42.3	39.58	Upwind, Dammer 107
12:28	Concord Meats	3	4	4		-4	Animal	WIND				"	NNW	3-4	71.8	47.7		Downwind, Vacant lot S of facility
12:36	Long Cheng	4-5	15	7		-6	Mammal	Animal				None	N	1-3	78.5	38.8		Downwind, on fence line behind holding pen
12:45	"	0			X		N/A					"	N	3-4	72.8	46.2		pen gravel lot at end of facility
12:55	Concord Meats	0			X		N/A					"	NNE	3-7	76.6	41.1		Upwind, parking lot of QSC

Additional comments:
 → Misting system active & stuck/vent activity during observations (see pics)
 → Wind swirling during IC Trailer/Tanning observation

Key: WS = Wind Color Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3522 Scale: 0, 1, 2, 3, 4, 5, 6 OR A,B,C,D,E,F,G
 RH = Relative Humidity Scale: 1, 2, 3, 4, 5
 Weather: Mostly Sunny, Partly Cloudy, Mostly Cloudy, Overcast, Hazy
 Precipitation: None, Fog, Rain, Sleet, Snow
 Wind Direction (blowing from): N, NNE, NE, ESE, E, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (C), Light Breeze (1-5 mph), Moderate Wind (6-15 mph), Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6-29-16
 Inspector Code: _____
 Signature: _____
 Name: AARON KUTZ

Time	Location	WSH	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wea	Prec	Wind	Speed	Temp	RH	BP	Comments	
							1	2	3	4	5									
1:53	Sarimax	1			X							None	S	32-4	76.5	40.5	29.3	upwind		
2:04	Sarimax	4	7	4								None	SSW	21-3	78.5	41.2	29.3	downwind		
2:20	TC Hide Farming	1-2	2									None	S	28-32	79.9	40.4	29.3	downwind		
2:25	TC Hide Farming	3	4	2								None	S	27-31	79.8	40.7	29.3	downwind		
2:33	TC Hide Farming				X							None	SSE	9-19	82.1	41.9	29.3	upwind		
2:44	Concord mats				X							None	SSE	14-37	83.3	34.4	29.3	upwind		
2:46	longchen	1-2			X							None	SSE	21-3	84.2	34.8	29.3	upwind		
2:55	longchen	2-3	4	2								None	SSE	41-66	77.8	38.3	29.3	downwind		
2:59	Concord mats	2-3	4	2								None	SE	16-20	80.1	36.1	29.3	downwind		
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				

Additional Comments:

Key: WS is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3922 Scale: 0,1,2,3,4,5 OR A,B,C,D,E,F,G

1 is Baited Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny Partly Cloudy Mostly Cloudy Overcast Hazy

Precipitation: None Fog Rain Sleet Snow

Wind Direction (Building from): N, NNE, NE, ENE, E, SSE, SE, S, SW, W, WNW, NW, NNW
 Wind Speed: Calm (Calm) Light Breeze (1-5 mph) Moderate Wind (6-15 mph) Strong Wind (16-25 mph)



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ODOR MONITORING DATA SHEET

Date: 6/30/16 Inspector Code: _____ Signature: _____ Name: AARON KUTZ

Time	Location	WSI/ D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wind	Temp	RH	BP	Comments
						1	2	3	4	5					
1 9:44	Concord	1-2	-	X	+4	Sweet	Baked				SWW	72-76	70.9	29.14	UPWIND, vacant lot S of facility
2 9:51	Long Chemo	1-2	2		+4	Sweet	Baked				SWW	75-77	67.8		UPWIND, 2020 parking lot
3 10:00	Concord	2-3	2		-4	Animal	Burnt				SWW	78-82	62.5		Downwind, Long chemo lot
4 10:13	Long Chemo	3	4		-5	Animal	Mandor				SWW	77-79	65.4	29.18	Downwind
5 10:37	SANIMAX	4	7		-6	Rotten	Breast				SWW	78-81	58.4	29.15	Downwind, bike path
6 10:54	"	1-2		X	0	Grass					SWW	80-84	61.3	29.17	UPWIND, Along Vendrosa Ave
7 11:05	TC Hike	2	4		-5	Dead Animal					E	80-83	65.6		Downwind, Abby Clinton Ave
8	→ No	UPWIND	out		-6	of observation	due to				rain	disappeared			UPWIND,
9 13:49	TC TRANSIT	4	7		-6	Dead Animal	Rotten				SWW	75-78	61.7	29.16	Downwind, Along Malden St.
10 14:04	"	0		X		N/A					NNW	50-53	57.6	29.17	UPWIND, along Clinton Ave
11 14:15	Concord	3	2		-4	Animal	Hay/manure				N	57-72	61.5		Downwind, vacant lot south of facility
12 14:27	Long Chemo	3	2		-4	Animal	Pail/manure				N	61-74	57.2		Downwind, parking lot along storm fence line
13 14:34	"	1		X	0	Grass/weeds					NNE	67-69	56.1		UPWIND, lot on edge of property
14 14:42	Concord	1		X	0	Grass					N	71-74	54.3	29.16	UPWIND, truck repair parking lot
15 15:15	TC Hike	4-5	7		-5	Dead Animal					NNW	74-79	53.1		Downwind, Along Hudson
16 15:23	TC Farming	4-5	4		-6	Dead Animal	Rotten				NNW	69-69	50.9		Downwind, Along Hudson
17 15:30	TC Hike	0		X		N/A					N	74-79	47.9	29.16	UPWIND, over grown area N of facility
18 15:40	TC Farming	0		X		N/A					N	74-79	50.8	29.17	UPWIND, over grown area N of facility
19 15:45	SANIMAX	5	7		-6	Sour	Rotten				N	85	43.7		Downwind, vendrosa of facility
20 15:55	"	0		X		N/A					N	88-92	41.6		UPWIND, Hudson and Almor

KEY: WS is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
or WS is German VDI 3882 Scale: 0,1,2,3,4,5 OR A,B,C,D,E,F,G

1 is Beaufort Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Fairly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)

road 1

road 2

2016 Odor Survey Report for Concord Fresh Meats

South St. Paul Odor Monitoring
South St. Paul, MN

SEH No. 136019

October 20, 2016

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Appendix A Field Data Sheets

2016 Odor Survey Report for Concord Fresh Meats

City of South St. Paul Odor Monitoring

Prepared for the City of South St. Paul

1.0 Background

The City of South St. Paul (the "City") has retained Short Elliott Hendrickson Inc. ("SEH") to conduct odor monitoring to support the enforcement of the City's Odor Pollution Ordinance. Previous monitoring has been conducted by both Trinity Consultants and SEH. In July 2013, a report titled, "A Summary of Odor Monitoring, Modeling, and Complaints in South St. Paul" was completed by Trinity Consultants documenting odor monitoring on several facilities located in the City. Two additional monitoring events were completed by SEH in 2014, as well as a third in 2015 to supplement those initial findings and identify facilities that may not be meeting the Odor Pollution Ordinance.

As stated in the SEH 2014 Odor Monitoring Survey Report to the City, Concord Fresh Meats (Concord Meats) caused odor observations that were consistent with significant odor values in the City Odor Ordinance. Although there were not enough significant odor observations to deem the facility a significant odor generator (SOG), it was determined that it would be beneficial to continue monitoring. The 2015 data showed a slight improvement in average odor values compared to 2014, but a number of downwind observations still recorded odors as high as 7 odor units. Again, there were not enough significant odor observations to deem Concord Meats as a SOG.

During this most recent round of monitoring (June 2016), eight observations were made from June 16 to June 30 to determine if the facility has reduced odors or if it continues to generate odors deemed significant.

Monitoring locations varied with wind direction and are described in the table below. A map view of the locations is also provided in **Figure 1**.

Monitoring Locations

Location	Location Description
(a)	UFCW parking lot off of Hardman Ave.
(b)	Directly west of facilities, across Concord Ave. in the Post Office parking lot
(c)	Off of Hardman behind the pallet company
(d)	Vacant lot behind Concord Fresh Meats to the southeast
(e)	Parking lot in front of Quality Service Corporation. NNW of the facility
(f)	Gravel parking area on northern edge of the Long Cheng property

2.0 Methods

Consistent with previous monitoring outlined in the 2014 and 2015 reports, odor strengths were observed using a Nasal Ranger field olfactometer rented from St. Croix Sensory by the City. Field olfactometers are portable odor detecting and measuring devices. These devices measure ambient odor and give a quantitative value to the odor as a dilution-to-threshold ratio, commonly called a dilution ratio or odor unit (OU). The dilution-to-threshold (D/T) ratio is calculated by:

$$\frac{\text{Volume of Carbon Filtered Air}}{\text{Volume of Odorous Air}} = \text{Dilution Ratio}$$

The Nasal Ranger has 6 dilution settings: 60, 30, 15, 7, 4 and 2. The number given to each setting refers directly to the dilution ratio of air being inhaled through the device. For example, when using the number 15 dilution setting, 15 parts of carbon filtered (odor free) air are mixed with 1 part of odorous air. As the setting number decreases, a larger ratio of odorous air is being mixed with the filtered air. At the number 2 setting, the ratio is 2 parts filtered air mixed with 1 part odorous air. Therefore, stronger odors will be detected at high number settings and higher dilution, while weak odors require less dilution to be detected and thus lower number settings. If all settings are observed and no odor is detected, there is no observed odor value. According to St. Croix Sensory and Huey et. al. 1960, each D/T ratio odor level can be described by the following:

- 2 D/T – Noticeable
- 4 D/T – More Noticeable
- 7 D/T – Objectionable
- 15 D/T – Nuisance
- 30 D/T and above – Nauseating

A variety of parameters were recorded during the odor monitoring. Both the detection and recognition thresholds (in D/T or OU) using the Nasal Ranger were recorded at each monitoring location. The detection threshold is the D/T setting at which an odor is first detected, whereas the recognition threshold is the D/T setting at which the odor had an identified descriptor associated to the odor. Recognized odors were assigned a descriptor that provides a description of the odor that can be connected to the odor source. The descriptors are used to assess and confirm the source of the odors. Several descriptors were identified during this monitoring including animal, manure, hay, exhaust, and grass. During

every monitoring event, both upwind and downwind odor observations were recorded to confirm the facility as the source of observed odors.

In addition, ambient temperature and wind readings (speed/direction) were taken both in the field with a portable weather meter and compared to recorded weather information from the South Saint Paul Municipal Airport (Fleming Field). Precipitation occurred before or during some of the monitoring observations.

3.0 Previous Results

SEH conducted two initial rounds of monitoring during the summer of 2014, the first taking place from July 21 to July 24 and the second from August 12 to August 19. During these two rounds of monitoring, odor observations were taken at several sites in the South St. Paul area to determine possible sources of potentially “offensive” odors. Each monitoring round consisted of a minimum of 8 separate observations at each of the suspected facilities. It wasn’t until the second round of this initial monitoring that Concord Meats was included as a potential source of significant odor. Additional data was collected for the facility during the 2015 monitoring event that took place between May 19 and June 12.

From these previous monitoring results, it was found that although Concord Meats caused odor observations that were consistent with significant odor values in the City Odor Ordinance, there were not enough significant odor observations to deem the facility a significant odor generator. As stated in the background section above, monitoring in 2015 showed a slight improvement in average odor values. Comparing the two, a decrease from 5.9 to 4.9 odor units at the detection threshold was observed, but a number of downwind observations still recorded odors as high as 7 odor units in 2015. A summary of these results can be found in the tables below.

Because of the potential for Concord Meats to generate significant odors that could negatively impact residents downwind, it was not ruled out as a possible significant odor generator and odor monitoring continued.

2014 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
8/14/2014	09:45	Downwind	SE	6.2-8.1	E-SE	5.8	7 *	4	Manure, Animal, Dead Animal, Rotten
8/18/2014	12:13	Downwind	W-SW	1.5-4.1	W	5.8	15 *	7	Dead Animal, Manure
8/19/2014	09:03	Downwind	NE	3.9-5.5	NW	5.8	7	4	Hay, Animal, Manure

* Due to wind direction, could not differentiate between Long Cheng and Concord Meats as source of odor

2015 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
5/20/2015	09:47	Downwind	E-SE	1.3-1.8	W	4.6	7	4	Animal, Manure
5/21/2015	13:50	Downwind	N-NW	3.1-5.2	W-NW	12.7	7	4	Animal, Manure
5/26/2015	10:46	Downwind	N-NW	3.7-5.0	N-NW	5.8	7	4	Animal, Manure
6/12/2015	10:25	Downwind	NE-N	2.7-5.9	NE	8.1	7	4	Animal, Burnt Hair, Manure

4.0 2016 Results

As part of continued monitoring of potential significant odor generators, Concord Meats was once again included in the 2016 odor survey. Results of this most recent round of monitoring produced improved results compared to those recorded during 2014 and 2015 monitoring events. The results from 2016 are shown in the table below.

2016 Monitoring near Concord Fresh Meat Processing

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
6/16/2016	15:55	Upwind	SSE	8.6-10.5	E	5.8	No Detect	--	N/A
6/16/2016	16:10	Downwind	ESE	4.5-7.7	E	6.9	4**	2**	Animal, Hay/Manure
6/21/2016	10:00	Downwind	W	4.0-7.5	WSW	10.4	2**	--	Wood, Burnt Hair, Manure/Animal
6/21/2016	10:15	Upwind	N-NW	5.5-7.2	WSW	11.5	No Detect	--	N/A
6/21/2016	12:45	Upwind	W-NW	5.6-7.8	W	15	No Detect	--	N/A
6/21/2016	12:55	Downwind	NW	3.5-4.7	W	10.4	4**	2**	Animal/Manure, Wood
6/24/2016	10:07	Upwind	S	3.2-6.5	SE	5.8	No Detect	--	N/A
6/24/2016	10:23	Downwind	S	4.6-8.3	SSE	9.2	4	2	Animal/Manure, Burnt Hair
6/28/2016	12:28	Downwind	NNW	3.4-4.9	Calm	Calm	4	4	Animal, Burnt
6/28/2016	12:55	Upwind	NNE	3.7-5.5	NNE	3.5	No Detect	--	N/A
6/29/2016	14:42	Upwind	SSE	1.4-3.9	SSE	3.5	No Detect	--	N/A

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
6/29/2016	14:59	Downwind	SE	2.6-4.2	SSE	3.5	4	2	Animal, Manure
6/30/2016	9:44	Upwind	SSW	1.2-3.0	S	4.6	<2	--	Sweet, Baked
6/30/2016	10:00	Downwind	SW	3.8-4.2	S	4.6	2	2	Animal, Burnt
6/30/2016	14:15	Downwind	N	4.5-7.2	NNW	11.5	2	--	Animal, Hay/Manure
6/30/2016	14:43	Upwind	N	4.6-11.5	N	11.5	<2	--	Grass
Downwind Detection Average							3.3	2.3	

** Due to wind direction, could not differentiate between Long Cheng and Concord Meats as source of odor

Animal, hay, manure, and burnt hair/burnt odors were detected regularly downwind during the 2016 study. These potentially "offensive" odors are consistent with descriptions previously recorded in 2014 and 2015 and are typical of those associated with a meat processing facility. The animal, hay, and manure odors likely reflect odors from the holding pens outside of the facility where the animals are kept, while the burnt hair/burnt odor is from processes inside the building. A wood odor was also detected during downwind observations when wind directions were out of the west to northwest. This was associated with the pallet company directly upwind between Concord Meats and the downwind monitoring locations.

Comparing these results to data from 2014 and 2015, there is marginal improvement in odor strengths of averaged downwind detections for 2016. No observations were recorded above 4 odor units at the detection threshold and all observations averaged only 3.3 odor units during this round of monitoring. During three observations this round (June 16 and 21), wind directions made separating Concord Meats and the neighboring Long Cheng facility difficult. No distinction was made between the two facilities and the observations were treated as detections for both.

Upwind monitoring recorded no odors consistent with those recorded downwind. Common odors such as grass were detected at low dilution levels. A faint sweet, baked odor was observed intermittently upwind on June 30, but was recorded at less than 2 odor units. Factoring in wind direction and location, the odor was thought to be coming from the Burger King directly upwind of the monitoring location.

Weather conditions at the odor observation locations were fairly comparable to the concurrent weather data recorded at the South St. Paul airport. Generally, the wind speed is higher at the airport compared to the industrial portion of the City to the north where Concord Meats is located.

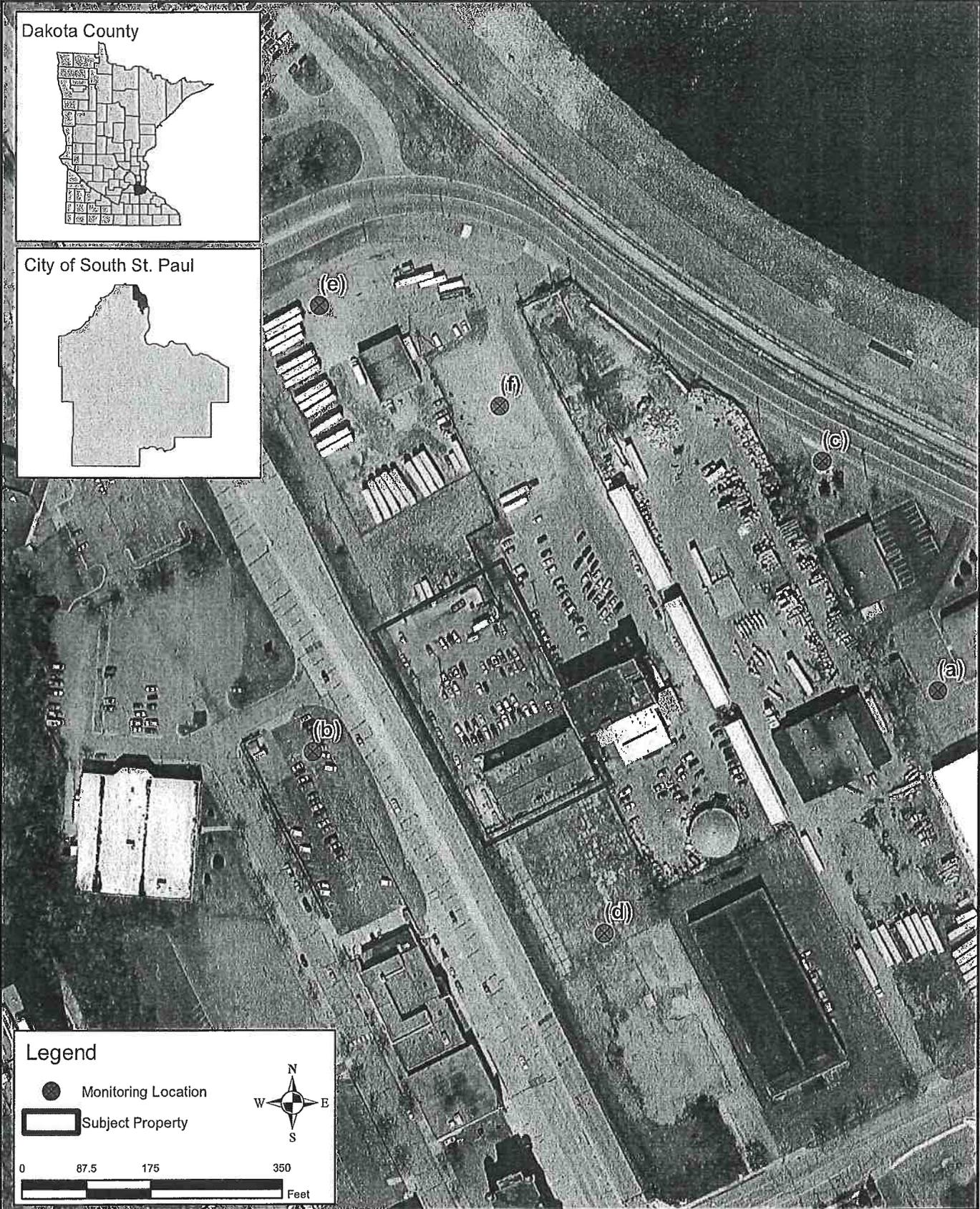
5.0 Summary

After eight downwind observations during this round of monitoring, and comparing them with the data collected from previous monitoring rounds in 2014 and 2015, Concord Meats did not have odors consistent with those of a SOG as defined by the City Ordinance.

Improvements in average odor values were realized in 2016 with no detected observations above 4 odor units downwind from the facility with an average detection of 3.3 odor units. With downwind detection averages decreasing since the initial monitoring in 2014 and no odor observations at or above 7 odor units this round, it is unlikely that more monitoring would generate regular odor observations of 7 odor units or above. An increase in activity at the facility or intermittent odor events may cause elevated detections, but at this time Concord Fresh Meats is not generating odors consistent with that of a Significant Odor Generator defined by the City.

List of Figures

Figure 1 – Monitoring Locations



Path: S:\PT\S\saipa136019\GIS\Monitoring Locations\Figure01_ConcordMeats.mxd

Legend

-  Monitoring Location
-  Subject Property



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ST. PAUL, MN 56110
PHONE: (651) 490-2000
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Project: SSTPA 136019
Print Date: 7/14/2016

Map by: akutz
Projection: NAD83 UTM 15N
Source: ESRI, SEH
MnGeoFSA2015Aerial

Monitoring Locations
2016 Concord Fresh Meats Odor Survey Report
South St. Paul Odor Monitoring
South St. Paul, MN

Figure
1

This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

Appendix A

Field Data Sheets



Short Elliott Hendrickson Inc.
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St. Paul, MN 55110-5596
651.490.2000 main | 888.908.8166 fax
800.325.2055 toll free
sehinc.com

5 LOCATIONS

ODOR MONITORING DATA SHEET

Date: 6/16/2016

Inspector Code: _____

Signature: _____

Name: AARON KUTZ

Time	Location	WS/1	D.H. (60-2)	R.H. (60-2)	<2	ND	H.T.	1	2	3	4	5	Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
1 14:45	SANIMAX	1	2	2	WN		0-2	weeds/grass, garbage					mostly sunny	Non	ESE	56-71	75.8	56.3	29.17	Upwind, drive path
2 15:00	"	3-4	7	4			-7	Rotten grease, sour					"	"	SE	28-33	80.9	53.5	27.18	Downwind, just north of entrance on headway
3																				
4																				
5 15:15	TC TANNING	3	4	2			-5	Dead Animal					"	"	ESE	57-63	80.1	54.7	29.17	Downwind, garbage
6																				
7 15:20	TC HIDE	3	4	2			-5	Dead Animal, paint					"	"	E	62-80	81.3	56.6	"	Downwind
8																				
9 15:30	TC HIDE				X		-1	Exhaust					"	"	ESE	27-47	81.9	53.5	"	UPWIND, DANNE, INC
10 15:30	TC TANNING					X	0	N/A					"	"	E	37-44	82.0	56.9	"	Along headway
11																				
12																				
13 15:55	Long Chen/Concord					X	0-N/A						mostly sunny	None	SSE	86-105	96.5	45.7	29.18	Upwind, UFCW PARKING Lot
14																				
15 16:10	"	3	4	2			-4	Animal, hay/manure					"	"	ESE	45-77	88.5	52.7	29.17	Downwind, directly west across Concord Ave.
16																				
17																				
18																				
19																				
20																				

Additional comments:
 → Missing System Active, some stack activity at SANIMAX
 → See note about Concord and Long Chen, due to wind direction could not separate.

KEY: WS is Wind Speed Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is Garman VDI 3382 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G
 1 is Beaufort Intensity Scale: 1,2,3,4,5
 Weather: Mostly Sunny, Partly Cloudy, Mostly Cloudy, Overcast, Hazy
 Precipitation: None, Fog, Rain, Sleet, Snow
 Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)



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 sehinc.com

ODOR MONITORING DATA SHEET

Date: 6/21/2016

Inspector Code: _____
 Signature: Aaron Kutz
 Name: AARON KUTZ

Time	Location	WS/J	D.H. (65-2)	R.H. (60-2)	ND	H.T.	1	2	3	4	5	Vis	Prec	Wind	Speed	Temp	RH	BP	Comments
8:40	TC Hide	4	15	7		-7		Dead Animal, Scur				Sunny	None	WSW	4.5-6.8	77.5	50.6	29.76	Downwind, DANVER INC. lot
8:50	TC TANNING	3-4	7	4		-6		chemical (chicken eggs), burnt				"	"	WSW	3.0-4.6	77.5	48.1	"	Upwind, ANDC front's back lot
9:00	"	0			X			N/A				"	"	WSW	5.5-8.5	74.0	47.1	29.75	Upwind, ANDC front's back lot
9:08	TC Hide	0			X			N/A				"	"	WSW	3.1-6.9	73.3	45.9	"	Upwind, poll in off
9:20	SANIMAX	1-2	5	30	15	-8		Garbage				"	"	W	58.6-3	75.3	43.0	29.76	Downwind, pile path
9:40	"	5	30	15		-10		Scur, rotten, grease				Sunny	None	W	4.2-6.7	76.8	43.2	29.74	Downwind, Behind Pellet Company
10:00	Long Clean/Conc'd	2	2	-		-1		wood burnt, manure/animal				"	"	W	4.0-7.5	77.5	42.2	29.75	Upwind, post office lot
10:15	"	0			X			N/A				"	"	NNW	5.5-7.7	79.9	37.9	29.23	Upwind, post office lot
10:45	"	0			X			N/A				"	"	WNW	5.6-7.8	81.0	35.2	29.21	Downwind, DUFC back lot
10:55	"	2-3	4	2		-4		Animal/manure, wood				"	"	NW	3.5-4.7	84.1	30.9	29.22	Downwind, pile path
11:10	SANIMAX	4-5	15	7		-7		Grease, rotten, soars, chemical				"	"	NW	5.8-10.6	82.3	31.5	29.20	Upwind, corner of Hardman & Amner
13:35	"	1-2			X	-2		Exhaust				Sunny	None	NW	8.1-11.9	84.9	29.6	"	Downwind
13:48	TC Hide	4-5	7	4		-6		Dead Animal, Exhaust				"	"	NNW	4.7-8.3	84.2	29.3	29.11	Downwind
14:00	TC TANNING	4	7	4		-7		Chemical (rotten egg), Dead Animal				"	"	WNW	6.1-10.6	83.3	30.8	"	Upwind
14:10	"	1			X			N/A				"	"	WNW	3.8-4.3	83.5	30.6	29.18	Upwind
14:15	TC Hide	1-2			X	-1		Asphalt				"	"	W	3.5-4.4	86.4	31.5	"	Upwind

Additional Comments:

→ Misty system active and stack activity at Sanimax for both observations → Long chimney concord combine because could not separate due to wind
 → Dusty A.M., Garbage truck drove by during upwind reading

KEY: WS is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3922 Scale: 0, 1, 2, 3, 4, 5, 6 OR A,B,C,D,E,F,G

1 is Beaufort Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny, Partly Cloudy, Mostly Cloudy, Overcast, Hazy

Precipitation: None, Fog, Rain, Sleet, Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, W, WNW, NW, NNW
 Wind Speed: Calm (<1 mph), Light Breeze (1-5 mph), Moderate Wind (5-15 mph), Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Date: 6/24/2016 Page 1 of 1

Inspector Code: _____ Signature: AARON KUTZ
Name: _____

Time	Location	WSH	D.H. (60-2)	R.H. (60-2)	ND	H.T.	1	2	3	4	5	Wca	Prc	Wind	Speed	Temp	RH	BP	Comments
9:34	SANJIMAX	3-4	15	7		-6	Grease/rotten					SUN	None	45-36	58	75.8	64.6	29.3	Downwind,
9:40		1	2	-		0	grass					SUN	None	SSW	52-37	77.1	60.5	29.29	upwind
9:48	TC Hide/Ammonia				X							SUN	None	S	48-60	76.2	58.6	29.20	upwind
9:54		3	7	4		-5	Dead animal					SUN	None	S	35-61	77.2	52.1	29.29	downwind
10:07	Concord		4		X							SUN	None	S	39-65	75.9	59.4	29.29	upwind
10:14	longcheng	2-3	4	2		-4	Grease/rotten (Sweet chemical)					SUN	None	S	42-89	74.5	60.2	29.3	upwind
10:20	longcheng	2-3	4	2		-3	animal					SUN	None	S	9-11	82.7	47.2	29.29	downwind
10:33	Concord	2	4	2		-3	animal / burnt hair					SUN	None	S	44-83	80.6	51.8	29.29	downwind
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

→ watercools
penetration test

Additional comments:

Key: WS is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
or WS is German VDI 3382 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1 is Bismarck Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, SW, WSW, W, WNW, NW, NNW
Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6/28/2016 Inspector Code: _____ Signature: Aaron Kutz Name: AARON KUTZ

Time	Location	WSR	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5						
10:50	SANIMAX	3-4	7	7		-5	Grease	Other	SOOR								Downwind, Arnoor & Hardman
11:00	"	1			X		Grease										UPWIND, Vanderosa Ave.
11:50	IC HIDE/ TANNING	2-3	4	2		-4	Dead Animal										park lot of Natural gas Co of
12:00	IC Hide/ TANNING	3	4	4		-4	Dead Animal, Truck Exhaust										corner of Madia and Clinton
12:10	IC Hide/ TANNING	1-2			X	-1	Exhaust										parking lot
12:28	Concord Meats	3-	4	4		-4	Animal, Faint										Upwind, Danner 107
12:36	Long Chang	4-5	15	7		-6	Mammoth Animal										Upwind, vacant 102 S of facility
12:45	"	0			X		N/A										on fence line behind holding pen
12:55	Concord Meats	0			X		N/A										gravel lot at end of facility
																	Upwind, parking lot of QSC

Additional comments:
 → Misting system active & stack/vent activity during observations (see pics)
 → Wind swirling during IC Hide/ Tanning observation

KEY: WS is Wind Color Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3382 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1 to Subnet Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Fairly Cloudy; Heavily Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)



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 St. Paul, MN 55110-5196
 (612) 490-2000 main | 888-908-8766 fax
 800.325.2055 toll free
 sehinc.com

ODOR MONITORING DATA SHEET

Date: 6-29-16 Page 1 of 1

Inspector Code: _____ Signature: AARON KUTZ
 Name: AARON KUTZ

Time	Location	WSH	D.H. (60-2)	R.H. (60-2)	ND	H.T.	1	2	3	4	5	Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
1:53	Sarimax	1			X		grass					PC	None	S	32-4	76.5	40.5	29.3	upwind
2:01	Sarimax	4	7	4		-5	rotten/govr					PC	None	SSW	21-3	78.5	41.2	29.3	downwind
2:20	TC Hide/Amway	1-2	2			+2	grass/powers					PC	None	S	28-32	79.9	40.4	29.3	downwind
2:25	TC Hide/Amway	3	4	2		-4	dead animal					PC	None	S	27-37	79.8	40.7	29.5	downwind
2:33	TC Hide/Amway				X							PC	None	SSE	21.9	82.1	71.9	29.3	upwind
2:48	Concord mills				X							PC	None	SSE	14-37	83.3	34.4	28.3	upwind
2:46	longchen	1-2					wood					PC	None	SSE	21-3	84.2	34.8	29.3	upwind
2:55	longchen	2-3	4	2		-4	animal/manure/hooves					PC	None	ESE	41-66	77.8	38.3	29.3	downwind
2:59	Concord mills	2-3	4	2		-3	animal/manure					PC	None	SE	26-27	80.1	36.1	29.3	downwind
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

Additional comments:

WSH is Word Odeur Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3382 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1 is Butanol/Isobutanol Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Page 1 of 1

Date: 6/30/16 Inspector Code: _____ Signature: _____ Name: AARON KUTZ

Time	Location	WSI	D.H. (60-2)	R.H. (60-2)	ND	H.T.	1	2	3	4	5	Wec	Prec	Wind	Speed	Temp	RH	BP	Comments
19:44	Concord	1-2			X		Sweet	Baked				MC	Noce	SSW	12-30	73.6	70.9	29.14	UPWIND, vs count lot S of facility
7:51	Long Cheney	1-2	2				Sweet	Baked				"	"	"	39-49	75.7	67.8	"	parking lot
10:00	Concord	2-3	2	2			Animal	Burnt				"	"	SW	38-42	78.2	62.5	"	Long drag lot
10:13	Long Cheney	3	4	2			Animal	Mandor				"	"	SSW	27-35	77.9	65.4	29.19	Downwind
10:37	SANIMAX	4	7	4			Roten	Grease				"	"	SSW	14-27	78.8	58.4	29.15	Downwind, the path
10:54	"	1-2			X		Gross					"	"	SWS	35-46	80.4	61.3	29.17	Along Vanderosa Ave
11:06	"	2	4	2			Animal					Over Rain	E	2-4	80.3	65.0	"	Along Clinton Ave	
13:49	TE TANNING	4	7	4			of observation					due to rain	downpour						upwind
14:04	"	0			X		Dead Animal	Roten				Sunny	Noce	NNW	3.9-10.7	75.9	61.7	29.18	Downwind, Along maiden St.
14:15	Concord	3	2				N/A					"	"	NNW	50-23	78.2	55.6	29.17	upwind, Along Clinton Ave
14:21	Long Cheney	3	2	2			Animal	Hay/worms				"	"	N	45-73	76.5	61.5	"	vacant lot south of facility
14:34	"	1			X		Animal	Hay/worms				"	"	N	3-61	77.4	57.2	"	parking lot along south fence line
14:43	Concord	1			X		Gross	worms				"	"	NNE	4.9-16	79.9	56.1	"	property on edge of truck repair parking lot
15:15	TE TANNING	4-5	4	2			Dead Animal					"	"	N	4.6-11.5	79.1	54.3	29.16	Along thredman
15:23	TE TANNING	4-5	4	4			Dead Animal	Roten				"	"	NNW	4.8-7.9	79.4	53.1	"	Along thredman
15:30	TE TANNING	0			X		N/A					"	"	N	4.2-5.4	79.5	47.9	29.16	Along thredman
15:40	TE TANNING	0			X		N/A					"	"	N	5.4-11.5	78.7	50.0	29.17	over green area N of facilities
15:45	SANIMAX	5	7	4			Sour	Roten				"	"	N	6.1-8.5	80.0	43.7	"	over green area N of facilities
15:55	"	0			X		N/A					"	"	N	8.8-12.4	78.7	44.0	"	Downwind, Vanderosa Ave
Additional comments: _____																			

Round 1
Round 2

Key: WSI is Word Order Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
or WSI is German VDI 3882 Scale: 0,1,2,3,4,5 OR A,B,C,D,E,F,G
1 to Bismarck Intensity Scale: 1, 2, 3, 4, 5
Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy
Precipitation: None; Fog; Rain; Sleet; Snow
Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
Wind Speed: Calm (<1 mph); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)

2016 Odor Survey Report for Sanimax

South St. Paul Odor Monitoring

South St. Paul, MN

SEH No. 136019

October 20, 2016

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Appendix A Field Data Sheets

2016 Odor Survey Report for Sanimax

City of South St. Paul Odor Monitoring

Prepared for the City of South St. Paul

1.0 Background

The City of South St. Paul (the “City”) has retained Short Elliott Hendrickson Inc. (“SEH”) to conduct odor monitoring to support the enforcement of the City’s Odor Pollution Ordinance. Previous monitoring has been conducted by both Trinity Consultants and SEH. In July 2013, a report titled, “A Summary of Odor Monitoring, Modeling and Complaints in South St. Paul” was completed by Trinity Consultants documenting odor monitoring conducted near several facilities located in the City. Additional monitoring events were completed by SEH in 2014, as well as in 2015 to supplement those initial findings and identify facilities that may not be meeting the Odor Pollution Ordinance.

As stated in the 2014 Survey Report submitted to the City by SEH and subsequent SEH reports in May, June, and August of 2015, Sanimax produced odors consistent with those deemed significant in the City Odor Ordinance. Of the facilities monitored, Sanimax consistently recorded the most detections of “offensive” odors downwind. Enough significant odor observations were recorded to show that the facility was consistent with the terms of a significant odor generator (SOG) in both 2014 and 2015, and it was determined that the facility should continue to be monitored. In 2015 a collection truck misting system, along with other improvements to the facility, was installed to attempt to reduce fugitive odors from trucks, the loading/unloading process and from potential offensive odors from stack emissions. The effectiveness of these systems are detailed in the 2015 reports.

During this most recent round of monitoring (June 2016), a minimum of eight observations were made from June 16 to June 30 to try and determine if the facility had reduced odors or if it continues to generate odors deemed significant. Monitoring locations varied with wind direction and are described in the table below. A map view of the locations is also provided in **Figure 1**.

Sanimax Monitoring Locations

Location	Location Description
(a)	Along curve on Verderosa Avenue. Just to the Southeast of the facility.
(b)	Along bike path that follows river to the east of the facility. Observations made at various points along the path depending on exact wind direction.
(c)	Near corner of Armour and Hardman Avenue.
(d)	Off Hardman Avenue., near corner of Hardman and Bridgepoint Drive.
(e)	South of facility on Verderosa Avenue.
(f)	Near northwest corner on the facility. Parked in small driveway off of Hardman Avenue.

2.0 Methods

Consistent with previous monitoring outlined in the 2014 and 2015 reports, odor strengths were observed using a Nasal Ranger field olfactometer rented from St. Croix Sensory by the City. Field olfactometers are portable odor detecting and measuring devices. These devices measure ambient odor and give a quantitative value to the odor as a dilution-to-threshold ratio, commonly called a dilution ratio or odor unit (OU). The dilution-to-threshold (D/T) ratio is calculated by:

$$\frac{\text{Volume of Carbon Filtered Air}}{\text{Volume of Odorous Air}} = \text{Dilution Ratio}$$

The Nasal Ranger has 6 dilution settings: 60, 30, 15, 7, 4 and 2. The number given to each setting refers directly to the dilution ratio of air being inhaled through the device. For example, when using the number 15 dilution setting, 15 parts of carbon filtered (odor free) air are mixed with 1 part of odorous air. As the setting number decreases, a larger ratio of odorous air is being mixed with the filtered air. At the number 2 setting, the ratio is 2 parts filtered air mixed with 1 part odorous air. Therefore, stronger odors will be detected at high number settings and higher dilution, while weak odors require less dilution to be detected and thus lower number settings. If all settings are observed and no odor is detected, there is no observed odor value. According to St. Croix Sensory and Huey et. al. 1960, each D/T ratio odor level can be described by the following:

- 2 D/T – Noticeable
- 4 D/T – More Noticeable
- 7 D/T – Objectionable
- 15 D/T – Nuisance
- 30 D/T and above – Nauseating

A variety of parameters were recorded during the odor monitoring. Both the detection and recognition thresholds (in D/T or OU) using the Nasal Ranger were recorded at each monitoring location. The detection threshold is the D/T setting at which an odor is first detected, whereas the recognition threshold is the D/T setting at which the odor had an identified descriptor associated to the odor. Recognized odors were assigned a descriptor that provides a description of the odor that can be connected to the odor source. The descriptors are used to assess and confirm the source of the odors. Several descriptors were identified during this monitoring including animal, dead/rotting animal, grease, sour, exhaust, and grass. During every monitoring event, both upwind and downwind odor observations were recorded to confirm the facility as the source of observed odors.

In addition, ambient temperature and wind readings (speed/direction) were taken both in the field with a portable weather meter and compared to recorded weather information from the South St. Paul Airport (Fleming Field). Precipitation occurred before or during some of the monitoring observations.

3.0 Previous Results

SEH conducted two initial rounds of monitoring during the summer of 2014, the first taking place from July 21 to July 24 and the second from August 12 to August 19. During these two rounds of monitoring, odor observations were taken at several sites in the South St. Paul area to determine possible sources of potentially “offensive” odors. Each monitoring round consisted of a minimum of 8 separate observations at each of the suspected facilities. After

the initial monitoring in 2014 identified Sanimax as a SOG, additional data was collected for the facility during multiple monitoring event in 2015 that took place between May 19 and June 12. Odor observations at or above 7 odor units in 2014 are included in the table below.

2014 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
8/12/2014	18:15	Downwind	N	2.9-3.3	NW	8.1	7	4	Sour, Rotten, Dead Animal
8/13/2014	10:04	Downwind	N-NW	1.5-2.1	Calm	Calm	7	4	Dead Animal, Rotten
8/13/2014	13:12	Downwind	NE	3.6-6.0	N-NW	10.4	30	15	Rotten, Dead Animal, Grease, Burnt
8/14/2014	10:25	Downwind	S-SE	3.8-4.7	S-SE	6.9	30	15	Grease, Rotten, Burnt
8/14/2014	13:28	Downwind	S	2.5-3.9	E-SE	9.2	15	7	Grease, Rotten, Rendering
8/18/2014	13:33	Downwind	W-NW	2.1-3.4	W	9.2	15	7	Grease, Dead Animal, Burnt, Chemical (chlorine)
8/19/2014	10:00	Downwind	N-NE	4.9-7.6	N-NW	8.1	30	15	Grease, Rotten, Dead Animal

As part of improvements being made to reduce odor emissions, Sanimax installed a collection truck misting system on the property to potentially reduce/eliminate fugitive odor emissions during truck loading. The odor reduction misting system disperses an odor neutralizer on the truck screen top after loading and was fully operational on May 27, 2015, which was documented in an email from Sanimax to the City that same day.

In an effort to better characterize any impacts of the newly installed misting system, observation data in the 2015 study was broken up into three main events: pre-misting system, transition period, and active misting system. Between May 19 and June 4, 16 odor observations were recorded. Of those 16 observations, the first five observations were recorded pre-operation of the misting odor reduction system, the next three were during a transition period during the start-up of the misting system, and the last eight were conducted after the system was fully operational.

The 2015 monitoring near Sanimax produced similar results to those recorded in the summer of 2014. Types of odors recorded downwind included dead animal, grease, rotten, and sour. Starting on June 1, 2015, during observations after activation of the misting system, the odor of chemical chlorine/bleach and another undetermined chemical odor were detected. The undetermined odor was most noticeable along the fence line of the facility's northern boundary and is likely from the odor misting system.

Odor strengths were recorded at a variety of intensities. Odors downwind of the facility were recorded at detection thresholds as high as 60 odor units, and recognition thresholds reached

as high as 30 odor units. Downwind odor strengths of 7, 15, 30 or 60 were measured during each of the monitoring events in 2015. Readings at or above 7 are considered significant in the Odor Pollution Ordinance.

Compared to the data from 2014, the strength and frequency of odors detected downwind were similar, but with some distinctions. The average downwind detection strengths had decreased from 17.3 in 2014 to 14.8 odor units in 2015, but every downwind observation was at or above 7. During the 2015 monitoring rounds, totaling 18 observations, seven observations recorded odors at the detection threshold of 7 odor units. The remaining nine observations recorded detections between 15 to 60 odor units. This compares to two detections of 7 odor units, and five detections between 15 to 30 odor units in 2014. The 2015 detections continued to be very similar in strength and frequency to the observations in 2014.

2015 Summary of Monitored Odors at 7 OU and Greater

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
Pre-Misting System									
5/19/2015	14:58	Downwind	N	3.7-4.5	N-NW	8.1	7	4	Rotten, Grease
5/20/2015	09:55	Downwind	E	1.5-2.3	Calm	Calm	7	4	Rotten, Grease, Sour
5/20/2015	14:20	Downwind	W-NW	2.7-5.1	N-NW	5.8	7	4	Grease, Rotten
5/21/2015	09:57	Downwind	W-SW	5.5-7.8	W	6.9	7	4	Grease, Rotten, Sour
5/21/2015	13:00	Downwind	N	3.4-5.8	N-NW	13.8	15	7	Grease, Rotten
Transition Period									
5/26/2015	09:35	Downwind	N-NE	1.6-2.1	N	3.5	15	7	Rotten, Sour, Grease
5/27/2015	09:20	Downwind	W-SW	1.2-3.0	S-SW	4.6	15	7	Grease, Rotten
5/27/2015	14:05	Downwind	W	2.4-3.5	W-SW	9.2	30	15	Grease, Rotten, Sour
Active Misting System									
6/1/2015	08:15	Downwind	SE-S	1.7-4.2	E	4.6	15	7	Sour, Rotten, Faint Chemical Odor
6/1/2015	17:15	Downwind	S-SE	3.1-6.3	SE-E	10.4	30	7	Rotten, Chemical (multiple), Sour, Grease
6/2/2015	09:25	Downwind	SW-S	5.8-10.0	S-SE	9.2	15	7	Rotten, Sour, Chemical, Grease

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/2/2015	15:50	Downwind	S-SE	5.6-10.3	S-SE	12.7	15	7	Chlorine, Other chemical, Rotten, Sour, Grease
6/3/2015	11:47	Downwind	S-SE	2.2-3.8	S	6.9	30	15	Rotten, sour, Chlorine, Other Chemical
6/3/2015	14:20	Downwind	E-SE	2.3-3.5	E	3.5	7	4	Rotten, Sour, Grease, Wet Grass
6/4/2015	08:43	Downwind	NW	4.7-6.1	W-NW	6.9	7	4	Dead Animal, Rotten, Grease, Sour
6/4/2015	16:25	Downwind	NE	2.3-5.0	W	4.6	7	4	Rotten, Sour, Dead Animal
6/12/2015	9:00	Downwind	NE	5.3-8.9	NE	7.0	60	30	Rotten, grease, chemical
6/12/2015	15:12	Downwind	E	2.7-3.2	E	8.0	60	30	Rotten, sour, grease

4.0 2016 Results

As part of continued monitoring of potential significant odor generators, Sanimax was included in the 2016 odor survey. Results of this most recent round of monitoring produced slightly improved results compared to those recorded during 2014 and 2015 monitoring rounds and are shown in the table below.

2016 Monitoring near Sanimax

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/16/2016	14:45	Upwind	E-SE	5.6-7.1	E	6.9	2	2	Weeds/Grass, Garbage
6/16/2016	15:00	Downwind	S-SE	2.8-3.3	E	6.1	7	4	Rotten, Grease, Sour
6/21/2016	9:20	Upwind	W	5.8-6.3	W	10.4	<2	--	Garbage
6/21/2016	9:40	Downwind	W	4.2-6.8	W-SW	10.4	30	15	Sour, Rotten, Grease
6/21/2016	13:10	Downwind	NW	5.8-10.5	W	9.2	15	7	Grease, Rotten, Sour, Chemical
6/21/2016	13:35	Upwind	NW	8.1-11.9	W-NW	13.8	<2	--	Exhaust

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptions
6/24/2016	9:34	Downwind	S-SW	3.6-4.5	S	6.9	15	7	Grease, Rotten
6/24/2016	9:40	Upwind	S-SW	3.7-5.2	SE	5.8	2	--	Grass
6/28/2016	10:50	Downwind	SE	2.4-5.3	calm	calm	7	7	Grease, Rotten, Sour
6/28/2016	11:02	Upwind	S-ES	4.4-5.7	E-NE	3.5	<2	--	Grass
6/29/2016	13:53	Upwind	S	3.2-4.0	S-SE	3.5	<2	--	Grass
6/29/2016	14:04	Downwind	S-SW	2.1-3.0	S-SE	3.5	7	4	Rotten, Sour
6/30/2016	10:37	Downwind	S-SW	1.4-2.7	S-SW	3.5	7	4	Rotten, Grease
6/30/2016	10:54	Upwind	S-SW	3.5-4.8	calm	calm	<2	--	Grass
6/30/2016	15:45	Downwind	N	6.1-8.5	N	15	7	4	Sour, Rotten, Chemical (bleach)
6/30/2016	15:55	Upwind	N	8.8-12.4	N	15	No Detect	--	N/A
Downwind Detection Average							11.9	6.5	

Grease, sour, rotten, and chemical (bleach) odors were detected regularly downwind during the 2016 study. These potentially "offensive" odors are similar with previous descriptions recorded in 2014 and 2015. The grease, sour, rotten, and chemical (bleach) odors reflected consistent with odors generated at the facility. Odors observed downwind of the Sanimax facility were found to be a combination of both stack emissions and fugitive odors as identified in the 2015 report.

Comparing these results to data from 2014 and 2015, averaged odor strengths were reduced for the 2016 downwind detections. Detections at or above 7 odor units decreased to only five observations and three observations were at or above 15 odor units in 2016. The average detection of all observations decreased from 19.4 odor units (averaged for all events from 5/19 to 8/19) in 2015 to 11.9 odor units in 2016.

The misting system installed in 2015 to control fugitive odors was active during all observations. Unlike monitoring in 2015, limited data identified chemical odors thought to be generated from the system in 2016. Only one detection of an undetermined chemical odor was detected downwind on June 21. In 2015, the facility also reported control issues with blood drying that were thought to contribute to the elevated odors during previous monitoring. No issues of odor control malfunctions were reported from the facility during the June 2016 monitoring likely contributing to the decreased odor strengths.

Upwind monitoring recorded no odors consistent with those recorded downwind. Common odors such as cut grass and vehicle exhaust were detected at low dilution levels. Two upwind

observation recorded an odor described as garbage on June 16 and 21. With the wind out of the east to southeast on June 16, the odor was thought to potentially be from across the Mississippi River, but no exact source was identified. The detection on June 21 was attributed to a garbage collection truck that drove by during the observation. The grass and exhaust odors detected upwind can likely be attributed to monitoring locations in overgrown areas, parking lots, and along truck hauling routes. No upwind observations were considered at offensive levels.

Weather conditions at the odor observation locations were fairly comparable to the concurrent weather data recorded at the South St. Paul airport. Generally, the wind speed is higher at the airport compared to the industrial portion of the City to the north where Sanimax is located.

5.0 Summary

After eight downwind observations during this round of monitoring, and comparing them with the data collected from previous monitoring rounds in 2014 and 2015, Sanimax appears to still be consistent with a Significant Odor Generator as defined by the City Ordinance. Some improvement was seen in 2016 with average downwind detection strengths decreasing from 19.4 odor units in 2015 to 11.9 odor units in 2016, but the frequency of odors at or above 7 odor units continues.

Little distinction was evident if the facility odors were from stack emissions or fugitive odors related to truck loading or onsite holding tanks. Unlike the results for 2015 when activation of the truck odor misting system was evident in the data with an additional chemical odor detected along the fence line of the facility's boundary, only one downwind detection recorded an undetermined chemical odor in 2016 presumed to be attributed to the misting system.

As mentioned above in the results section, odors observed downwind of the Sanimax facility are likely a combination of both stack emissions and fugitive odors. The data continues to show no clear evidence of reduced downwind detections due to activation of the misting system, but this is likely due to stack emissions from facility processes having more influence downwind than fugitive odors from truck loading. With no reported emission control system issues from the facility during the 2016 monitoring round, and a decrease in average downwind odor strengths, it is more likely that these improvements are attributed to reduced odor generated from stack emissions versus odors from truck loading/unloading.

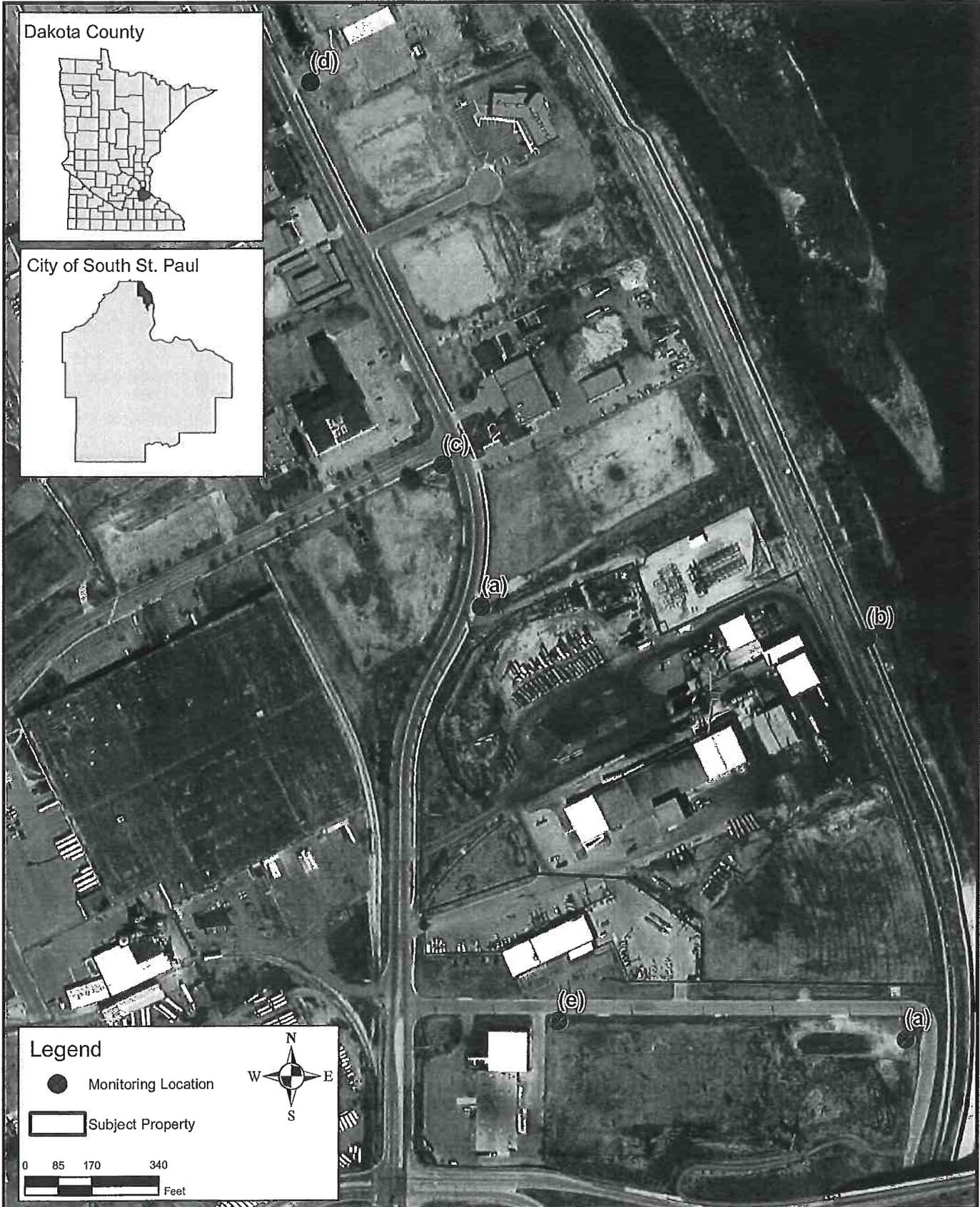
Considering the odor observations at or above 7 odor units in 2016, it is likely that more monitoring would continue to generate additional odor observations of 7 odor units or above. At this time, it can be determined that Sanimax still generates significant odor consistently enough to be deemed an SOG as defined by the City Ordinance. A summary of significant detections are included below.

2016 Significant Odor Summary for Sanimax

Date	Time	Location	Wind Direction (Field)	Wind Speed (Field), mph	Wind Direction (Airport)	Wind Speed (Airport), mph	Detection Threshold, Odor Units	Recognition Threshold, Odor Units	Descriptors
6/16/2016	14:45	Downwind	S-SE	2.8-3.3	E	6.1	7	4	Rotten, Grease, Sour
6/21/2016	9:40	Downwind	W	4.2-6.8	WSW	10.4	30	15	Sour, Rotten, Grease
6/21/2016	13:10	Downwind	NW	5.8-10.5	W	9.2	15	7	Grease, Rotten, Sour, Chemical
6/24/2016	9:34	Downwind	S-SW	3.6-4.5	S	6.9	15	7	Grease, Rotten
6/28/2016	10:50	Downwind	SE	2.4-3.5	Calm	Calm	7	7	Grease, Rotten, Sour
6/29/2016	14:04	Downwind	S-SW	2.1-3.0	S-SE	3.5	7	4	Rotten, Sour
6/30/2016	10:37	Downwind	S-SW	1.4-2.7	S-SW	3.5	7	4	Rotten, Grease
6/30/2016	14:45	Downwind	N	6.1-8.5	N	15	7	4	Sour, Rotten, Chemical (bleach)

List of Figures

Figure 1 – Monitoring Locations



Legend

- Monitoring Location
- ▭ Subject Property

Path: S:\PT\GIS\Map196019\GIS\MonitoringLocations\Map1\Figure01_Sanimax.mxd

	<p>3535 VADNAIS CENTER DR. ST. PAUL, MN 55110 PHONE: (651) 490-2000 FAX: (888) 908-8166 TF: (800) 325-2055 www.sehinc.com</p>	<p>Project: SSTPA 136019 Print Date: 8/1/2016</p> <p>Map by: akutz Projection: NAD83 UTM 15N Source: ESRI, SEH MnGeoFSA2015Aerial</p>	<p>Monitoring Locations 2016 Sanimax Odor Survey Report South St. Paul Odor Monitoring South St. Paul, MN</p>	<p>Figure 1</p>
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This map is neither a legally recorded map nor a survey map and is not intended to be used as one. This map is a compilation of records, information, and data gathered from various sources listed on this map and is to be used for reference purposes only. SEH does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and SEH does not represent that the GIS Data can be used for navigational, tracking, or any other purpose requiring exacting measurement of distance or direction or precision in the depiction of geographic features. The user of this map acknowledges that SEH shall not be liable for any damages which arise out of the user's access or use of data provided.

Appendix A

Field Data Sheets



Shert Electronics Headlines Inc.
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St. Paul, MN 55110-5196
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800.325.2055 toll free
sehinc.com

5 LOCATIONS

ODOR MONITORING DATA SHEET

Date: 6/16/2016 Inspector Code: _____ Signature: Aaron Kutz Name: Aaron Kutz

Time	Location	WSN	D.H. (60-2)	R.H. (60-2)	<	ND	H.T.	Descriptors					Prec	Wind	Speed	Temp	RH	BP	Comments
								1	2	3	4	5							
1 14:45	SANIMAX	1	2	2	WN			weeds/grass, garbage											Upwind, drive past
2 15:00	"	3-4	7	4			-7	Rotten, grease, sour											Downwind, just northeast entrance on transfer
3																			
4																			
5 15:15	TC TANNING	3	4	2			-5	Dead Animal											Downwind, garbage
6																			
7 15:20	TC TANNING	3	4	2			-5	Dead Animal, point											Downwind, Along Clinton Ave.
8																			
9 15:38	TC TANNING				X		-1	Exhaust											UPWIND, DANNE, INC
10 15:30	TC TANNING				X		0	N/A											Along Peterson
11																			
12																			
13 15:55	Long Chen/Concord				X		0	N/A											Upwind, JFCW PARKING Lot
14																			
15																			
16 16:10	"	3	4	2			-4	Animal, hay/minor											Downwind, directly west across Concord Ave.
17																			
18																			
19																			
20																			

Additional comments:
 → Mixing System Active, Some Stack activity at SANIMAX
 → See Note About Concord and Long Chen Due to wind direction could not separate

Key: WS is Wind Odr Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3282 Scale: 0, 1, 2, 3, 4, 5, 6 OR A, B, C, D, E, F, G

1 is Rubens Immetry Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, SSE, SE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Date: 6/21/2016

Inspector Code: _____
Signature: Aaron Kutz
Name: AARON KUTZ

Time	Location	WSI	D.H. (60-2)	R.H. (60-2)	<2	ND	H.T.	1	2	3	4	5	Whea	Prec	Wind	Speed	Temp	RH	BP	Comments
18:40	TC Hide	4	15	7			-7	Dead Animal, Soap					Sunny	None	WSW	4.5-6.8	72.7	50.6	29.76	Downwind, DANONER, Inc. lot
20:50	TC TANNING	3-4	7	4			-6	chemical (rotten eggs), burnt					"	"	WSW	3.0-4.8	71.5	49.1	"	Upwind, ADC front's back lot
9:00	"	0				X		N/A					"	"	WSW	5.5-8.5	72.0	47.1	29.75	Upwind, ADC front's back lot
9:08	TC Hide	0				X		N/A					"	"	WSW	3.1-6.9	73.3	45.9	"	Upwind, poll in off Hardwood pile path
9:20	SANIMAX	1-2			X		-2	Garbage					"	"	W	5.8-6.3	75.3	43.5	29.76	Downwind, Behind Pallet Company
9:40	"	5	30	15			-10	Soap, Rotten, grease					"	"	W	4.2-6.8	76.8	43.2	29.24	Upwind, post office lot
10:00	Long Clean/animal	2	2	-			-1	wood, burnt, manure/animal					"	"	W	4.0-7.5	77.5	42.2	29.25	Upwind, post office lot
10:15	"	0				X		N/A					"	"	NNW	5.5-7.2	79.9	37.9	29.23	Upwind, post office lot
9:45	"	0				X		N/A					"	"	NNW	5.6-7.8	81.0	35.2	29.21	Downwind, DUFC back lot
10:55	"	2-3	4	2			-4	Animal/manure, wood					"	"	NW	3.5-4.7	84.1	30.9	29.72	Downwind, bike path
10:10	SANIMAX	4-5	15	7			-7	Grease, rotten, soap, chemical					"	"	NW	5.8-10.5	85.3	31.5	29.20	Upwind, corner of Hardwood & Avenue
10:55	"	1-2			X		-2	Exhaust					Sunny	None	NW	8.1-11.9	87.9	29.8	"	Downwind
13:48	TC Hide	4-5	7	4			-6	Dead Animal, exhaust					"	"	NNW	4.7-8.3	84.2	29.3	29.19	Downwind
14:00	TC TANNING	4	7	4			-7	chemical (rotten egg), Dead Animal					"	"	NNW	6.1-10.5	83.5	30.8	"	Upwind
14:10	"	9				X		N/A					"	"	NNW	3.8-4.3	83.5	30.6	29.18	Upwind
14:15	TC Hide	1-2			X		-1	Asphalt					"	"	W	3.5-4.4	82.4	31.5	"	Upwind

Additional comments:

→ misting system active and stack activity at Sanimax for both observations
→ During A.M., Garbage truck drove by during upwind reading

WS is Wind Oler Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
or WS is German VDI 3282 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1 is Bureau Intensity Scale 1,2,3,4,5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Heavy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (6-15 mph); Strong Wind (16-25 mph)



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 sehinc.com

ODOR MONITORING DATA SHEET

Date: 6/24/2016 Page 1 of 1

Inspector Code: _____ Signature: AARON KUTZ
 Name: AARON KUTZ

Time	Location	WSI	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Wind	Speed	Temp	RH	BP	Comments	
							1	2	3	4	5							
9:37	SANDMAX	34	15	7		-6	Grease/rotten					None	45-50	58	64.6	28.3	Downwind,	
9:40		1	2	-		0	grass					None	52-57	77.1	60.5	29.88	upwind	
9:48	TC Hide/Ammonia				X							None	49-60	76.8	58.6	29.70	upwind	
9:54		34	7	4		-5	Dead animal					None	35-61	71.2	52.1	28.89	downwind	
10:07	Concord		14		X							None	32-65	75.9	59.4	28.29	upwind	
10:14	Longchere	2-3	4	2		-4	Grease/rotten (Sweet chemical)					None	42-89	74.5	61.2	28.3	upwind	
10:10	Longchere	2-3	4	2		-3	animal					None	39-41	82.7	47.2	28.29	downwind	
10:23	Concord	2	4	2		-3	animal / burnt hair					None	46-83	80.6	51.8	29.29	downwind	
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20																		

→ waterpods
 gas being lot

Additional comments:

WSI is Wind Order Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
 or WS is German VDI 3522 Scale: 0, 1, 2, 3, 4, 5 OR A, B, C, D, E, F, G

1 is Blustar Intensity Scale: 1, 2, 3, 4, 5

Weather: Misty, Sunny, Partly Cloudy, Mostly Cloudy, Overcast, Hazy

Precipitation: None, Fog, Rain, Sleet, Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed: Calm (<1 mph), Light Breeze (1-5 mph), Moderate Wind (5-15 mph), Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Date: 6/28/2016 Inspector Code: _____ Signature: Aaron Kurtz Name: AARON KURTZ Page 1 of 1

Time	Location	WSH	D.H. (60-2)	R.H. (60-2)	ND	H.T.	Descriptors					Was	Prec	Wind	Speed	Temp	RH	BP	Comments
							1	2	3	4	5								
10:50	SANITARY	3-4	7	7		-5	Grease	Other	Sour			Part cloudy	None	SE	24.5	73.7	44.7	29.50	Downwind, Armour & Hardman
11:00	N	1			X		Grease					None	SE	44.5	76.3	43.0	29.48	Upwind, Vanderosa Ave.	
11:50	TC Hides	2-3	4	2		-4	Dead Animal					None	SSE	32-47	73.4	45.6	29.49	Downwind, parcel lot of Natural Gas Co	
12:00	TC Hides	3	4	4		-4	Dead Animal	Grass			PC	None	NE	Int	75.2	43.7	29.47	Downwind, corner of Maden and Clinton	
12:15	TC Hides/Tanning	1-2			X	-1	Exhaust					None	NSE	24.38				Downwind, parcel lot of Tanning	
12:28	Concord Meats	3-	4	4		-4	Animal	Bird				None	NNW	34-49	71.8	47.7		Upwind, Danner 10+	
12:35	Long Strong	4-5	15	7		-6	Manure	Animal			PC	None	N	13-24	78.4	38.8		Downwind, vacant lot S of facility on fence line behind holding pen	
12:45	N	0			X		N/A					None	N	33-46	73.8	46.2		Upwind, parcel lot of facility	
12:55	Concord Meats	0			X		N/A					None	NNE	37-55	76.6	41.1		Downwind, parking lot of OSC	

Additional comments: → Misty system active & sink/vent activity during observations (see pics)
→ Wind switching during TC Hides/Tanning observation

Notes: WS is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong or WS is German VDI 3222 Scale: 0,1,2,3,4,5,6 OR A,B,C,D,E,F,G

1-6 Bismar Intensity Scale 1,2,3,4,5

Weather: Heavy Stormy Partly Cloudy Heavy Cloudy Overcast Hazy

Predominant: None Fog: Rain: Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, SSE, SE, SSW, SW, WSW, W, WNW, NW, NNW
 Wind Speed (mi/h): Light-Breeze (1-5 mph), Moderate Wind (5-15 mph), Strong Wind (>15 mph)



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ODOR MONITORING DATA SHEET

Date: 6-29-16 Page 1 of 1

Inspector Code: _____ Signature: Aaron Kutz
Name: AARON KUTZ

Time	Location	WS/	D.H. (60-2)	R.H. (60-2)	ND	H.T.	1	2	3	4	5	Wea	Prec	Wind	Speed	Temp	RH	BP	Comments
1:53	Sarimack	1			X		grass					PC	None	S	32-4	74.5	40.5	29.3	upwind
2:04	Sarimack	4	7	4		-5	rotten / soil					PC	None	SSW	21-3	76.5	41.2	29.3	downwind
2:20	TC Hole / Animal	1-2	2			+2	grass / soil					PC	None	S	28-32	77.9	40.4	29.3	downwind
2:25	TC Hole / Animal	3	4	2		-4	dead animal					PC	None	S	24-31	79.8	40.7	29.3	downwind
2:33	TC Hole / Animal				X							PC	None	SSE	2-1.9	72.1	74.9	29.3	upwind
2:44	Concord man's				X							PC	None	SSE	1.4-3.7	73.3	34.4	29.3	upwind
2:46	longchen	1-2			X		wood					PC	None	SSE	21-3	81.2	34.8	29.3	upwind
2:55	longchen	2-3	4	2		-4	animal / manure / soil					PC	None	SSE	4-6.6	77.8	38.3	29.3	downwind
2:59	Concord man's	2-3	4	2		-3	animal / manure					PC	None	SE	26-40	80.1	36.1	29.3	downwind
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
18																			
20																			

Key: WS is Wind Odor Scale: 1-Very Weak, 2-Weak, 3-Moderate, 4-Strong, 5-Very Strong
or WS is German VDI 3082 Scale: 0, 1, 2, 3, 4, 5 OR A,B,C,D,E,F,G

1 is Beaufort Intensity Scale: 1, 2, 3, 4, 5

Weather: Mostly Sunny; Partly Cloudy; Mostly Cloudy; Overcast; Hazy

Precipitation: None; Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, SSE, SE, SSW, SW, WSW, W, WNW, NW, NNW
Wind Speed: Calm (<1); Light breeze (1-5 mph); Moderate wind (6-15 mph); Strong wind (16-25 mph)

Additional Comments:



ODOR MONITORING DATA SHEET

Date: 6/30/16 Inspector Code: _____ Signature: _____ Name: AARON KUTZ

Time	Location	WSI	D.H. (80-2)	R.H. (80-2)	<	ND	HT.	Descriptors						Temp	RH	BP	Comments
								1	2	3	4	5	6				
19:44	Concord	1-2				X	-4	Sweet	Baked								UPWIND, vacant lot S of family parking lot
2 7:51	Long Cheney	1-2	2	2			-4	Sweet	Baked								UPWIND, 2020 parking lot
3 10:00	Concord	2-3	2	2			-4	Animal	Burnt								Downwind, Long cheng lot
4 10:13	Long Cheney	3	4	2			-5	Animal	Mandate								Downwind
5 10:37	SANDMAX	4	7	4			-6	Rotten	Grease								Downwind, the path
6 10:51	"	1-2				X	0	Gross									UPWIND, Along Vandross Ave
7 11:05	"	2	4	2			-5	Dead Animal									Downwind, Along Clinton Ave
8	→ No	Upwind	cat	7	4		-6	of other station	due to								UPWIND,
9 13:49	TC TANNING	4	7	4			-6	Dead Animal	Rotten								Downwind, Along madison st.
10 14:04	"	0				X		N/A									UPWIND, Along Clinton Ave
11 14:15	Concord	3	2	2			-4	Animal	Hay/manure								Downwind, vacant lot south of facility
12 14:27	Long Cheney	3	2	2			-4	Animal	Hay/manure								Downwind, parking lot along south fence line
13 14:38	"	1				X	0	Gross/urinals									UPWIND, on edge of property
14 14:43	Concord	1	4	2			0	Gross									UPWIND, Truck repair parking lot
15 15:15	TC Side	4-5	4	4			-5	Dead Animal									Downwind, Along headman
16 15:23	TC TANNING	4-5	4	4			-6	Dead Animal	Rotten								Downwind, Along headman
17 15:30	TC Side	0				X		N/A									UPWIND, over grow area N of building
18 15:40	TC TANNING	0				X		N/A									UPWIND, over grow area N of building
19 15:45	SANDMAX	5	7	4			-6	Sour	Rotten	clean							Downwind, weathering of fuel
20 15:55	"	0				X		N/A									UPWIND, headman and Alton

WSI is Wind Color Scale: 1-Very Weak; 2-Weak; 3-Moderate; 4-Strong; 5-Very Strong
OR WS is German VDI 3882 Scale 0-1, 2, 3, 4, 5 OR A, B, C, D, E, F, G

HT is Bimetal Intensity Scale: 1, 2, 3, 4, 5

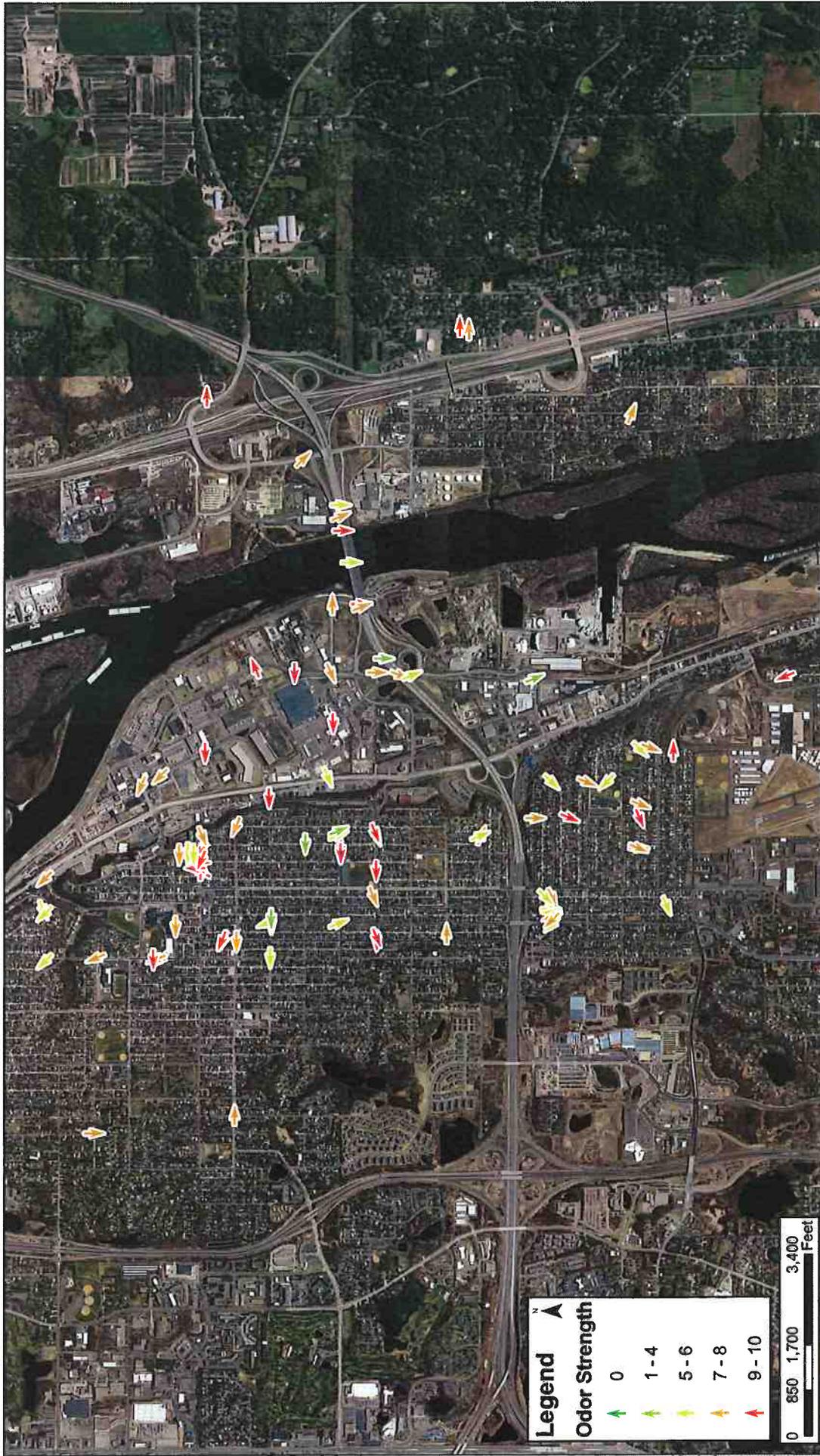
Weather: Heavy Snow; Farty Cloudy; Heavy Cloudy; Overcast; Hazy

Precipitation: Heavy Fog; Rain; Sleet; Snow

Wind Direction (blowing from): N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW, NNW, NW
Wind Speed: Calm (<1); Light Breeze (1-5 mph); Moderate Wind (5-15 mph); Strong Wind (>15 mph)

Road 1

Road 2



Legend

Odor Strength

- 0 ▲
- 1-4 ▲
- 5-6 ▲
- 7-8 ▲
- 9-10 ▲



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Project: SSTRPA 190919
Print Date: 11/17/2016
Map by: Inhouse
Production Manager: LTM: TSN
Dwgs: 05/11/2016

Odor Complaint Locations
City of South St. Paul
South St. Paul, Minnesota

Figure 1

This map is a digital illustration of an aerial photograph. It is not intended to be used as a survey or as a legal document. The map is a representation of the information available at the time of the map's creation. The map is not intended to be used as a legal document. The map is not intended to be used as a legal document. The map is not intended to be used as a legal document.

Air Quality Improvement Initiatives

© Update Meeting June 13th, 2016



2016 Initiatives

☉ Mechanical Optimization First Priority (Completed Items)

75K Blood Scrubber

- 75KB - Check nozzles and headers for plugging
- 75KB - Check recirc lines for plugging
- 75KB - Clean inlet ducts
- 75KB - Clean internals
- 75KB - Install Δ P transmitter
- 75KB - Remove and clean mist eliminator
- 75KB - Remove screen on recirc - increased flow ~80 gpm
- 75KB - replace rubber boot on fill line with pipe
- 75KB - Replace snowflake media with 3.5" Tri-pack
- 75KB - Replace two pigtail nozzles with approp. ones.
- 75KB - Replace missing corner of mist eliminator
- 75KB - Install new pH/ORP probe
- 75KB - Repipe chemical feed lines

12K Blood Scrubber

- BG - Finish repiping Blood cyclone Δ P meter
- BT1 - Add packing
- BT1 - site clear old piping

12K Blood Venturi

- BV - Install Δ P transmitter
- BV - Repair leaking supply headers
- BV - Replace leaking fresh water to nozzles line
- BV - Seal large access door to stop leaks
- BV - replace existing drain valve w/one w/a handle

75K Receiving Scrubber

- 75KR - Add media
- 75KR - Clean and sanitize basin
- 75KR - Flush recirculation header
- 75KR - Install flow meter
- 75KR - Install Δ P transmitter
- 75KR - Remove and clean mist eliminator
- 75KR - Remove and clean nozzles
- 75KR - Remove media
- 75KR - install pH/ORP probe
- 75KR - install pH/ORP probe
- 75KR - repipe chemical feed lines
- 75KR - site clear

18K Scrubber

- 18K - cleaned mist eliminator
- 18K - Drain and clean basin if needed
- 18K - Install flow meter
- 18K - Install new pH/ORP probe/repiping lines
- 18K - Install Δ P transmitter
- 18K - rebuild spray arms that are sagging
- 18K - Repair caustic injection port
- 18K - Repair cracked union on recirc. line
- 18K - Repipe chemical feed lines
- 18K - replace bent nozzles

18K Venturi

- 18KV - Install flow meter
- 18KV - Install Δ P transmitter



2016 Initiatives (Continued)

⊙ Mechanical Optimization First Priority (Completed Items)

75KRM Red Meat Scrubber

- 75KRM - Repair recirculation line
- 75KRM - add packing
- 75KRM - Clean old media
- 75KRM - Clean the basin
- 75KRM - Install flow meter
- 75KRM - Install support for inlet section of recirc line
- 75KRM - Install Δ P transmitter
- 75KRM - Remove and check/clean the mist eliminator
- 75KRM - Remove nozzles and flush lines
- 75KRM - Install new pH/ORP probe
- 75KRM - repipe chemical feed lines

40K Feather Scrubber

- F - Add packing (~30 ft3) or extend nozzles
- F - fix broken scrubber fan drain line
- F - fix broken stack sniff tube
- F - fix broken vent line from sewer
- F - Install 2" tee on main water header for scrubber
- F - Install flow meter
- F - Install Δ P transmitter
- F - Repair leaking nipple on recirculation line
- F - Relocate caustic feed above flow meter
- F - Repipe recirculation & chemical feed

65K Poultry Scrubber

- P - Check spray nozzles for plugging
- P - Clean basin
- P - Install 2nd screw on spray arm supports
- P - Install new pH/ORP probe/repiping lines
- P - Install Δ P transmitter
- P - Rebuilt 1 spray arm that was broke off at threads
- P - Redo recir. and chemical feed lines
- P - Replace steel u-bolt and bolt w/SS
- P - stabilize the main supply header inside the scrubber

4K Feather Venturi

- FV - Clean
- FV - Install flow meter
- FV - Install Δ P transmitter
- FV - remove 1 spray nozzle so have more flow

12K Poultry Venturi

- PV - Install flow meter
- PV - Install Δ P transmitter
- PV - Repipe all recirc. piping due to heavy buildup
- PV - Clean basin
- PV - unplug overflow line



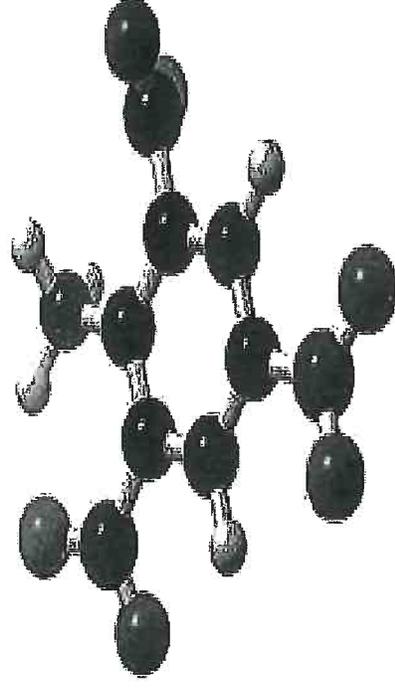
2016 Initiatives (Continued)

- **Ongoing training & testing utilizing Green Bay and Montreal personnel & expertise**
 - **Isabelle Bouvier (Montreal) in SSP May through August**
 - Sharing of best practices
 - Proper training of all operations staff
 - Revision of SOP's & Training Documents
 - Development & Implementation of all Preventative Maintenance Schedules
 - Implementation of chemistry changes
 - **Dennis Burceau (GB & SSP)**
 - Continued presence at both facilities
 - Direction and implementation of chemistry changes



2016 Initiatives (Continued)

- **Chemistry Changes & Initiatives**
- Initiated following mechanical optimization
- 1st Phase of changes already being undertaken
- Training
- **2nd Phase to be Implemented in August 2016**
- Additional mechanical equipment on order (lead times)
- Stabilization of 1st phase changes prior to advancement
- Continued education & training





COUNCIL WORKSESSION REPORT

DATE: NOVEMBER 28, 2016

DEPARTMENT: Finance

ADMINISTRATOR: SPKsa

3

AGENDA ITEM: Financial Policy: Airport Revenue and Allowable Uses

DESIRED MEETING OUTCOMES:

This item is for the purpose of reviewing and discussing the policy for accounting for Airport Revenues and guiding Allowable Uses of Airport Revenues

OVERVIEW:

It has become common practice for Cities to evolve and formalize financial practices through the review and development of formal policies. In addition many of the credit rating agencies now place greater emphasis on the importance of sound financial management practices as reflected by the use of declared financial policies.

The *attached Airport Revenue and Allowable Uses of Airport Revenue policy* outlines and documents existing but previously unwritten practices. The attached document formalizes these City practices with regard to revenues and expenditures in the Airport Operating and Capital Funds.

The policy incorporates the definition of Airport Revenues as identified in the Federal Aviation Administration (FAA) grant awards. The policy also incorporates all allowable uses as identified in the FAA Airport Compliance Manual. The procedures noted are general and we are developing a detailed procedures manual that will guide implementation of this policy.

Tonight, staff will provide a brief verbal summary and will address any questions or other considerations for the *attached financial policy*.

SOURCE OF FUNDS:

Airport Operating and Capital Funds

 <p>City of South St. Paul ADMINISTRATIVE POLICIES AND PROCEDURES</p>	<p>APP Department: Finance</p>
	<p>City Administrator Approval:</p> <hr/> <p>City Council Approval:</p> <p>Issue Date:</p> <p>Revised Date:</p>
<p>SUBJECT: AIRPORT REVENUE AND ALLOWABLE USE OF AIRPORT REVENUES POLICY</p>	

I. PURPOSE

The purpose of this policy is to ensure compliance with the requirements of state and federal regulations and the terms and conditions of the federal award from the Federal Aviation Administration (FAA). The Airport Improvement Program Grant and 49 USC 47107(b) requires the City to make certain assurances in regards to airport revenues and has established the general requirements for the use of airport revenue.

II. DEFINITIONS

Airport Revenue – All fees, charges, rents or other payments received by or accruing to the sponsor which are generated at the Airport.

Grant Funds – All funds received from the FAA and Minnesota Department of Transportation (MNDOT) for maintenance, equipment or capital improvements at the Airport.

III. POLICY

All revenue generated at the Airport will be recorded in the Airport Operating Fund, with the exception of payment in lieu of taxes (PILT) which is split between the Airport and the City General Fund based on tax rates. This exception was approved by FAA. All Grant dollars for maintenance will be recorded in the operating fund. Grant dollars received for capital improvements at the Airport will be recorded in the Airport Capital Fund. Revenues generated at the airport include lease revenues, tie down fees, gate and ramp fees, fuel sales, and other miscellaneous charges.

Airport revenue may be used for the capital and operating costs of the airport. Operating costs for the Airport include both direct and indirect costs, which can include reimbursements to the City for the costs of services actually received and documented. The Airport may also repay internal loans from the City, including principal and interest. The City allocates interest to all funds based on average cash balances and at the portfolio rate of interest. A portion of the general costs of government or the Administrative Support Charge is another allowable use of Airport Revenues because the allocation is consistent city wide.

The City will also adhere to the specific allowable costs identified in the FAA Airport Compliance Manual which incorporates the federal guidelines for the use of all airport revenues.

IV. PROCEDURE

The City has established two funds for all Airport activity – one operating fund and one capital fund. All revenues will be coded to one of these funds, depending on the use of

those dollars. All hangar leases and lease changes will be reviewed and approved by the city council.

The Finance Director will oversee the billing of all Airport leases and recording of all fuel purchases. Analytic procedures will be applied by the Finance Director throughout the year to ensure all revenues generated at the Airport are recorded into the Airport funds.

Expenditures of Airport revenues will adhere to the Council approved budget and to federal requirements. Grant specific improvement projects will be budgeted through the annual Capital Improvement Plan. Initiation and execution of individual capital improvements shall require specific Council approval and will only occur if the grant funding is authorized by FAA and/or MNDOT.

Detailed processes can be found in the Procedures Manual.

V. AUTHORITY FOR IMPLEMENTATION AND ENFORCEMENT

The Finance Director of the City is hereby designated as the responsible party for implementation of the Airport Revenue and Allowable Use of Airport Revenues policy and procedures, with general supervision by the City Administrator and Mayor/City council.