

May 2, 2014

MEMORANDUM

To: Joy Navarrete, Planning Department, City and County of San Francisco

From: Michael Keinath
Sarah Klug

Cc: Therese Brekke, Lennar Urban

Subject: Air Quality Analysis for the Automated Waste Collection Systems in the Candlestick Point-Hunters Point Shipyard Phase II Development Plan
Planning Department Case File No: 2007.0946E

Introduction

The Environmental Impact Report (EIR) for the Candlestick Point – Hunters Point Shipyard Phase II Development Plan (San Francisco Planning Department Case Number 2007.0946E) was certified by the City in June 2010. The FEIR analysis included discussion of an Automated Waste Collection Systems (referred to herein AWCS) in the Utilities Variant. The project sponsor, Lennar Urban, is seeking approval of the AWCS and additional details about the design are now available. This memorandum evaluates the proposed AWCS in light of the analysis and conclusions reached in the FEIR.

Project Description

The AWCS is a type of waste collection system. Instead of implementing the traditional method where waste trucks pick up trash on the side of the road, users will deposit their waste into inlets to an underground network of waste collection pipes that lead to one of three AWCS Facilities.

Separate inlets for regular trash, recycling items, and compostables will be located in every building and at appropriate public locations. Waste would enter the underground distribution network of piping periodically throughout the day. The pipes transport waste using vacuum pressure and air velocity created by electrically powered large suction fans. Once the waste reaches the AWCS Facility, the waste is separated from the transport air with a cyclone separator. The waste is then compacted with a compactor feed hopper and stored in separate 40 cubic yard containers, one for each waste stream – trash, recycling and compostables. When the containers of waste are full, trucks will transport the full container to either Recology's Tunnel Beatty Site (for trash and compostables) or their recycling facility at Pier 96 (recycling). An estimate of seven trucks per day would be needed to transport the full containers. The containers will be completely enclosed while onsite and in transport. Meanwhile, the exhaust air would pass through a multi-stage dry filtering system to remove particulates. One collection facility will be located on top of the parking garage for the retail center in Candlestick Point at the southwest corner of the intersection of Arellio Walker Way and Ingerson Avenue. The other two collection facilities will be located in Hunters Point Shipyard – one near Crisp and Ring Roads in a Research and Development area and one at Spear Avenue near C Street in a Research and Development area. Before the construction of the AWCS facilities is complete, Recology will handle waste collection using its current waste cart and collection truck methods.

Construction

The FEIR evaluated three construction related air quality impacts: *Impact AQ-1: Criteria Pollutants (Construction)*, *Impact AQ-2: DPM from Construction Activities*, and *Impact AQ-3: TACs from Construction Activities*. The construction activity data that was used to estimate emissions included construction in the areas where the facilities will be located. The construction HRA in the FEIR also included construction activities and construction emission sources in these locations. Thus, the construction impacts of the ACWS were included in the FEIR analysis. Consequently, the findings of the FEIR for *Impact AQ-1: Criteria Pollutants (Construction)*, *AQ-2: DPM from Construction Activities*, and *Impact AQ-3: TACs from Construction Activities* would not change based on the additional detail now available for the AWCS. Construction of the AWCS would comply with MM AQ 2.1 for construction emissions.

Operational Emissions

The FEIR evaluated operational emissions in *Impact AQ-4: Criteria Pollutants (Operational)* and *Impact AQ-5: Carbon Monoxide*. The FEIR included an analysis of CAP emissions from 78,109 daily external motor vehicle trips and area sources such as natural gas combustion, maintenance equipment, and consumer product use. Implementation of the AWCS would result in CAP emissions from truck travel and PM emissions from the exhaust of the AWCS Facilities.

In the FEIR, the emissions from the 78,109 trips were estimated using URBEMIS, which assumes a standard mix of vehicle types for the city/county. This mix would include both heavy trucks and passenger cars. The mix of vehicles for the city/county includes vehicles used for all types of trips, including waste pick up.

With implementation of the AWCS, the total quantity of vehicle miles traveled by garbage trucks throughout the Project would be significantly reduced. Each facility would have approximately 14 one way daily truck trips (7 trucks to and from each central collection facility), resulting in 21 daily round truck trips which go directly to and from each central collection facility rather than from building to building throughout the Project. Thus, emissions from the truck trips associated with the AWCS were fully accounted for in the FEIR and actual truck emissions with implementation of the AWCS would be lower than estimated in the FEIR due to the AWCS reduced truck miles traveled.

Emissions from the exhaust of the AWCS central collection facilities are expected to be minimal due to the design of the multi-stage dry filtering system. In an effort to further minimize emissions from the facilities, the filtration system will be designed to meet the Bay Area Air Quality Management District's (BAAQMD) Best Available Control Technology (BACT) for "Solid material storage - Enclosed".¹ The BACT limit is 0.01 grains per dry standard cubic foot (gr/dscf). Given this emission rate and the exhaust rate of the system, emissions for solid material storage would be 27.2 pounds per day (lb/day) or 4.96 tons PM₁₀ per year for one facility, as shown in Table 1. A source test may show that actual emissions from the AWCS may be much lower. Once the AWCS is operational, Recology will conduct initial testing of exhaust air for PM₁₀ emissions to ensure the emissions do not exceed this estimated rate. Recology will also develop an Operation Plan for the AWCS which will include a periodic monitoring schedule for testing air emissions from the AWCS. Recology will notify the San Francisco Department of Public Health (SFDPH) in its oversight role as Local Enforcement Agency (LEA) under CalRecycle prior to commencing AWCS operations. Testing results will be submitted to the LEA within 30 days of receipt of final testing results.

¹ BAAQMD. BACT Guideline. Section 11, Miscellaneous Sources, Solid Material Storage – Enclosed. Doc. # 1571.1 (10/18/91). Available at: <http://hank.baaqmd.gov/pmt/bactworkbook/default.htm>.

Table 1: Estimated PM₁₀ Emissions from Discharge of one Facility based on assumed BACT Emission Rate

Emissions	Flow Rate	Emissions	
gr/dscf	scf/min	lb/day	tons/year
0.01	13,200	27.2	4.96

The FEIR determined that *Impact AQ-4* was significant and unavoidable. The FEIR estimated PM₁₀ emissions from the 2010 Project to be 1,490 lb/day. Assuming the emissions in Table 1 from the discharge at each of the three collection facilities, calculated PM₁₀ emissions for the Project would increase by approximately 6% overall. However, the reduced truck travel distances associated with the AWCS would also decrease PM₁₀ emissions, such that a net increase of PM₁₀ emissions, assuming the Table 1 levels, would be less than 6% of that total. Such a change in Project emissions would not change the conclusions of *Impact AQ-4: Criteria Pollutants (Operational)*. Further, the conclusions related to *Impact AQ-5: Carbon Monoxide* (less than significant) would not change based on the additional detail now available for the AWCS. The AWCS is an all-electric system and thus no emit carbon monoxide emissions are generated and the AWCS reduces truck travel.

Health Impact of Operation of the Facilities

The FEIR evaluated the concentrations of TACs from operation of Research and Development uses in *Impact AQ-6: Toxic Air Contaminants*. The AWCS will not accept any hazardous waste or other sources of TACs. While TACs may be associated with waste, the waste will be stored at the collection facilities for a less than a day and hence would not be expected to break down and emit TACs. Furthermore, any decay of materials will occur within the enclosed containers ensuring that TACs will not be emitted into the environment at any appreciable quantities. Thus, the AWCS would not change the findings of *Impact AQ-6: Toxic Air Contaminants* (less than significant with mitigation).

Impact AQ-7: Traffic PM_{2.5} evaluated the impact of vehicular traffic on PM_{2.5} concentrations. The operation of the AWCS would result in PM_{2.5} emissions from trucks transporting the waste offsite. Seven trucks per day are expected to come to each of the three collection centers to collect the waste and transport it to the Recology Transfer Station at Tunnel Road or the recycling facility at Pier 96. The FEIR evaluated the PM_{2.5} concentration attributable to emissions from vehicles on surface streets in the Candlestick Point and Hunters Point Shipyard area as a result of the Candlestick Point-Hunters Point Shipyard Phase II Development in accordance with San Francisco's Article 38. Several roads were analyzed, including Third Street, Harney Way, and Evans Avenue. Article 38 focuses on PM_{2.5} concentration as opposed to other chemicals of concern. While PM_{2.5} is not the only pollutant of concern, the FEIR states that "the threshold concentration of PM_{2.5} is meant to serve as a health-protective 'proxy' or surrogate for pollutant exposure from vehicles."

Different types and sizes of vehicles emit air pollutants in different amounts. When determining the emissions from this traffic, a mix of vehicles was assumed. This "fleet mix" was determined using ratios of vehicle miles travelled by vehicle class reported in California Air Resources Board's Emission Factor Model (EMFAC), and thus it includes a certain percentage of trucks. Based on the traffic volume from the transportation analysis and percent of trucks from EMFAC, the Article 38 analysis assumed over 500 trucks per day on the roads analyzed, depending on the road. The estimate of truck traffic in EMFAC is based on projections of all types of truck traffic, which includes truck travel associated with a traditional waste collection system. Thus, by using EMFAC's fleet mix, the previous analysis would have included truck travel associated with a traditional waste collection system. The AWCS would decrease the truck travel on the main roads due to the larger capacity of the trucks associated with the AWCS and would virtually eliminate travel of waste collection trucks on

small residential roads. Thus, the impacts of the seven trucks (14 one-way trips) associated with each of the central collection facilities were included in the Article 38 analysis and the additional detail now available for the AWCS would not change the conclusions of *Impact AQ-7: Traffic PM_{2.5}* (less than significant).

Odors

Impact AQ-8: Odors states that “there may be some potential for small-scale, localized odor issues to emerge around project sources such as solid waste collection, food preparation, etc.” The FEIR found the effects “would be resolved by interventions after receipt of any complaints” and would be less-than-significant.

Recent BAAQMD guidance recommends reviewing odor complaints for similar facilities in the area to determine odor impacts of the proposed facility.² While there are no similar AWCS facilities nearby, TransVac has built and operated other similar facilities, most near hospitals. TransVac representatives report that TransVac has received no odor complaints from these facilities. Furthermore, to observe the odor conditions at a similar TransVac facility, ENVIRON visited the facility at the Swedish Hospital near Seattle, Washington. The site visit occurred during normal operating hours and conditions and when waste was emptying into the compactor. ENVIRON staff did not experience any odors at the site.

Furthermore, the features of the AWCS substantially minimize odor compared with a conventional waste collection system. With the AWCS, waste is deposited through inlets, drops into a hold chamber, and is held in place until a valve opens and allows the material to drop into the horizontal underground transport pipe network. The valve closes immediately after waste drops into the pipe network. This network is sealed throughout the system, and any potential odor is contained within the piping network. Waste held in the chamber will be emptied at least every 8 hours. Should the holding chambers fill up prior to the next scheduled time, a photo detector will automatically trigger the emptying of the chamber. In conventional waste collection systems, waste may be stored in trash containers inside buildings, outside residential units, or at curbside for up to 7 days prior to collection, resulting in odor where people live and work. The longer waste is allowed to mold, the greater the potential for odors. The AWCS would reduce the time waste is stored in building holding chambers to 8 hours or less. Furthermore, the AWCS is always under negative pressure so there is no buildup of odors.

The AWCS concentrates waste collection and the potential for odors to the three AWCS central collection facilities, but the potential for odors at the facilities might be less than the odors collected at any individual site in a conventional waste collection system. The lids to containers in a conventional waste collection system may be left open or ajar, allowing odors to be released, which is especially problematic during warm weather. The AWCS eliminates these sources of odors by eliminating individual cans and keeping waste enclosed. Even at the central collection facilities, the waste would be enclosed. Waste transported through the sealed pipe network travels to a cyclone separator and a waste compactor, which compresses the waste into sealed metal transport containers. When an AWCS waste container is full it is disconnected from the compactor and transported by truck to a waste disposal or recycling facility. The waste would be stored at the site for less than a day, compared with waste left for up to 7 days at residences and commercial properties in a conventional system.

² BAAQMD. 2012 CEQA Air Quality Guidelines. Available at: http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en

According to TransVac, odor has not been an issue at the existing known AWCS facilities, presumably due to features incorporated into the design. The only odiferous air that vents to the atmosphere is the discharge of the network of pipes. Before this air is discharged to the environment, the air is separated from waste with the cyclonic separator, and flows through a filter room. Due to the sheer volume of air needed to pull the waste through the system to the central collection facilities, odors are expected to be diluted before even receiving treatment. Air inlets will be located in the piping system in the streets and will occur throughout the community. These tend to be located upstream of waste inlets. Odors are not expected to be released from these inlets because the system is kept at negative pressure. In the event of a power outage, air could exist the vents, but such a situation would be temporary and rare. Further, the system could be evacuated to remove waste if necessary and eliminate any collection of odors.

Nonetheless, to reduce the potential for complaints and small-scale, localized odor issues, Recology and TransVac have prepared and would comply with an *Odor Management Plan*. This plan uses CalRecycle's Sample Odor Impact Minimization Plan^{3,4} as a guide for addressing odors. The Odor Plan, which is included as Attachment A of this document, outlines an odor monitor protocol, odor complaint response protocol, and describes the odor management measures.

Due to the design of the facilities, AWCS would not change the conclusion of *Impact 8: Odors* (less than significant). Further, Recology would manage the AWCS to minimize odors and address odor complaints if any, in compliance with the Odor Management Plan. Finally, the LEA has the authority to ensure that odor complaints, if any, are adequately addressed by Recology.

Regional Air Plans

Impact AQ-9: Consistency with Regional Air Plans compares the Candlestick Point – Hunters Point Shipyard Phase II Development Plan with the *Bay Area 2005 Ozone Strategy* and the *2009 Clean Air Plan*. The review of both plans focused on transportation and the need for smart growth. The AWCS is consistent with reduced transportation and smart growth strategies because the system takes heavy duty waste collection trucks off of neighborhood roads and reduces the total amount of truck miles driven. Thus, the AWCS would not conflict with the findings of *Impact AQ-9: Consistency with Regional Air Plans* (less than significant).

Attachments:

Attachment A: *Odor Management Plan for the Candlestick Point/Hunters Point Phase II Project AWCS*

³ CalRecycle. Sample Odor Impact Minimization Plan. Available at: <http://www.calrecycle.ca.gov/swfacilities/compostables/Odor/OIMP/Sample.doc>.

⁴ While this document was used as a guide for the attached odor management plan, many of its provisions are intended for a traditional waste collection or transfer facility and thus are not applicable to the AWCS.

Attachment A

**Odor Management Plan for the
Candlestick Point/Hunters Point Phase II Project AWCS**

Attachment A

**Odor Management Plan for the
Candlestick Point/Hunters Point Phase II Project AWCS**

Odor Management Plan
Automated Waste Collection System
Candlestick Point/Hunters Point
Phase II Project AWCS

Prepared April 2014

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1 Introduction

This Odor Management Plan (OMP) documents odor management practices that will be implemented at the central collection facility for the Automated Waste Collection System (“AWCS”) Facility located at Candlestick Point in San Francisco, California. This OMP will be available at the Facility to operations and inspection personnel, and revised as necessary to reflect any changes in the design or operation of AWCS Facility. This OMP and supporting documents will be made available to the San Francisco Department of Public Health, the Bay Area Air Quality Management District, or other local enforcement agency when requested.

The AWCS is a type of waste collection system that accommodates the collection of trash, recyclables, and compostables. Instead of implementing the traditional method of waste collection where waste trucks pick up waste in small containers located on the curb, users will deposit their waste into inlets to an underground network of waste collection pipes that leads to the AWCS Facility.

Separate inlets for the disposal of regular trash, recycling items, and compostables will be located in every building and at appropriate public locations. Waste will enter the underground distribution network of piping periodically throughout the day as users deposit waste into the inlets. The pipe transports waste using vacuum pressure and air velocity created by electrically powered large suction fans. Once the waste reaches the AWCS Facility, the waste is separated from the transport air with a cyclone separator. The waste falls into an in-feed hopper and is compacted and stored in containers (“containers”), one for each waste stream – trash, recyclables and compostables. The compactors and containers are stationary, and are located in an enclosed building. When the containers of waste are full, roll-off trucks will transport the containers to either Recology’s Tunnel Beatty Site (for trash and compostables) or the recycling facility at Pier 96 (recyclables). An estimate of seven trucks per day will be needed to transport the full containers. The containers will be completely enclosed while onsite and during transport. Meanwhile, the exhaust air would pass through a multi-stage dry filtering system to remove particulates. The AWCS Facility layout is shown in Attachment A.

The Facility will accept both residential and commercial waste continuously 24 hours per day, 7 days per week. The disposal of hazardous wastes or other toxic wastes is not permitted.

Odors have not been an issue at any other AWCS site due to the odor reducing strategies built into the system design, which will also be implemented at the Candlestick Point Site. Nonetheless, this Odor Management Plan was prepared to minimize the risk of producing odors, and to establish best practices with respect to odor management during operations.

1.1 Key Waste Reduction Design Features

By design, the AWCS minimizes odors. When the waste is transported through the enclosed AWCS system, it does not come into contact with the ambient environment, which reduces the potential for odors to escape. After the waste enters an AWCS inlet, the waste travels through a completely enclosed piping system, until it reaches an enclosed cyclone, in-feed hopper, compactor, and waste storage container. The only time any waste may be exposed to ambient

air is when the storage container inside the facility is disconnected from the compactor prior to being sealed for transport which should only amount to a matter of minutes.

The air that is used to transport the waste to the AWCS is separated from the waste in the cyclone and released to the atmosphere through an exhaust stack. Due to the sheer volume of air needed to force the waste through the system to the Facility, any odors are greatly diluted before release. The limited capacity of the containers ensures the waste will be kept onsite for a short time, usually a matter of hours, which reduces the amount of time the waste has to decay and potentially produce more odors.

2 Odor Monitoring Protocol

2.1 Proximity to Odor Receptors

The nearest receptors may include residents and medical staff in the Life Care building, residences, retail customers, workers and vendors, hotel residents and staff, people visiting the movie theatre, restaurants and fitness club, schools, places of worship, people playing at the playground and workers located around the project site. Table 1 shows the distance from the AWCS Facility to the closest receptor by type and direction.

Table 1: Distance and direction to the off-site receptors

Receptor	Closest Distance from AWCS (feet)	Direction
Residents and Medical Staff of Life Care Building	53	North of the facility
Other Residences	420	North-West of the facility
Retail	45	East of the facility
Hotel	625	South of the facility
Movie Theatre	10	South of the facility
Restaurant	45	East and South of the facility
Fitness Club	469	South of the facility
Playground	866	North of the facility
School	866	North of the facility
Place of Worship	1,203	North of the facility

2.2 Method for Assessing Odor Impacts

Each operating day, the operator will evaluate on-site odors and operations for potential release of objectionable odors. Potential releases include, but are not limited to:

- Receipt of exceptionally odorous material.
- Unanticipated delays in transporting material offsite.

If questionable or objectionable on-site odors are detected by site personnel, operations personnel will implement the following protocol, as appropriate:

1. Investigate and determine the likely source of the odor.
2. Assess the effectiveness of available on-site management practices to resolve the odor event and immediately take steps to reduce the odor-generating capacity of on-site material as follows:
 - If material is exceptionally odorous on receipt, add carbon source and/or detergent based deodorants at the compaction phase to adsorb the odorous compounds.
 - In case of leaks through the pipes during suction, cyclone separation or compaction phases, clean aisles of spilled materials and treat with carbon source and/or other detergents or products to mitigate odor.

3. Determine if the odor traveled off-site by surveying the site perimeter and noting existing wind patterns.
4. If it is determined that possible odors impacts occurred, contact the appropriate local enforcement agency and/or neighbors.
5. Record the event for further operational review.

3 Meteorological Conditions

To determine meteorological conditions and patterns at the AWCS Facility, meteorological data collected from a station installed by the Bay Area Air Quality Management District at the Hunter's Point Shipyard for a period from October 1, 2002 through September 30, 2003 was analyzed. This location is just over one mile away from the AWCS Facility and has similar surrounding terrain and land use, so was considered representative of the site. Attachment B shows wind rose plots of this data for the entire year as well as by seasons.

The annual wind rose shows that the prevailing dominant winds are the westerly winds. The prevailing dominant winds from April through October are also westerly winds. During the colder months, i.e. November through March, winds are not as strong and do not have a particular dominant wind direction.

4 Odor Management Measures

4.1 Enclosed Waste Processing and Storage

The AWCS Facility is a fully-enclosed system that uses underground pipes and pressurized air to transport municipal solid waste, including recycling and compostable materials, from waste inlets to enclosed centralized waste collection facilities. As a result, the AWCS system significantly minimizes the potential for odors in waste inlets, waste storage areas and areas where waste is compacted and operators will ensure the system remains enclosed. The system operates 24 hours/day, which reduces the amount of time waste has to accumulate and decay. Following compaction, the waste moves into a closed waste storage Container for removal. These components are housed within an enclosed building. In an effort to ensure waste is not exposed to the ambient environment, any leaks or openings in the pipes, hopper, or container will be repaired as soon as is practicable.

4.2 Covered Containers

The system is designed so that the metal containers will always be covered and closed, helping ensure that the waste will not be released from the containers. The operators of the AWCS and the material delivery drivers will ensure the containers are always securely closed during transport. As mentioned previously, when the containers are disconnected from the compactors, a modest amount of waste will be exposed to the ambient environment for a brief time. The operators and material delivery drivers will ensure the containers are closed as soon as they are disconnected from the compactors.

4.3 Door closures

The aboveground portion of the AWCS Facility is enclosed within a building. The trucks access the covered containers through roll-up doors. These doors will remain closed unless a truck is accessing a container for transport to minimize the release of facility air to the environment.

4.4 Contact Information

Facility personnel will install a sign indicating a contact person to call for questions or complaints about the Facility. The sign will show both a Facility and Bay Area Air Quality Management District (BAAQMD) phone number that is accessible 24 hours a day, 7 days a week. The sign that will be posted is shown in Attachment C.

The sign will meet the following requirements:

- installed within 50 feet of the main entrance to the facility
- at least 48 inches wide by 48 inches tall
- lettering at least 4 inches tall
- text contrasting with the sign background
- lower edge of the sign located between 6 and 8 feet above grade.

4.5 Housekeeping

Facility personnel will sweep or clear the facility floor and other areas of the facility in the case of a system upset which causes trash to accumulate outside of the closed containers. The facility floor will be swept, followed by the use of detergents or other products to mitigate odors, if necessary.

The facility floor will be completely swept or cleared as needed but not less than once a week. The sweeping/cleaning activity will be logged in a sweeping log as shown in Attachment D.

The facility personnel will ensure that the cyclone separator and hopper remain unobstructed and clean.

The waste storage containers will be washed after the contents are unloaded to reduce odors from residual waste. This washing will occur at Recology's Tunnel Beatty Site and not at the AWCS facility.

4.6 Breakdown Procedures

In the event of a power outage or scenario that prevents operation, the facility will not be able to receive waste. Waste may have been in transport when the power outage occurred and hence would be stalled somewhere in the system of piping. To reduce odors from waste under these circumstances, the facility personnel will ensure that the system piping at the facility remains intact and will keep the waste completely enclosed.

In the event that waste cannot be transported offsite due to breakdown, the facility personnel will employ all feasible measures to reduce odors from the onsite waste.

4.7 Control Strategies

Odor control strategies are built into the AWCS design; accordingly other control strategies are not anticipated at this time.

5 Complaint Response Protocol

5.1 Protocol for Handling Complaints

On the days when odor complaints are received by the AWCS Facility, or on days when notified by the District or the appropriate local enforcement agency that an odor complaint has been received for the Facility, a Facility representative will conduct an odor survey of the surrounding community as soon as practical, but not to exceed 2 hours after receiving the complaint, or notification from the District or the appropriate local enforcement agency.

The survey will be conducted in a complete radius at no less than 4 locations around the Facility, which would extend as far outward as odors are detected. The odor survey results will be documented in a complaint response odor survey form, as shown in Attachment E.

If contact information from the complainant is available, the operator at the Facility will contact that person to inform him/her of how the odor is being addressed within one week of receiving the complaint.

If the odor survey shows that the design of the system or this odor management plan could be updated to reduce the odors that caused the complaint, the Facility will make these updates if cost effective.

The odor surveys and logs will be reviewed once every 12 months. For repeat complaint situations, the Facility will review the survey logs and identify if design or structural changes are needed to be made to the Facility to reduce odors. This Odor Management Plan will also be reviewed and updated with methods to reduce odor sources related to the AWCS Facility. A plan to address a repeat complaint will be developed within two weeks of a third similar complaint.

5.2 Written Log of Odor Complaints

Whenever an odor complaint is received, operators shall fill out information on the complaint as shown in Attachment F. The operators at the facility will maintain a written log of all odor complaints received, for a minimum of 2 years from the date of receipt of the complaint and make the log available upon request.

Appendix A

Facility Layout



DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS
BEFORE YOU DIG

UNDERGROUND SERVICE ALERT OF NORTHERN CALIFORNIA

SITE LEGEND

— PROPERTY BOUNDARY LINE
- - - - - ROW

SITE INFORMATION

SITE AREA = 31,500 SQ. FT. (0.69 ACRES)
BUILDING FOOTPRINT = 6,350 SQ. FT.

PARKING

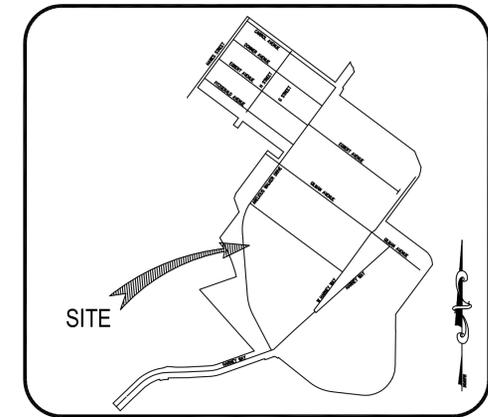
4 SPACES + 1 HANDICAP (11'x18') = 5 SPACES

LANDSCAPING

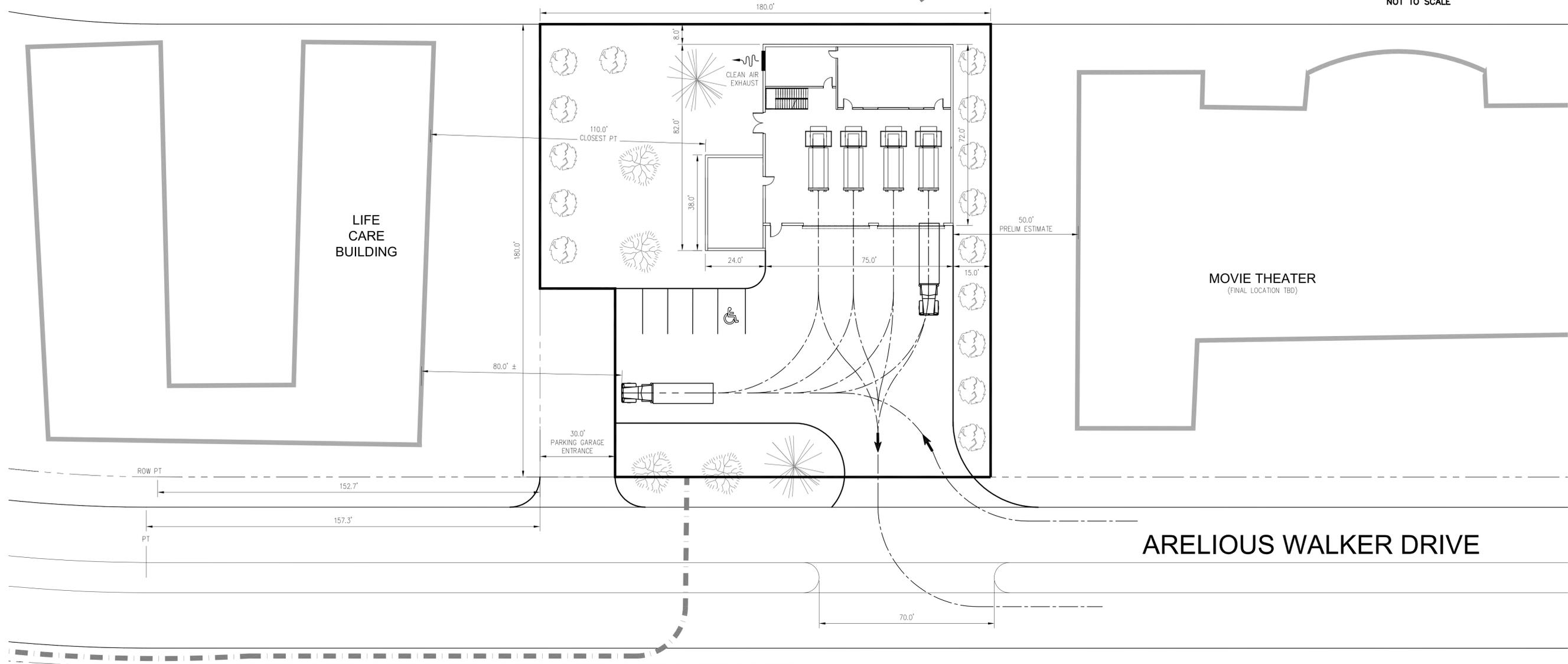
EXTERNAL/STREET LANDSCAPING
STREET FRONTAGE = 3 TREES

INTERNAL LANDSCAPING
TOTAL TREES/SHRUBS = 18 TREES

DRAINAGE AND LIGHTING TBD



SITE LOCATION MAP
NOT TO SCALE



SITE PLAN - AWCS COLLECTION CENTER



NO.	BY	DATE	REVISIONS	APPROVAL

DATE: 11/25/2013
DRAWN BY: ...
PROJ. ENGR: ...
PROJ. MGR: ...

1835 Blake Street, Denver, CO 80202
ph. 303.327.8185 email. www.transvacs.com

SUB-PHASE CF-02
AUTOMATED WASTE COLLECTION SYSTEM
CANDLESTICK POINT REDEVELOPMENT
CITY AND COUNTY OF SAN FRANCISCO CALIFORNIA

SHEET NUMBER
WC-1.7
JOB NUMBER
529-01

I:\SYSTEMS\529 - CANDLESTICK-HUNTERS POINT - SAN FRANCISCO, CA\52901 - CANDLESTICK-HUNTERS POINT (URBAN DEVELOPMENT)\ENGINEERING\DWG\TYAC DP-01.DWG 4/8/2014

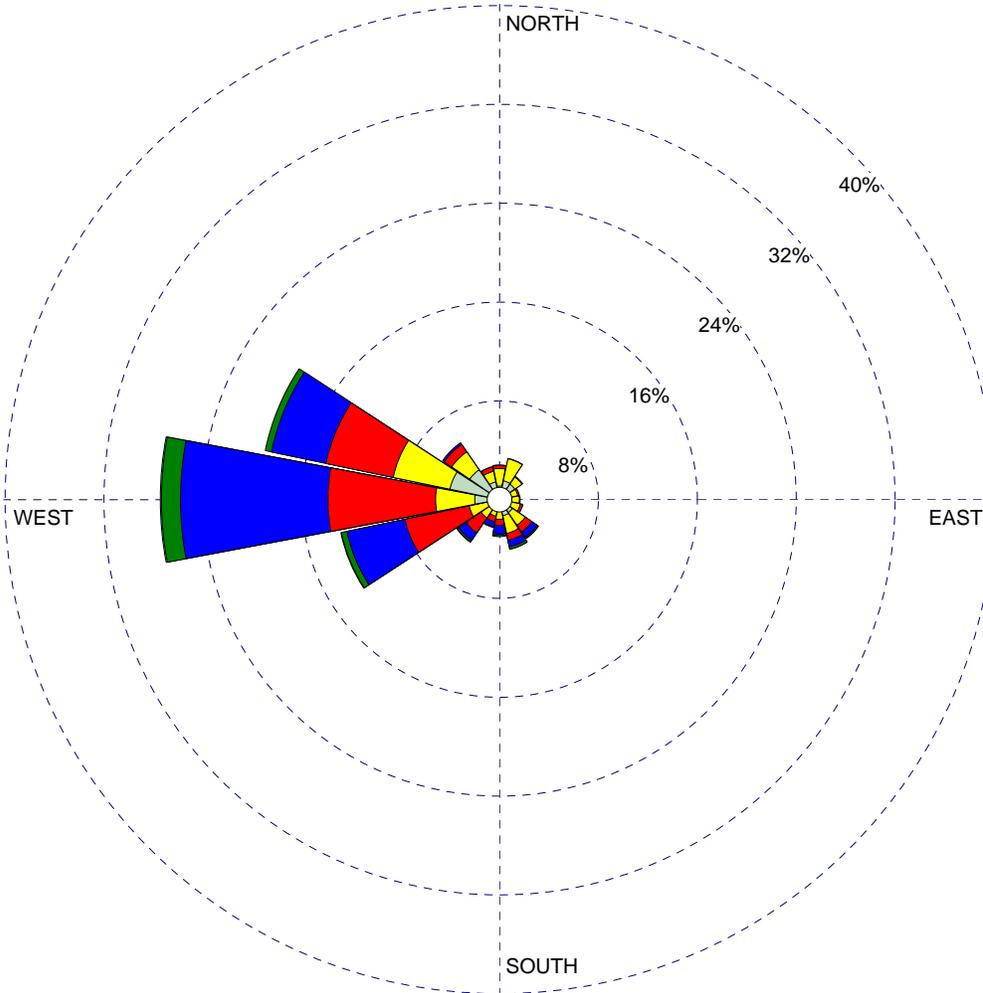
Appendix B
Wind Rose

WIND ROSE PLOT:

**Annual Meteorological Conditions
Automated Waste Collection System**

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 0.83%

LOCATION:

Candlestick Point-Hunters Point
Shipyards

DATA PERIOD:

**Start Date: 10/1/2002 - 00:00
End Date: 9/30/2003 - 23:00**

COMPANY NAME:

ENVIRON International Corporation

MODELER:

CALM WINDS:

0.83%

TOTAL COUNT:

8760 hrs.

AVG. WIND SPEED:

3.94 m/s

DATE:

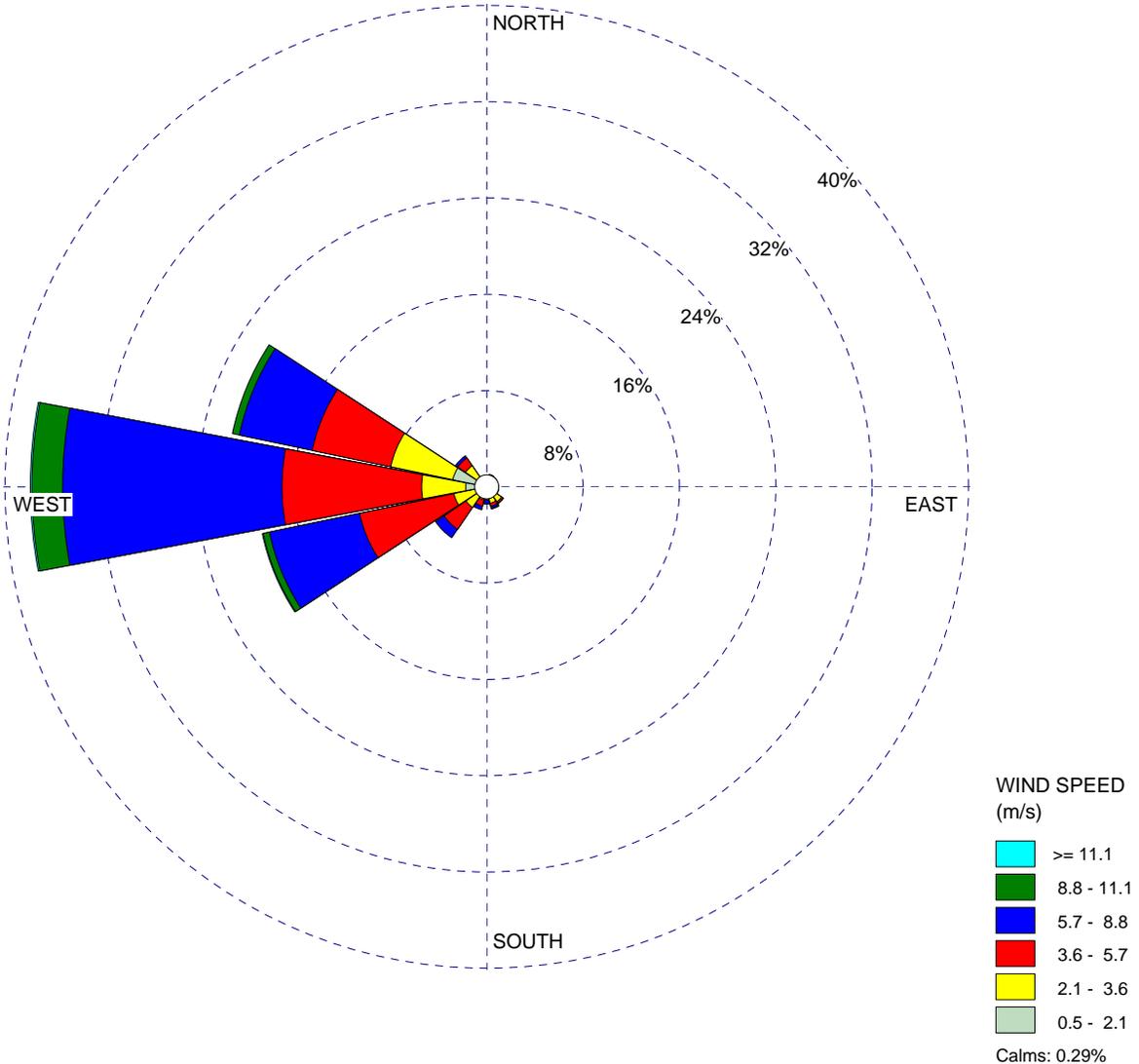
3/28/2014

WIND ROSE PLOT:

**April - October Meteorological Conditions
Automated Waste Collection System**

DISPLAY:

**Wind Speed
Direction (blowing from)**



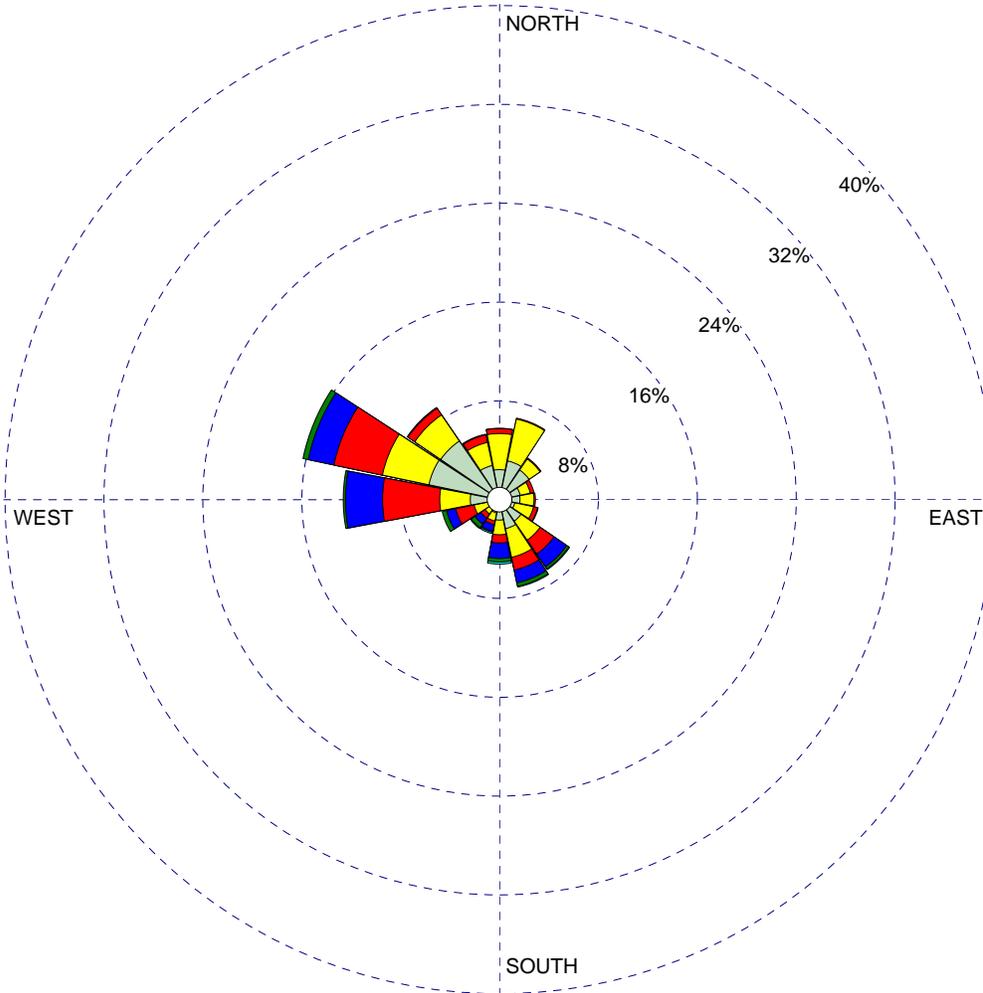
LOCATION: Candlestick Point-Hunters Point Shipyard	DATA PERIOD: Start Date: 10/1/2002 - 00:00 End Date: 9/30/2003 - 23:00	COMPANY NAME: ENVIRON International Corporation	
		MODELER:	
	CALM WINDS: 0.29%	TOTAL COUNT: 5136 hrs.	
	AVG. WIND SPEED: 4.68 m/s	DATE: 3/28/2014	

WIND ROSE PLOT:

**November - March Meteorological Conditions
Automated Waste Collection System**

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.1
- 8.8 - 11.1
- 5.7 - 8.8
- 3.6 - 5.7
- 2.1 - 3.6
- 0.5 - 2.1

Calms: 1.60%

LOCATION: Candlestick Point-Hunters Point Shipyard	DATA PERIOD: Start Date: 11/1/2002 - 00:00 End Date: 3/31/2003 - 23:00	COMPANY NAME: ENVIRON International Corporation	
		MODELER:	
	CALM WINDS: 1.60%	TOTAL COUNT: 3624 hrs.	
	AVG. WIND SPEED: 2.89 m/s	DATE: 3/28/2014	

Appendix C

Contact Sign

For questions or complaints, please contact:

Recology [Contact Name]

Recology [Contact Phone Number]

Bay Area Air Quality Management

District: 1-800-334-6367

Appendix D
Log of Sweeping Activities

Appendix E
Odor Complaint Response Survey Form

Odor Survey Form

Complaint Information

Address of Complainant: _____ Time of Complaint: _____ Date of Complaint: _____

Odor Survey Information

Name of Inspector: _____ Time of Survey: _____ Date of Survey: _____

Indicate the locations surveyed: _____

If an odor is detected during the survey, identify:

Location of odor: _____

Time when odor detected: _____

Duration of odor: _____

Description of odor character: _____

Frequency of detected odor (circle one): single occurrence quarterly monthly weekly daily

Intensity of odor (circle one): very light light moderate strong very strong

Describe the odor source (if identified). If possible, identify specific cause of odor (i.e., specific compound, equipment, process, plant upset, etc.): _____

Have odors been detected at this location at different times?

If so, compare previous and current odor observations: _____

Other notes:

Weather Conditions During Odor Survey

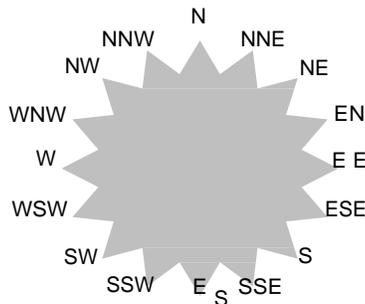
Weather conditions: Clear sky / sunny Partially cloudy Overcast Rain

Temperature: _____°F Relative Humidity: _____%

Wind speed: Light breeze (1-5 mph) Moderate wind (5-15 mph) Strong wind (15+ mph)

Wind direction (direction from):

(circle one)



Appendix F

Log of Odor Complaints

Odor Complaint Form

Contact Information

Complainant Name: _____

Telephone Number: _____

Address: _____

E-mail Address: _____

General Information

Date complaint received: _____

Time complaint received: _____

Location where odor detected: _____

Date when odor first detected: _____

Time(s) when odor detected: _____

Duration of odor: _____

Description of odor character: _____

Alleged source of odor: _____

Frequency of detected odor (circle one): single occurrence quarterly monthly weekly daily

Intensity of odor (circle one): very light light moderate strong very strong

Weather Conditions During Time When Odor First Experienced by Complainant

Weather conditions: Clear sky / sunny Partially cloudy Overcast

Temperature: _____ °F Relative Humidity: _____ %

Wind speed: Light breeze (1-5 mph) Moderate wind (5-15 mph) Strong wind (15+ mph)

Wind direction (direction from):
(circle one)

