APPENDIX A: ESP Supplemental Biological Report, ESP NSAP, NSAP Comparison Table, City's Response to ESP Supplemental Biological Report

Recommendations on the Newby Island Sanitary Landfill and The Recyclery California Environmental Quality Act (CEQA) Documentation

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International Disposal Corp. of California, Inc. and Browning-Ferris Industries of California, Inc.

Newby Island Sanitary Landfill

September 2010

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1 Introduction

In September 2009, the City of San Jose issued a Draft Environmental Impact Report for the *Newby Island Sanitary Landfill and The Recyclery Rezoning Project*. The project proposes a Planned Development (PD) rezoning of the Newby Island Sanitary Landfill (NISL) and the adjacent Recyclery. The purpose of the proposed PD zoning is to allow the maximum height of the active portion of the landfill to be raised to 245 feet (NGVD29), adding approximately 15.12 million cubic yards to the capacity of the landfill. Presently, the landfill is designed and permitted to an elevation of 150 feet (NGVD29), as approved by the Local Enforcement Agency (LEA; City of San Jose Department of Planning, Building, and Code Enforcement) and concurred with by the California Integrated Waste Management Board (CIWMB).

Environmental Stewardship & Planning, Inc. (ESP) was retained by International Disposal Corp. of California, Inc. and Browning-Ferris Industries of California, Inc. (Applicant) to assist with the preparation of documentation in support of the proposed project. At the direction of the Project Proponent, ESP conducted the following tasks:

- Developed an objective baseline for the gull population;
- Supplemented data included in the Biological Resources Chapter of the September 2009 Draft Environmental Impact Report (EIR);
- Supplemented data included in the September 2009 Nuisance Species Abatement Plan (NSAP);
- Supplemented data included in the Project Description of the September 2009 Draft EIR;
- Reviewed evidence of alleged litter impacts; and
- Reviewed evidence of alleged corvid impacts.

This report consists of the following sections:

- Section 1. Introduction
- Section 2. Baseline Development
- Section 3. Baseline Maintenance
- Section 4. Evaluation of Proposed Project's Potential Impact on Sensitive Species
- Section 5. Corvids
- Section 6. Litter
- Section 7. References Cited
- Section 8. List of Preparers

2 Baseline Development

Pursuant to CEQA Guidelines §15125(a), "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published . . . This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." ESP reviewed the available gull count data in order to determine a baseline condition of the number of gulls that occurred at the Newby Island Sanitary Landfill (NISL) at time the Notice of Preparation (NOP) for the Draft EIR for the Newby Island Sanitary Landfill and The Recyclery Rezoning Project (City of San Jose, 2009) was issued.

2.1 Background

The disturbed area of the NISL, where trash is actively deposited and buried each day with daily cover material, attracts gulls in winter months, including California gulls, herring gulls, Thayer's gulls, ring-billed gulls, western gulls, glaucous-winged gulls, and other species that forage on the refuse at the active landfill area. Gull numbers are substantially lower in summer, but California gulls, which breed in the South Bay, use the landfill throughout the summer.

Table 1 details the historic number of gulls that have been reported at the NISL. Of note is one report of 33,000 gulls (including 8,000 California gulls in December 1998 and another report of 24,000 gulls (including 8,000 California gulls) in February 1998 (City of San Jose, 2009). The draft EIR (City of San Jose, 2009) noted that gull counts at NISL were conducted in 2006 by the San Francisco Bay Bird Observatory (SFBBO) and U.S. Geologic Survey (USGS). Those surveys found that California gulls were the most numerous gull species between April and August, with an average of 3,877 California gulls per survey during those months. In winter of 2007, the highest survey count was 3,612 California gulls in February (City of San Jose, 2009).

Since November 16, 2007, NISL has implemented a gull abatement program. Prior to July 18, 2008, abatement activities consisted of the periodic use of pyrotechnical devices. After July 18, NISL initiated the use of falcons and dogs, along with pyrotechnics and all-terrain vehicle (ATV) harassment, to further reduce the number of gulls visiting the landfill. According to the NISL manager, ATV and pyrotechnic abatement is now conducted on an "as needed" basis depending on a field determination of the relative abundance of gulls at the landfill. The falconer is typically onsite from 6:00 a.m. to 5:30 p.m. Monday through Friday, and from 6:00 a.m. to 4:30 p.m. on Saturday. There is no coverage on Sunday because the landfill is closed. The falconer also uses pyrotechnics and dogs, as needed, to

expel gulls. Additional harassers (additional falconers, ATV drivers, and pyrotechnic specialists) can be used as determined by facility management (R King, pers. comm., 2010).

2.2 Material and Methods

Data were provided by SFBBO for all gull sampling episodes between February 2007 and March 2010. Data were provided in Excel format and reduced for analysis. On each day gull counts were performed, the SFBBO typically conducted between two and four, one-hour sampling episodes. In total, SFBBO has conducted over 125 daily surveys since February 2007. For additional details on the SFBBO survey methodology and results, refer to *Draft Gull Abatement Surveys at Newby Island Landfill, 2007-2009* (Robinson-Nilsen and Demers, 2010). For the purpose of this analysis, the individual gull counts from each day were summed and the average number of gulls per survey-day was obtained. Hereafter referred to as average number of gulls/survey.

Table 1. Historic Number of Gulls Reported at NISL

Gull Species	Date	Number Observed
California gull	Feb 1998	8000
	Dec 1998	8000
	Apr-Aug 2006	3,877
	Feb 2007	3,612
Herring gull	Dec 1997	9000
	Dec 1998	24,000
	Mar 2000	20,000
Western gull	Feb 1997	200
	Dec 1998	400
Glaucous-wing gull	Dec 1997	300
	Feb 1998	800
Thayer's gull	Dec 1997	300
	Feb 1998	350
All gull species	Feb 1998	24,000
	Dec 1998	33,000

Source: City of San Jose, 2009

Using Excel spreadsheets and Analyse-it statistical software (Analyse-it Software Ltd., 2008), the average number of gulls/survey was graphed against calendar date for 2007, 2008, 2009, and for 2007-2010 combined. Descriptive statistics (e.g., mean [$\boxtimes$], standard deviation [s], standard error of the mean [$s_{\boxtimes}$], etc.) were calculated by year, by season (summer, fall, winter, spring), and by reproductive period (breeding and non-breeding) for each year. This report recognizes that the frequency of data sampling between different years, season, and reproductive periods were uneven. For example, in 2007, sampling was conducted on 30 days; in 2008, 74 days; and in 2009, 22 days.

2.3 Baseline Selection

Analysis of the annual data indicates a continuing reduction in the average number of gulls/survey from an average of 2,597 in 2007, to 987 in 2008, and 609 in 2009 (Table 2). The empirical data suggests that the reduction in the average number of gulls/survey is due to the implementation of the abatement program by NISL. This represents a 77 percent reduction in three years.

Table 2. Descriptive Statistics of Gull Counts/Sampling Period By Year

Statistic	Year		
	2007	**2008**	**2009**
Mean	2597.3	987.0	609.2
Standard Error	297.4	133.6	109.0
Median	2328.8	501.6	442.1
Mode	4692.5	13.3	N/A
Standard Deviation	1629.1	1149.3	511.0
Sample Variance	2653869.4	1320786.9	261146.61
Kurtosis	-0.5	4.9	4.8
Skewness	0.5	1.9	1.8
Range	6163.5	6232.5	2298.3
Minimum	34	0	13.8
Maximum	6197	6232	2312
Sum	77915	73038.6	13402.7
Count	30	74	22
Confidence Level	608.3	266.3	226.6

Source: Padre Associates, 2010.

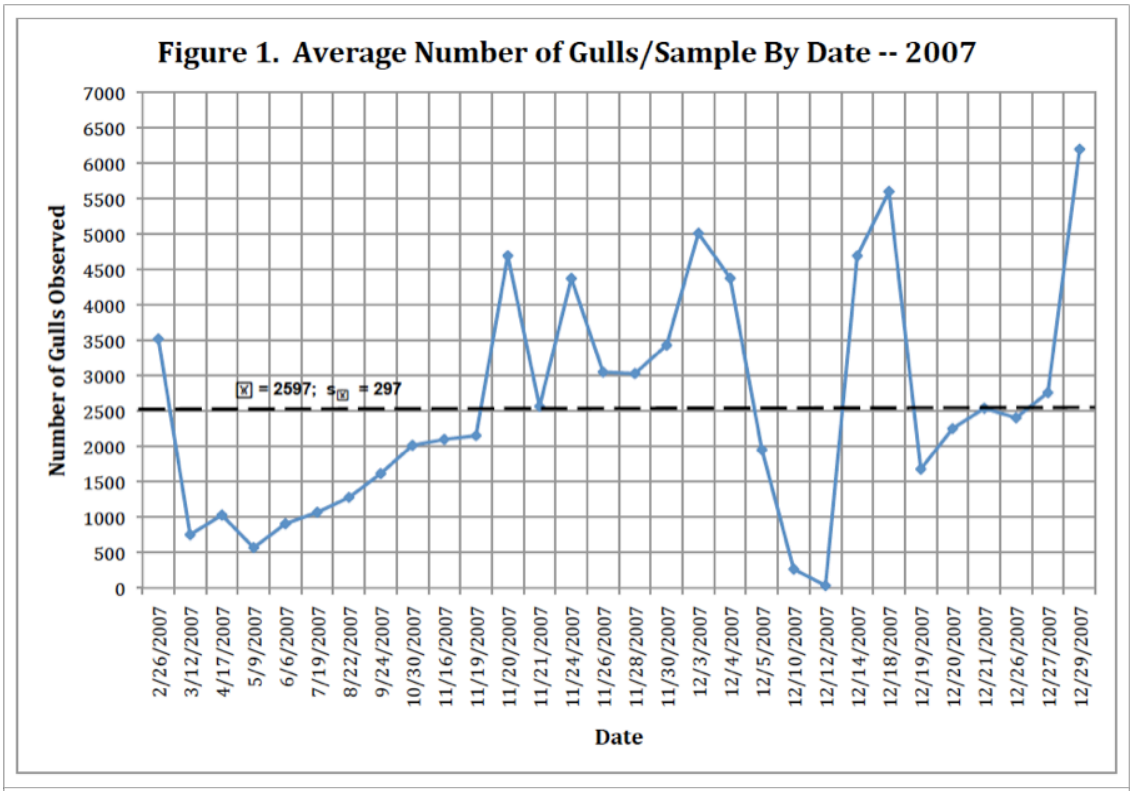


Figure 1. Average Number of Gulls/Sample By Date -- 2007
Number of Gulls Observed
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
x̄ = 2597; s = 297
2/26/2007
3/12/2007
4/17/2007
5/9/2007
6/6/2007
7/19/2007
8/22/2007
9/24/2007
10/30/2007
11/16/2007
11/19/2007
11/20/2007
11/21/2007
11/24/2007
11/26/2007
11/28/2007
11/30/2007
12/3/2007
12/4/2007
12/5/2007
12/10/2007
12/12/2007
12/14/2007
12/18/2007
12/19/2007
12/20/2007
12/21/2007
12/26/2007
12/27/2007
12/29/2007
Date

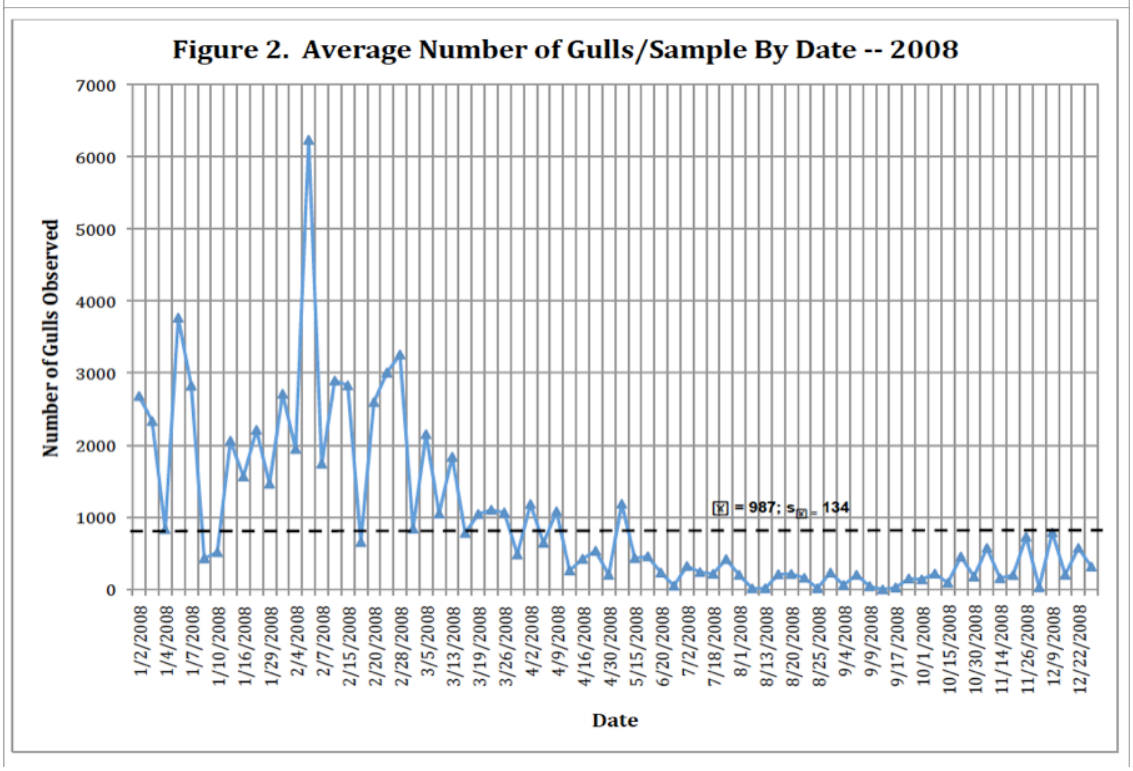


Figure 2. Average Number of Gulls/Sample By Date -- 2008
Number of Gulls Observed
7000
6000
5000
4000
3000
2000
1000
0
x̄ = 987; s = 134
1/2/2008
1/4/2008
1/7/2008
1/10/2008
1/16/2008
1/29/2008
2/4/2008
2/7/2008
2/15/2008
2/20/2008
2/28/2008
3/5/2008
3/13/2008
3/19/2008
3/26/2008
4/2/2008
4/9/2008
4/16/2008
4/30/2008
5/15/2008
6/20/2008
7/2/2008
7/18/2008
8/1/2008
8/13/2008
8/20/2008
8/25/2008
9/4/2008
9/9/2008
9/17/2008
10/11/2008
10/15/2008
10/30/2008
11/14/2008
11/26/2008
12/9/2008
12/22/2008
Date

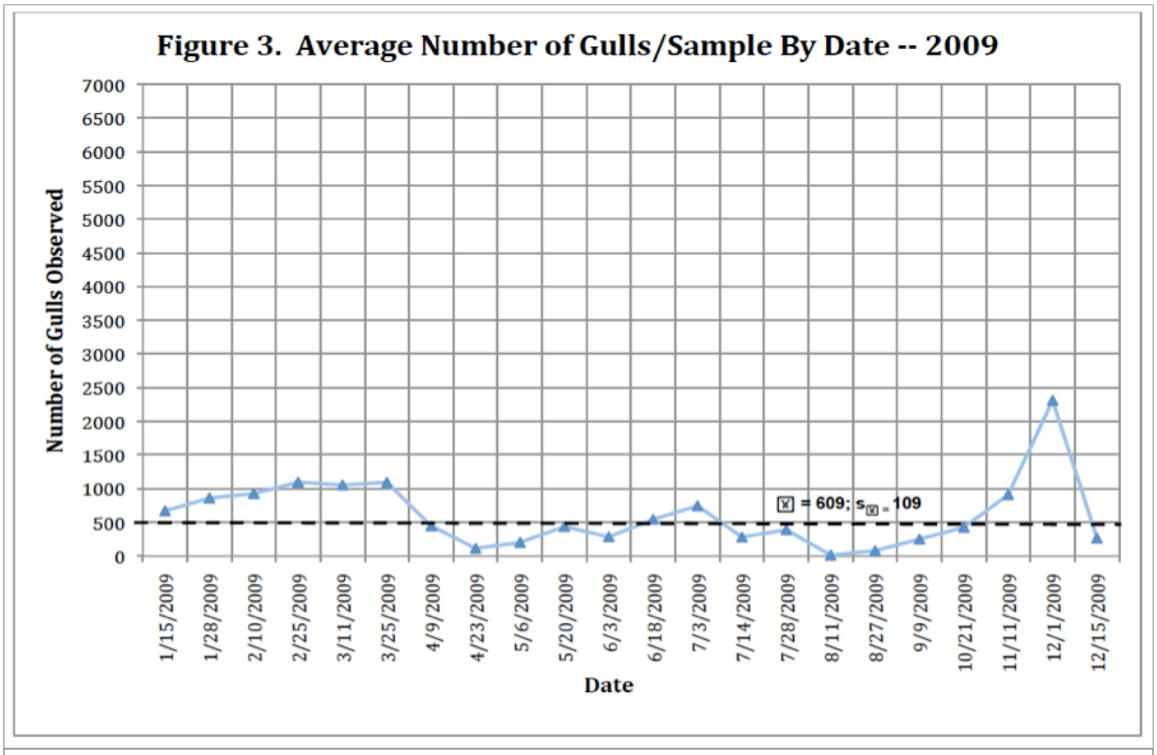


Figure 3. Average Number of Gulls/Sample By Date -- 2009
Number of Gulls Observed
7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
= 609; s = 109
1/15/2009
1/28/2009
2/10/2009
2/25/2009
3/11/2009
3/25/2009
4/9/2009
4/23/2009
5/6/2009
5/20/2009
6/3/2009
6/18/2009
7/3/2009
7/14/2009
7/28/2009
8/11/2009
8/27/2009
9/9/2009
10/21/2009
11/11/2009
12/1/2009
12/15/2009
Date

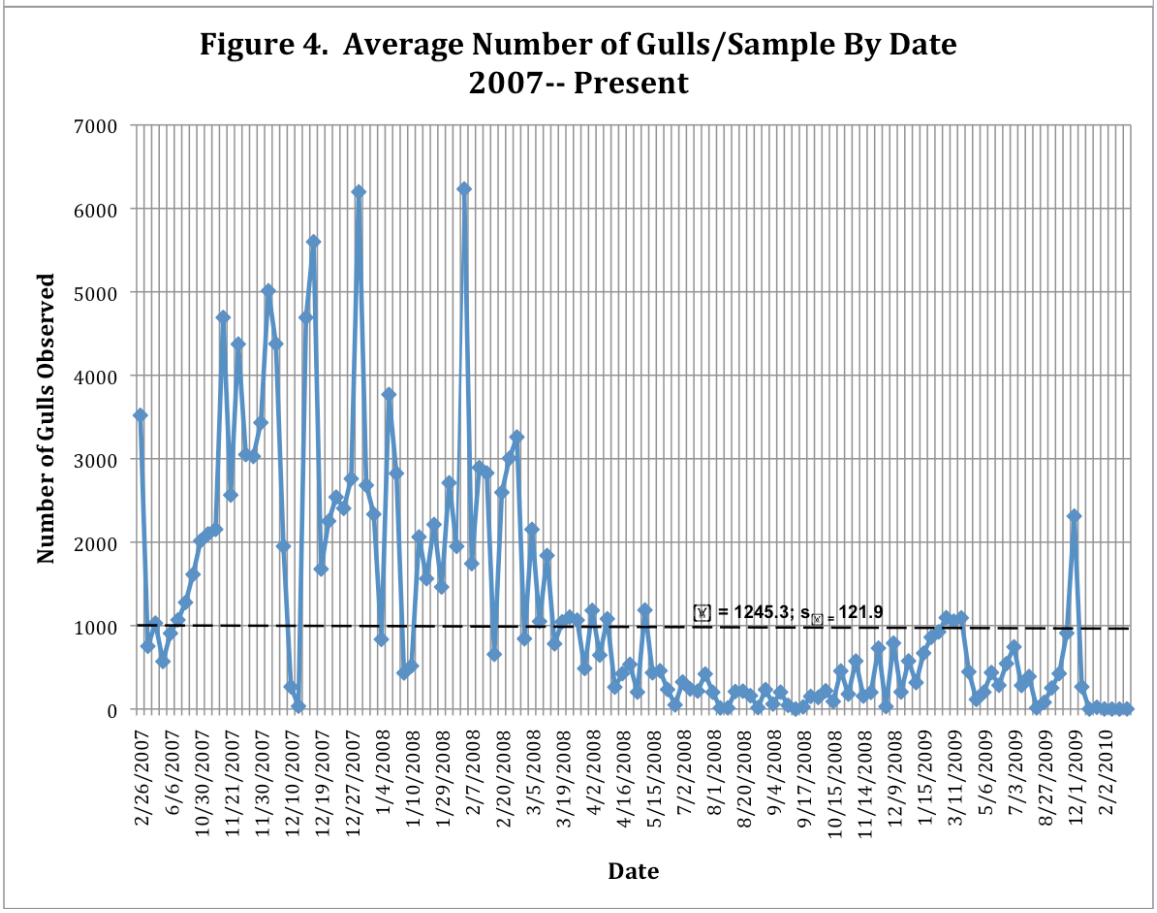


Figure 4. Average Number of Gulls/Sample By Date
2007-- Present
Number of Gulls Observed
7000
6000
5000
4000
3000
2000
1000
0
= 1245.3; s = 121.9
2/26/2007
6/6/2007
10/30/2007
11/21/2007
11/30/2007
12/10/2007
12/19/2007
12/27/2007
1/4/2008
1/10/2008
1/29/2008
2/7/2008
2/20/2008
3/5/2008
3/19/2008
4/2/2008
4/16/2008
5/15/2008
7/2/2008
8/1/2008
8/20/2008
9/4/2008
9/17/2008
10/15/2008
11/14/2008
12/9/2008
1/15/2009
3/11/2009
5/6/2009
7/3/2009
8/27/2009
12/1/2009
2/2/2010
Date

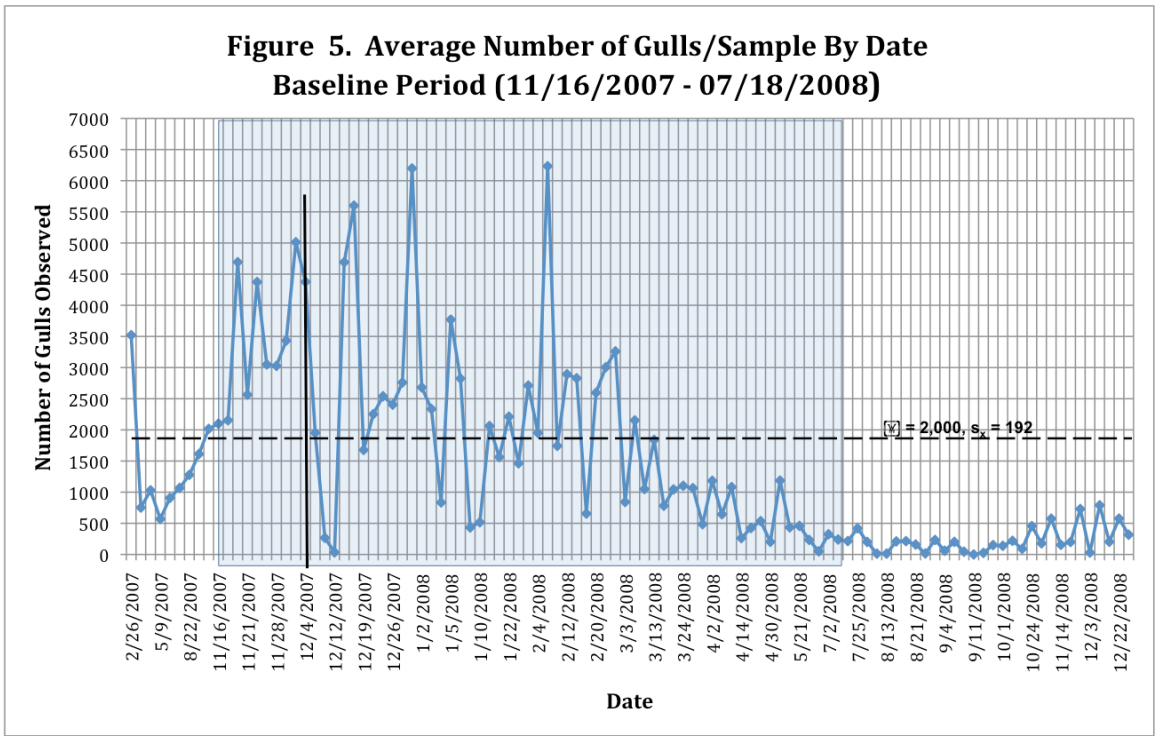
Analysis of the quarterly data indicated that the highest average numbers of gulls/survey was generally observed in winter and fall, with the lowest numbers generally occurring in summer or spring, but these findings were inconsistent among years (Table 3).

Analysis of the reproductive period, defined as the period between April 15 and October 1 (Winkler, 1996 and Howell and Dunn, 2007), indicated that the average number of gulls/survey was consistently greater during the non-breeding period than the breeding period for 2007, 2008, and 2009 (Table 3).

As noted above, abatement activities were initiated on November 16, 2007, and were limited to periodic pyrotechnical measures. NISL commenced the use of falcons and dogs on July 18, 2008. The Notice of Preparation (NOP) was issued by the City of San Jose on December 3, 2007. Consequently, at the time of the NOP, only pyrotechnical abatement was in use by NISL, and this lasted approximately eight months. The logical baseline condition, therefore, is represented by the period between the initiation of pyrotechnical abatement and the start of falcon/dog abatement measures. The appropriateness of this period is reinforced by the fact that the NOP was issued in this time frame. While this period represents less than a full year of data, it does include portions of both the breeding and non-breeding periods, as well as portions of the winter, spring, and summer seasons.

To determine the baseline condition assessed in the EIR, the average number of gulls/survey was calculated for the period between November 16, 2007 (the start of pyrotechnic abatement) and July 18, 2008 (the start of falcon/dog abatement). This resulted in a mean or average of 1,994 gulls/survey ($s_{\boxtimes}$ = 192) for the 66 aggregate samples, and a range between 34 and 6,232 (Table 3). Figure 4 is a graph of the average number of gulls/survey in the time period analyzed.

Table 3. Descriptive Statistics of Gull Counts/Sample By Season and Reproductive Period						
Statistic	**Season**				**Reproductive Period**	
	Spring	**Summer**	**Fall**	**Winter**	**Breeding**	**Non-Breeding**
2007						
Mean	835.0	1172.8	2888.8	3029.2	1077.8	2793.8
Standard Error	137.6	104.8	361.0	734.0	143.3	295.6
Median	907.5	1172.8	2564.5	2650.0	1049.0	2540.0
Mode	#N/A	N/A	4692.5	N/A	N/A	
Standard Deviation	238.2	148.1	1573.4	1798.0	351.0	1698.0
Sample Variance	56752.1	21945.1	2475699.5	3232756.7	123219.7	2883261.4
Kurtosis	N/A	N/A	-0.7	2.3	0.7	-0.71
Skewness	N/A	N/A	0.0	1.0	0.2	0.2
Range	460	209.5	5566.0	5445.0	1043.5	
Minimum	570.0	1068.0	34.0	752.5	570.0	34.0
Maximum	1030.0	1277.5	5600.0	6197.5	1613.5	6197.5
Sum	2507.5	2345.5	54887.0	18175.0	6466.5	
Count	3	2	19	6	6	33
Confidence Level (95.0%)	591.8	1331.0	758.4	1886.9	368.4	602.1
2008						
Mean	664.4	146.8	301.3	1971.6	237.2	1527.6
Standard Error	100.2	29.0	69.4	235.9	41.6	189.4
Median	510.8	180.5	200.0	1950.0	202.5	1081.3
Mode	N/A	13.3	N/A	N/A	13.3	N/A
Standard Deviation	375.0	123.2	250.3	1270.4	231.6	1242.3
Sample Variance	140602.6	15173.0	62631.4	1614020.9	53649.9	1543218.0
Kurtosis	-1.6	-0.5	-0.2	3.1	8.6	3.4
Skewness	0.4	0.5	1.1	1.3	2.4	1.5
Range	983.8	420.0	760.0	5915.8	1186.3	6202.5
Minimum	202.5	0.0	30.0	316.7	0.0	30.0
Maximum	1186.3	420.0	790.0	6232.5	1186.3	6232.5
Sum	9302.0	2642.9	3917.5	57176.2	7353.4	65685.2
Count	14.0	18.0	13.0	29.0	31.0	43.0
Confidence Level (95.0%)	216.5	61.3	151.2	483.2	85.0	382.3
2009						
Mean	446.2	294.0	978.3	920.5	304.4	914.1
Standard Error	121.7	106.3	465.2	75.6	64.8	164.5
Median	437.5	267.5	667.5	925.0	282.5	910.0
Mode	N/A	N/A	N/A	N/A	N/A	N/A
Standard Deviation	322.1	260.3	930.4	169.0	214.8	545.7
Sample Variance	103743.7	67761.5	865644.3	28576.3	46133.8	297822.4
Kurtosis	2.9	1.3	2.1	-0.1	0.4	4.3
Skewness	1.5	1.0	1.5	-0.7	0.7	1.7
Range	977.5	731.3	2046.0	425.0	731.3	2046.0
Minimum	115.0	13.8	266.0	670.0	13.8	266.0
Maximum	1092.5	745.0	2312.0	1095.0	745.0	2312.0
Sum	3123.4	1763.8	3913.0	4602.5	3348.0	10054.7
Count	7.0	6.0	4.0	5.0	11.0	11.0
Confidence Level (95.0%)	297.9	273.2	1480.5	209.9	144.3	366.6
Source: Padre Associates, 2010						



2.4 Recommended Baseline

Based on the statistical evaluation presented in the previous sections, and the timing of the NOP, it is our opinion that the baseline to be used in the EIR is 1,994/survey, rounded up to 2,000.

3 Baseline Maintenance

Once the baseline was established as discussed in Section 2, an appropriate Action Threshold for gull populations at Newby Island Sanitary Landfill was considered to ensure that foraging gull populations are maintained at levels below the baseline. For the purposes of this report, the Action Threshold is the level of the foraging gull populations, which would trigger increased gull abatement measures. The following discussion provides a summary of how the Action Threshold was calculated, how gull counts in relation to the Action Threshold will be determined, and what measures will be implemented in the event the Action Threshold is exceeded

3.1 Action Threshold

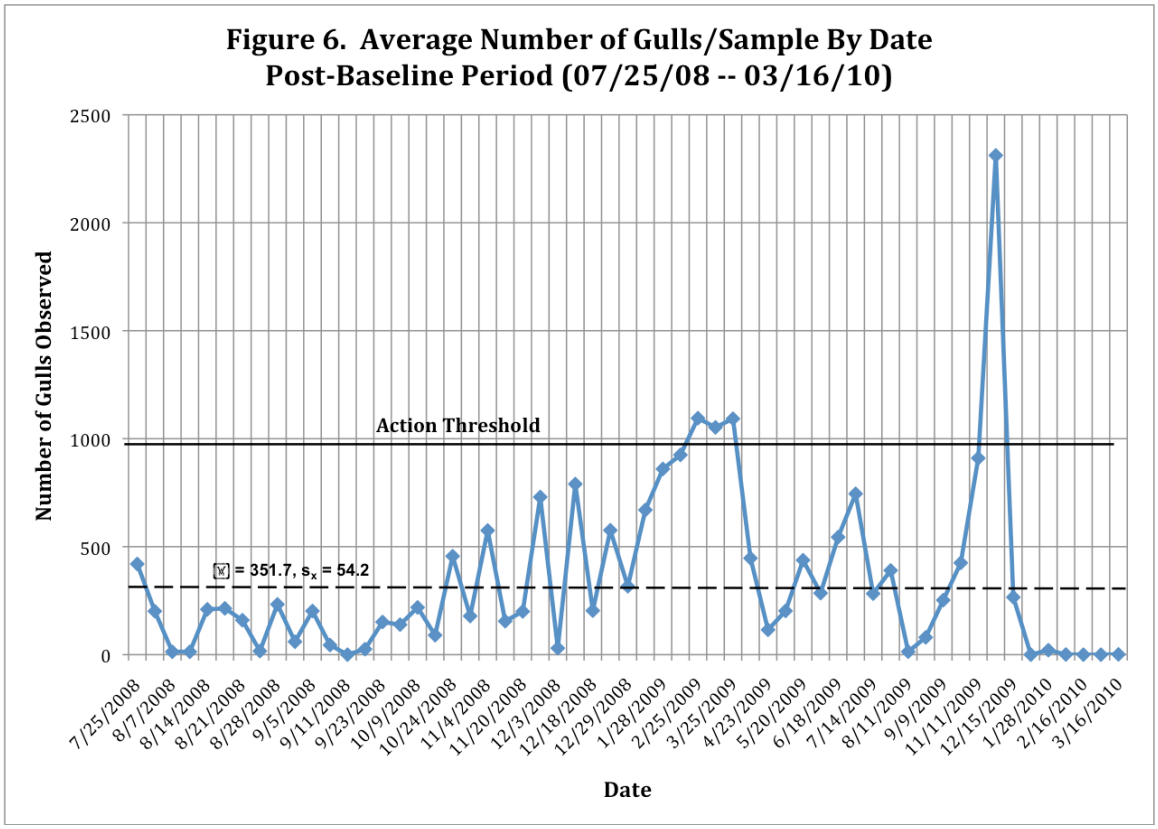
The recommended Action Threshold is 1,000 gulls/survey over four consecutive sampling episodes, which represents a 50 percent reduction of the baseline level, and a 97 percent reduction from the historic high of 33,000 gulls in 1998. The approach represents a significant reduction in the number of gulls, as compared to the baseline. Based on the post-baseline data, the Action Threshold has not been triggered (Figure 6).

3.2 Monitoring and Response Protocol

We recommend the following protocol:

A qualified organization, such as SFBBO, shall monitor gull population numbers at the NISL on a twice-monthly basis. Raw data from the sampling episodes shall be provided to NISL, which will analyze the data in the same manner as detailed in Section 2 of this report to determine the average number of gulls/survey.

We recommend two independent trigger events to warrant increased gull abatement measures:



1. If the Action Threshold is exceeded, the Land Managers Committee (LMC) shall advise with regard to the level and duration of enhanced abatement measures to be implemented to respond to an irruption of nuisance species. Enhanced abatement would be discontinued when a sampling episode indicates gulls are below 1,000 gull/survey level, or on the advice of the LMC.

2. In the event that the falconer observes a large influx of gulls, he/she shall estimate the number by conducting spot counts from near the center of the active landfill cell. In each cardinal direction (e.g., west, east, north, and south), the falconer shall visually estimate the number of gulls, and sum the four counts. If the count exceeds the 1,000 gulls, NISL management shall be notified to deploy additional harassment staff until the gulls have been dispersed from the landfill.

Over time, as more data are collected and analyzed, seasonal, cyclic, and other trends in gull levels may change such that the LMC may recommend enhancement abatement on a pre-emptive basis. Similarly, if trends begin to show a diminution of nuisance species numbers due to extrinsic factors, such as emigration of gulls from the South Bay to new feeding and breeding areas, the level of abatement activities may be modified.

3.3 Enhanced Nuisance Abatement

Currently, NISL employs one falconer on a daily basis from Monday through Saturday. The falconer also uses dogs and employs pyrotechnical devices on an as-needed basis. In the event the Action Threshold is reached, the LMC shall advise NISL with regard to the implementation of additional falconers, dogs, ATV drivers, pyrotechnic specialists and other adaptive measures identified in the NSAP to respond to increases in gull numbers. The use of abatement measures has been shown to quantitatively reduce the gull populations at the landfill site.

4 Evaluation of Proposed Project's Potential Impact on Sensitive Species

4.1 Population Growth

In ecology, a population is defined as a group of organisms of the same species that live in a given region. The number of organisms in a population will fluctuate based on the frequency of births, deaths, immigrations, and emigrations. Births and immigration contribute to an increase in the size of the population, while deaths and emigration result in a decrease in the size. An increase in the number of organisms in a population is referred to as population growth. Factors that limit and even prevent population growth are called limiting factors.

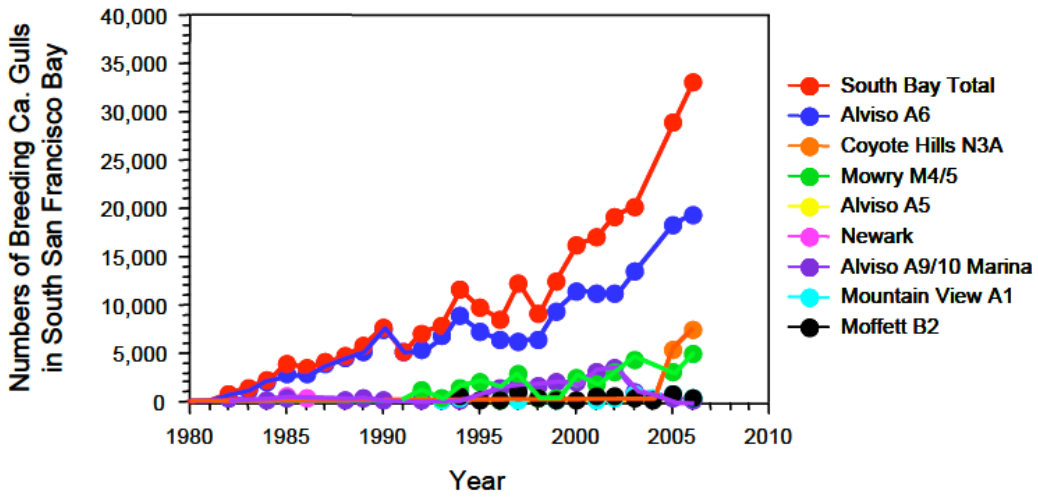
Limiting factors are environmental conditions that limit population size in a habitat. When basic needs, such as food, water, and shelter availability, are not met, individuals of the population start to die off or fertility becomes inhibited. The limiting factor works as a control that prevents unchecked growth in a population or can be a factor that results in a population to decline and disappear from a habitat.

The growth and sustainability of the South Bay gull population is dependent on three primary items: nesting habitat, water, and food. NISL does not provide nesting habitat or a substantial water source but provides a food source for gulls and other nuisance species. Historically, NISL, combined with surrounding habitat, has provided some support for a portion of the gull population in the South Bay.

Surrounding land uses, including the Don Edwards San Francisco Bay National Wildlife Refuge, provide suitable nesting and foraging habitat for a number of species in South San Francisco Bay. The Refuge was founded in 1972, and by 1979 the Refuge had acquired 18,000 acres of land. As of 2004, the Refuge was comprised of 30,000 acres of open bay, salt pond, salt marsh, mudflat, upland and vernal pool habitats. As shown in Figure 7, the number of breeding California gulls in the South San Francisco Bay have gradually increased since 1982. The increase in the number of breeding California gulls has increased from less than 1,000 breeding gulls in 1982 to more than 33,000 in 2006 (Ackerman et al. 2006).

As discussed by Shuford (2008), it does not appear that gull-nesting habitat is currently a limiting factor of gull population sizes, suggesting that gull populations could continue to increase based on the availability of nesting habitat. Eighteen landfills (potential sources of food for gulls) have closed in Alameda, San Mateo and Santa Clara counties since 1980 (Table 4), yet the number of breeding California gulls has continued to increase. Suitable habitat has increased from 18,000 acres in 1979 to 30,000 acres in 2004 but the number of available food sources (landfills) has decreased since 1980, suggesting that the availability of suitable nesting habitat rather than landfill food sources have contributed to the growth of gull populations in the South Bay over the past three decades.

Figure 7. California Gull Breeding Population in South San Francisco Bay Since 1982



Source: Ackerman, J. T., J. Y. Takekawa, C. Strong, N. Athearn, and A. Rex. 2006.

Table 4. Landfill Closures in the South San Francisco Bay Area Since 1980

Landfill	Address	Distance from NISL	Date Closed
Alameda County			
Turk Island Landfill	32505 Union City Blvd Union City, CA 94587	11.2 miles NW of NISL	06/30/1986
Davis Street Sanitary Landfill	W End of Davis Street San Leandro, CA 94577	24.0 miles NW of NISL	12/23/1986
Albany Landfill	W End Buchanan Street Albany, CA 94706	35.6 miles NW of NISL	01/01/1984
City of Alameda SW II-2 Disposal Site	N Side Doolittle Drive @ Bridge to Alameda Island Alameda, CA 94502	24.8 miles NW of NISL	01/23/1995
Moraga Ave DS/AKA City of Piedmont DS	N of Moraga Avenue, W of Red Rock Road Piedmont, CA 94618	30.0 miles NNW of NISL	12/31/1988
Marciel Ranch Landspreading	Jess Ranch Road Livermore, CA 94550	25.6 miles NE of NISL	12/31/1996
U.S. Pipe Foundry	1295 Whipple Road Union City, CA 94587	11.0 miles NNW of NISL	12/26/2000
Pacific States Steel Corp Codisposal Site	34863 Mission Boulevard Union City, CA 94587	9.3 miles NNW of NISL	12/01/1996
San Mateo County			
Junipero Serra Solid Waste Disposal Site	Junipero Serra Boulevard near Southgate Avenue Colma, CA 99999	31.9 miles WNW of NISL	01/01/1988
Burlingame Refuse Disposal Area	Airport Boulevard Near Broadway Burlingame, CA 94010	24.2 miles WNW of NISL	01/01/1992

Landfill	Address	Distance from NISL	Date Closed
3rd Avenue LF/San Mateo Composting Site	East Third Avenue along the SF Bay San Mateo, CA 94404	19.8 miles WNW of NISL	03/31/1989
Half Moon Bay Landfill	W End Poplar & Metzger Hmb. Half Moon Bay, CA 94019	27.1 miles W of NISL	02/01/1997
Belmont Island Park Landfill	Belmont Island Park, NE of Marine Parkway Belmont, CA 94002	17.1 miles WNW of NISL	01/01/1996
Santa Clara County			
Shoreline Regional SLF/Mountain View SLF	1780 Amphitheater Parkway Mountain View, CA 94043	7.5 miles WSW of NISL	10/01/1993
City of Sunnyvale Landfill	North Side Caribbean Drive Near Mathilda Avenue	4.5 miles SW of NISL	10/01/1993
City of Palo Alto Refuse Disposal Site	2830 Embarcadero Road Palo Alto, CA 94303	8.3 miles W of NISL	05/01/2011
All Purpose Landfill	5500 Lafayette Street Santa Clara, CA 95054	3.0 miles SSW of NISL	10/01/1993
Route 237 Lincoln Technology Park	Route 237 and Gold Street Alviso (San Jose), CA 94089	3.0 miles SSW of NISL	01/01/1988

Source: Calrecycle, 2010.

4.2 Gulls Utilizing the Landfill

As referenced in Section 2 above, data were provided by the SFBBO for all gull sampling episodes at NISL between February 2007 and March 2010. On each day gull counts were performed, the SFFBO conducted between two and four, one-hour sampling episodes. Analysis of the annual data indicates a continuing reduction in the number of gulls observed/sampled from an average of 2,597 in 2007, to 987 in 2008, and 609 in 2009. This represents a 77 percent reduction in three years. Abatement activities were initiated at the landfill on November 16, 2007, and were limited to periodic pyrotechnical measures. NISL commenced the use of falcons and dogs on July 18, 2008 and has continued the use of falconers, dogs, ATVs and pyrotechnics to discourage gull foraging at the landfill.

The landfill's opportunity to contribute to reduction in gull population is limited to restricting gull access to food. By successfully implementing abatement measures identified in the NSAP, NISL will continue to limit the food source available to gulls.

4.3 Gulls Potential Impact on California Clapper Rails

The California clapper rail (*Rallus longirostris levipes*) is a federal Endangered species and a California fully protected species. The California clapper rail is one of the largest members of the family rallidae at approximately 13 to 19 inches in height. Due to its large size combined with the lack of observed attacks on clapper rails by gulls during winter high-tide

surveys, Shuford (2008) suggests gulls are not important predators of the California clapper rail. Although it is possible that gulls might occasionally prey on an exposed rail chick or nest, it is speculative that gull predation would have a population-level effect on California clapper rails. To date, no evidence has been found supporting or refuting that the availability of foraging opportunities for gulls at the Landfill has any relationship to predation on clapper rails. However, to ensure that potential impacts to California clapper rails are minimized, the Landfill is proposing the gull abatement program described in this report as part of the project.

Non-native predators, such as red fox, Norway rats and feral cats are known to prey on California clapper rails and their eggs. Although nuisance species, such as red fox and feral cats, are most likely foraging in the vicinity of The Recyclery and not the working face of the Landfill (Gambelin, pers. comm.. 2010), water prevents predators such as the red fox and feral cats from crossing to adjacent land uses and preying on species (Dakin et al. 1998). The Landfill property is surrounded by Coyote Creek (to the north, northeast and east), South Coyote Slough (to the west and southwest), and the San Jose/Santa Clara Water Pollution Control Plant (to the south). Coyote Creek and South Coyote Slough would likely prevent access by red fox and feral cats to the adjacent suitable habitat for California clapper rail. Because of the relative size of the California clapper rail, physical barriers to suitable habitat for sensitive species, and the current abatement practices implemented by the Applicant, it is anticipated that nuisance species would have a less-than-significant impact on the California clapper rail and their eggs.

Additionally, the Landfill utilizes the services of a weekly pest extermination service, which controls the rat population on the Landfill property. Because the Landfill is implementing measures to control the rat population potentially foraging on the Landfill site, it is not anticipated that the availability of foraging opportunities for rats at the Landfill is correlated to predation on the California clapper rail and their eggs.

4.4 Gulls Potential Impact on Salt-Marsh Harvest Mouse

The salt-marsh harvest mouse is a small rodent that lives in the salt marshes of the San Francisco Bay and feeds primarily on the stems and leaves of salt marsh plants. The species is generally nocturnal and is active throughout the year.

Howard Shellhammer, PhD. noted in his "*A Marsh is a Marsh is a Marsh . . .But not Always to a Salt Marsh Harvest Mouse*" that with recent habitat loss and development closer to the native salt-marsh harvest mouse habitat, new predators, such as feral and domestic cats and non-native red fox, have been introduced into the harvest mouse's environment (1998). These animals, in addition to native predators such as hawks, owls, herons and clapper rails, prey on the harvest mouse (Shellhammer 1998). Predation by the animals referenced above and diminished habitat quality and size are the greatest threat to salt-marsh harvest mouse population numbers (Shellhammer 1998; USFWS 2010).

As discussed above, Coyote Creek and South Coyote Slough would likely prevent access by red fox and feral cats to the adjacent suitable habitat for salt-marsh harvest mouse. The water barriers surrounding the Landfill property are likely preventing predation on adjacent land uses by cats and red foxes foraging on the Landfill site; therefore, it is not anticipated that the availability of foraging opportunities for red fox and feral cats at the Landfill is correlated to predation on the salt-marsh harvest mouse.

Biologists conducting winter California clapper rail surveys have observed gulls taking rodents, including harvest mice, while foraging in salt marshes (Shuford 2008); however, Shuford states that it seems unlikely that gull predation alone would have a population-level effect on salt-marsh harvest mice. Studies conducted at Alviso in 1983 and 1984 (shortly after colony establishment) indicate that the diet of the gulls sampled were comprised of only approximately 5 to 6 percent rodents (Shuford 2008). The available gull diet data for the breeding season indicates very few rodents are taken. Because available gull diet data indicates rodents are not a primary dietary component, habitat modification contributed to significant reductions in salt-marsh harvest mouse populations, physical barriers to suitable habitat for sensitive species would limit predation by terrestrial nuisance species, and implementation of the current abatement practices at the Landfill, it is not anticipated that the availability of foraging opportunities for gulls and other nuisance species at the Landfill would result in significant predation on the salt-marsh harvest mouse.

4.5 Gulls Potential Impact on Salt-Marsh Wandering Shrew

The salt-marsh wandering shrew is a small- to medium-sized shrew that occurs historically in salt marshes adjacent to South San Francisco Bay. As discussed in Collins (2008), salt-marsh wandering shrews are fairly good swimmers and have been observed diving underwater to avoid capture.

The loss of available marsh habitat in South San Francisco Bay has influenced the size and distribution of salt-marsh wandering shrew populations and is the primary reason for concern of this species (Collins 1998). Although habitat loss is the primary reason for reduction in population size and distribution of the salt-marsh wandering shrew, known predators of the species include northern harrier, white-tailed kite, short-eared owl, egrets, herons, feral cats, red fox, raccoon, long-tailed weasel, and Norway rats (Collins 1998; Josselyn et al. 2005).

As discussed above, Coyote Creek and South Coyote Slough would likely prevent access by red fox and feral cats to the adjacent suitable habitat for salt-marsh wandering shrew. The water barriers surrounding the Landfill property are likely preventing predation by cats and red foxes foraging on the Landfill site; therefore, it is not anticipated that the availability of foraging opportunities for red fox and feral cats at the Landfill is correlated to predation on the salt-marsh wandering shrew.

Additionally, the Landfill utilizes the services of a weekly pest extermination service, which controls the rat population on the Landfill property. Because the Landfill is implementing measures to control the rat population potentially foraging on the Landfill site, it is not anticipated that the availability of foraging opportunities for rats at the Landfill is correlated to predation on the salt-marsh wandering shrew.

Little data is available on the salt-marsh wandering shrew, and to date no evidence has been found supporting or refuting potential gull predation on salt-marsh wandering shrew. Because the shrew is known to dive underwater to evade capture, it is anticipated that the availability of foraging opportunities for gulls at the Landfill is correlated to predation on the salt-marsh wandering shrew.

4.6 Conclusion Regarding Impacts on Sensitive Species

The first significance threshold in Section 3.6.2.1 of the September 2009 Draft EIR states that project would result in a significant biological resources impact if it would "have substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service". The Draft EIR identifies that the proposed project could potentially impact three sensitive species: California clapper rail, salt-marsh harvest mouse, and salt-marsh wandering shrew. As discussed above, because of the relative size of the sensitive species, physical barriers to suitable habitat for sensitive species, and the current abatement practices implemented by the Applicant, the conditions suggests that continued operations and proposed activities associated with the project would not likely result in a significant impact to the California clapper rail, salt-marsh harvest mouse, or the salt-marsh wandering shrew.

As discussed above, the evidence suggests that the availability of suitable nesting habitat rather than foraging opportunities at landfills have contributed to the growth of gull populations in the South Bay over the past three decades. Suitable habitat has increased from 18,000 acres in 1979 to 30,000 acres in 2004 but the number of available food sources (landfills) has decreased since 1980. As landfill food sources have declined, nesting habitat has increased and so have gull populations. Therefore, because nesting habitat has continued to increase since 1980, while potential foraging opportunities have decreased due to landfill closures, nesting habitat is likely the primary limiting factor in gull population growth, not landfills.

The Applicant will continue its abatement measures as required by California regulation.[1] These measures have proven highly successful in reducing gull foraging at landfills. The Applicant's gull abatement program is therefore considered part of the project.

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[1] CCR Title 27, Chapter 3, Subchapter 4, Article 3, Section 20810 – Vector and Bird Control.

4.7 Off-site Mitigation

Mitigation Measure BIO – 13.3 of the September 2009 Draft EIR identified the need for off-site mitigation if abatement measures do no prove successful at maintaining foraging gull populations at the NISL to levels identified in the NSAP.

As referenced in SFBBO's *Colonial Waterbird Nesting Summary for San Francisco Bay, 2009*, "the South Bay Salt Pond Restoration Project will displace California Gulls from the largest colony at pond A6 when it is restored to tidal action in 2011. . . . Displaced California Gulls from the A6 colony also have the potential to outcompete other waterbirds for nesting habitat. California Gulls initiate nests before many other nesting waterbirds, and may exclude them from historical nesting habitat (Strong et al. 2004). Therefore, measures should be taken to deter displaced gulls from the A6 colony from nesting at current waterbird colony sites."

If NISL limits the number of gulls foraging at the landfill to a level below the defined significance threshold, there is no nexus to provide off-site mitigation habitat for sensitive species in light of the potential for restoration projects, such as the South Bay Salt Pond Restoration Project, to cause sensitive species to be displaced from their historical nesting habitat by increased populations of gulls. NISL has no control or authority over actions taken outside the limits of the landfill with respect to the increase in habitat for gulls. NISL can only control gull numbers at the landfill. If restoration projects in the South Bay displace existing gull populations to sites currently occupied by sensitive species, and alternative foraging sites are used by gulls, NISL will have no authority to remedy any impact on off-site sensitive species from the increased gull population caused by external actions. These are impacts unrelated to the operation of the landfill. Further, the provision of off-site habitat for sensitive species that are displaced by habitat restoration projects would in no way guarantee a viable mitigation measure since there is no assurance that that would not further exacerbate the gull population problem by providing even more potential habitat. Consequently, off-site habitat creation would be "mitigating" for an impact unrelated to the project.

There is no guarantee that the creation of or contribution to off-site habitat for sensitive species would be successful. Although the off-site habitat may successfully provide additional habitat in South San Francisco Bay, there is no assurance that sensitive species would not compete with nuisance species or other non-protected species for breeding and/or foraging habitat at the mitigation site. There would be no assurance that gulls or other species would not compete with waterbirds for available nesting habitat, lessening the success of the off-site mitigation. Measures would need to be implemented by the land manager to ensure that creation of the off-site mitigation would benefit the intended species and would not benefit nuisance species.

5 Corvids

American crows and common ravens are members of the family Corvidae (or corvids). Crows are known to forage or fly to roost sites up to 18 kilometers (km; 11 miles) from their daytime activity centers (Liebezeit and George 2002), while ravens can fly up to 65 km (40 miles) in a day (Boarman 2003). Corvids typically feed on the ground and eat earthworms, insects and other small animals, seeds, and fruit but are also known to feed on garbage, carrion, and chicks they rob from nests.

The September 2009 Draft EIR claims that "wintering and breeding gulls and corvids have been documented foraging in large numbers on refuse at the Newby Island Landfill," although no corvid surveys or corvid counts were cited. The Biological Resources Chapter of the Draft EIR is primarily based on information contained within the H.T. Harvey & Associates September 2009 *Biological Resources Report for Newby Island Landfill Expansion Planned Development EIR*. The H.T. Harvey report states that "corvids (crows and ravens), forage regularly at Newby Island Landfill, and these species depredate western snowy plover and California clapper rail nests in the South Bay (N. Wilson 2004, S. Rottenborn, pers. obs., SFBBO, unpublished data)."

ESP attempted to research the sources referenced above. On June 15, 2010, Kevin Crouch from Padre Associates, Inc. contacted Caitlin Robinson-Nilsen from SFBBO. Ms. Robinson-Nilsen said she was unaware of the unpublished data and also noted that SFBBO has not conducted corvid surveys. She said that N. Wilson had been an intern at SFBBO in 2004 and that she (Ms. Wilson) had conducted clapper rail surveys, but Ms. Wilson did not conduct corvid surveys and had never been to the Landfill.

On June 16, 2010, Mr. Crouch from Padre Associates, Inc. contacted Stephen C. Rottenborn, Ph.D. from H.T. Harvey & Associates to discuss the citations referenced above and on Page 48 of the biological resources report. Dr. Rottenborn noted that the citation was added in support of the text regarding predation by corvids on California clapper rail nests and not in support of the statement that corvids regularly forage at the landfill. Dr. Rottenborn noted that he had observed a common raven predating a clapper rail nest, but he had not conducted corvid surveys at the Landfill. He had observed ravens at the Landfill "while birding or conducting surveys in adjacent areas," but he had not recorded numbers.

During the December 14, 2009 and January 12, 2010 site visits to the Landfill, ESP observed corvids loitering on the Landfill property (including the active face, the construction and demolition area, the composting area, the Recyclery, etc.). Although corvid counts were not conducted, it is estimated that approximately 10 to 20 corvids were present on the collective Landfill site (325 acres) with the majority of the corvids found loafing on the composting windrows or the fence posts between the composting operations and the Refuge.

To date no evidence has been found that the Landfill is significantly encouraging the growth of the corvid population or that corvids are a significant factor in predation on any sensitive species.

Standard and adaptive abatement measures identified in the Nuisance Species Abatement Plan (NSAP), include maintaining a small working face, compacting and covering refuse on the open face, and enclosing the outdoor food processing operations, would also contribute to abatement of nuisance species such as corvids.

6 Litter

Comments submitted by the California Regional Water Quality Control Board (RWQCB), Citizens Committee to Complete the Refuge, Santa Clara Valley Audubon Society, and Irving Lyons III during the Draft EIR review period raised concerns over the impact of windblown waste from the Landfill on adjacent land uses. The Applicant requested that Powers Environmental provide copies of the complaints submitted to the RWQCB; however, upon their investigation, Powers was informed that the RWQCB could "not readily find copies of the complaints" (Le, pers. comm.. 2010). Based on further investigation there appears to be no evidence from any first hand observer of any windblown litter leaving the Landfill site and blowing into either the Refuge, wetlands surrounding the Landfill or Coyote Creek.

The comment letter submitted by the RWQCB states that "there is currently a problem with windblown waste impacting the Refuge." The Applicant has never been advised that the Don Edwards National Wildlife Refuge has had any litter issues associated with the Landfill operation. Landfill personnel has not observed litter blowing from the Landfill northward towards the Refuge. The Local Enforcement Agency (LEA), which regularly inspects the Landfill for litter control, has confirmed that NISL adheres to its litter control plan and has not identified any significant litter issues associated with the Landfill operation. NISL has not received any notice of violation for failure to control litter.

State regulations, enforced by the LEA (Title 27 California Code of Regulations §20830) provide that: "Litter shall be controlled, routinely collected and disposed of properly. Windblown materials shall be controlled to prevent injury to the public and personnel. Controls shall prevent the accumulation, or off-site migration, of litter in quantities that create a nuisance or cause other problems." The Solid Waste Facilities Permit (SWFP) for the Landfill states that the "facility shall comply with all State Standards for Solid Waste Handling and Disposal." This permit also indicates that all requirements, including mitigation measures, in a certified EIR shall be followed.

In order to comply with this regulation and the SWFP condition regarding potential litter impacts of Landfill operations, NISL implements a litter control plan. As part of the litter control plan, litter-control fences encircle the active disposal area. Daily covering of the wastes with soil or other approved material is a consistent practice, as required by Title 27, to minimize odors, to prevent litter, and to control vectors. Litter that has blown onto litter-control fences is removed and returned to the working face of the landfill. Windblown litter is corralled around the working face, as needed, and returned to the landfill. A full-time employee is dedicated to collecting windblown litter throughout the site. As noted on the July 31, 2008 Disposal Facility Inspection Report prepared by the California Integrated Waste Management Board, "very good litter control was observed at the CS2 area. The

combination of the topography (bowl) and the litter fencing in place is doing an excellent job of stopping the migration of litter."

Adherence to the litter control plan is enforced by the City Planning Department as a PD permit condition and by the LEA as part of the LEA's enforcement of State regulations and the SWFP for the Landfill. During periods of stronger winds when windblown litter can potentially leave the Landfill working face, the Landfill utilizes a variety of litter control measures, including the use of litter control fences, and additional labor to collect and remove litter that has blown from the working face. Therefore, to date no evidence has been found of any existing or potential significant adverse effect from windblown litter emanating from the Landfill.

7 Summary

As discussed above, ESP reviewed the available gull survey count data and evaluated the average number of gulls observed per survey. Based on these calculations, a baseline number of gulls observed per survey was developed. The baseline condition was calculated as the period between the initiation of pyrotechnical abatement and the start of falcon/dog abatement measures, which also coincided with the issuance of the NOP. The baseline to be used in the EIR should be the 1,994, rounded up to 2,000.

The recommended Action Threshold to keep gulls below baseline levels is 1,000 gulls/survey over four consecutive sampling episodes, which represents a 50 percent reduction of the baseline level, and a 97 percent reduction from the historic high of 33,000 gulls in 1998. As discussed in Section 3, we recommend two independent trigger events to warrant increased gull abatement measures:

1. If the Action Threshold is exceeded, the Land Managers Committee (LMC) shall advise with regard to the level and duration of enhanced abatement measures to be implemented to respond to an irruption of nuisance species. Enhanced abatement would be discontinued when a sampling episode indicates gulls are below 1,000 gull/survey level, or on the advice of the LMC.

2. In the event that the falconer observes a large influx of gulls, he/she shall estimate the number by conducting spot counts from near the center of the active landfill cell. In each cardinal direction (e.g., west, east, north, and south), the falconer shall visually estimate the number of gulls, and sum the four counts. If the count exceeds the 1,000 gulls, NISL management shall be notified to deploy additional harassment staff until the gulls have been dispersed from the landfill.

The impacts referencing a 2025 closure date and the implications of landfill operation beyond December 31, 2025 have been modified to ensure that project-specific impacts and the implementation of the associated mitigation measures would not result in exceedance of or non-compliance with the significance thresholds.

8 References

This section includes references consulted during the preparation of this report, but not previously listed in the references section of the Draft EIR and/or the NSAP.

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9 List of Preparers

Amanda Rose

Amanda Rose has over eight years of experience as project manager and environmental staff for a variety of projects. Ms. Rose has been involved in the preparation of California Environmental Quality Act (CEQA) documents, including Initial Study/Mitigated Negative Declaration (MND) documents, and Environmental Impact Report (EIR) documents, as well as National Environmental Policy Act (NEPA) documents, including Categorical Exclusion (CE) documents, Environmental Assessment (EA) documents, and Environmental Impact Statement (EIS) documents. Her projects have involved transportation systems, recreational trail systems, recreational facilities projects, educational facilities, water and natural gas pipelines, solid waste facilities, and storm water detention facilities. She has also obtained the required environmental permits for a variety of projects.

Steve Peterson, AICP

Steve Peterson has over 25 years experience in the environmental planning and permitting of major infrastructure projects. Mr. Peterson has prepared and edited land use planning, California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) compliance documents for solid waste facilities, waste to energy projects, open space preserves, mitigation banks, residential developments, communication facilities, range and cropland operations and bikeways. He has taught NEPA and CEQA compliance procedures for American Bar Association continuing education programs and has assisted in drafting environmental policies for state and national governments. His ability to work with engineers, scientists, electeds and special interest groups has produced solution-oriented outcomes for a wide variety of projects.

Richard Meredith

Richard Meredith has over 30 years of experience as a biologist/project manager on a variety of public and private sector projects with specialized expertise in biological impact analyses for large flood control, military, water resources, and other public works projects. He has managed multidisciplinary teams of scientists, planners, and engineers in the preparation of environmental studies under NEPA, CEQA, and international environmental impact assessment guidelines.

Mr. Meredith has a wide range of experience conducting biological studies in support of CEQA and NEPA environmental analyses including baseline resource evaluations, biological and regulatory constraints analyses, habitat studies, development of significance thresholds, and developing and implementing mitigation strategies.

His experience with special-status species includes formal and informal consultations with the U.S. Fish and Wildlife Service and the California Department of Fish and Game under the federal and California Endangered Species Acts; field evaluations of listed and proposed

species using habitat-based and approved survey protocols; pre-construction tailgate orientations for construction crews; and, construction monitoring and post-construction assessments.

Kevin Crouch

Kevin Crouch is a staff biologist at Padre Associates, Inc., and prior to joining the Padre team, Mr. Crouch worked for California Department of Fish and Game as a field biologist, where he conducted research projects that involved identifying birds, mammals, reptiles, amphibians and vegetation within central/northern California. Mr. Crouch currently conducts wildlife surveys (special-status species and general wildlife), performs construction monitoring, wetland delineations, California red-legged frog site assessments, vegetation mapping and monitoring, report preparation (including GIS), and ecological analysis. Mr. Crouch is authorized to conduct presence/absence surveys for the state threatened California black rail. Mr. Crouch has attended seminars on Northern California reptiles and amphibians, California red-legged frog, California tiger salamander, Alameda whipsnake, CEQA, and wetland delineation training.

Jules Evens

Jules Evens, Avocet Research Associates Principal, has been conducting field studies of wetland birds and habitats in the San Francisco Bay Estuary since beginning his career as a field biologist with Point Reyes Bird Observatory Conservation Science (PRBO) in 1974. He continues his relationship with PRBO as an active Research Associate. He established Avocet Research Associates, an independent consulting firm, in 1984. He has acted as Principal Investigator and/or Consulting Biologist on many long-term monitoring studies of waterbird populations in Bay Area wetlands to document habitat affinities, abundance, and diversity of avian communities. He has worked co-operatively with various government agencies and research organizations on wildlife habitat requirements and public access issues.

ESP NUISANCE SPECIES ABATEMENT PLAN
NEWBY ISLAND SANITARY LANDFILL AND RECYCLERY

INTRODUCTION

The Newby Island Sanitary Landfill and the Recyclery Planned Development project ("Project") will allow current levels of waste handling to continue at the Landfill and will allow for food waste to be handled at the Recyclery for composting purposes. If food waste is accessible, the Landfill and Recyclery may attract nuisance species, primarily gulls, but also corvids such as common ravens and American crows, rats, opossums, raccoons, skunks, red foxes, and feral cats. Populations of these species may be sustained, at least in part, by the availability of anthropogenic food obtained from the Landfill and Recyclery. Additionally, providing conditions suitable for the reproduction of mosquitoes could result in the support of mosquito populations, potentially affecting human health by acting as a vector for disease.

This nuisance species abatement plan (NSAP) is adopted by the Project Proponents as part of the Project. It has been developed for the Landfill and Recyclery and will be implemented during all material processing at these facilities. The purpose of the NSAP will be to minimize the numbers of nuisance species attracted to the Landfill and Recyclery. .

This NSAP is designed to continue and improve upon previous control measures that have been implemented by the Landfill and Recyclery. These measures include:

- Reducing availability of food supply at the Landfill by maintaining a small working face and through the compaction and daily cover of refuse with compacted soil or an approved alternative;
- Covering the Recyclery food waste processing area;
- Eliminating sources of water through drainage controls which prevent ponding of water;
- Use of blank-firing guns and other pyrotechnics, paintball guns, trained falcons, trucks/ATVs, and propane cannons by landfill personnel to minimize birds' desire to land at the Landfill;
- Covering of tire piles with a tarp, rapid processing of tires, and regular inspection of tires for mosquitoes;
- Diligent cleaning and housekeeping in the Recyclery; and
- Monthly service by a rodent control contractor at the Recyclery

Substantial data on the effectiveness of gull abatement activities at Newby Island landfills suggest that such measures can be highly successful in reducing the numbers of gulls foraging on refuse (SFBBO 2008, Vasoncellos pers. comm.). In particular, abatement using a mixture of techniques appears to be more effective than pyrotechnics alone. Although abatement activities at Newby Island have been effective, the potential for habituation by some nuisance birds to the abatement measures

suggests that adaptive management of abatement measures and continued monitoring will be necessary to restrict nuisance bird use of the Landfill to low levels.

The Project Proponent has had this comprehensive NSAP prepared that will be implemented as part of the Newby Island Landfill Expansion Planned Development project. This plan describes measures that will be used to limit any potential adverse effects of nuisance species by limiting the numbers of nuisance species that receive food subsidies at the Landfill and Recyclery. The primary focus of these measures is limiting availability of food waste to the nuisance species and access to food waste by these species, rather than physical or lethal control of nuisance species. Because some of the measures proposed in this plan have not yet been used at the Landfill and Recyclery, and because other, more effective measures may become known in the future, this plan is meant to be adaptive. Monitoring of the success of this plan in reducing numbers of nuisance species will be conducted to inform the management process, and abatement measures will be adapted as necessary to ensure the success of the plan.

Implementation of the plan will be the responsibility of the General Manager of the landfill operator, while the City of San Jose's Director of Planning, Building, and Code Enforcement will oversee and enforce the plan's implementation.

NUISANCE SPECIES AT NEWBY ISLAND LANDFILL AND RECYCLERY

Following is a brief overview of the nuisance species that could potentially occur, or are expected to occur, at Newby Island Landfill and the Recyclery. More information on these speciesmay be found in the Newby Island Landfill Expansion Planned Development EIR.

Gulls. In the past, the Landfill and Recyclery was a source of food subsidies for gulls. During the breeding season, most of the gulls occurring at the Landfill have been South Bay-breeding California gulls. During the non-breeding season, particularly from October through March, the principal gull species foraging at the Landfill have been California, herring, ring-billed, western, glaucous-winged, and Thayer's gulls. Gull counts conducted in April through August 2006 by SFBBO and USGS (Ackerman et al. 2006) indicate that California gulls are the most numerous gull species during that season. The average abundance of California gulls at Newby Island during these surveys was 3877 gulls, substantially more than at Tri-Cities landfill (1738) and at Palo Alto's landfill (49) (Ackerman et al. 2006). These counts represented the highest number of individuals observed at any one time. However, observations of gulls here and elsewhere in the South Bay show a high rate of turnover, with gulls constantly moving in and out of the landfill during the day. As a result, the number of different individuals using the landfill in a given day is substantially higher than the maximum number recorded at a given time.

Historic high counts of gulls at Newby Island have included 33,000 (including 8,000 California gulls) on 22 December 1998 and 24,000 (including 8,000 California gulls) on 24 February 1998 (Santa Clara County Bird Data). Other gull species observed in high

numbers at Newby Island include herring gulls (9,000 on 19 December 1997; 24,000 on 22 December 1998; 20,000 on 8 March 2000), western gulls (200 on 19 February 1997; 400 on 22 December 1998), glaucous-winged gulls (300 on 19 December 1997; 800 on 24 February 1998), and Thayer's gulls (300 on 19 December 1997; 350 on 24 February 1998; Santa Clara County Bird Data). Tri-Cities Landfill, which is located approximately 3.2 miles northwest of NISL, reduced the amount of trash it accepts in 2007; however, high gull counts at NISL prior to 2007, may have been the result of the availability of food at, and the close proximity of, both landfills simultaneously, as gulls were frequently observed moving between the two landfills prior to 2007.

SFBBO (2008) continued gull surveys at Newby Island Landfill between February 2007 and December 2008 to determine the effectiveness of the gull abatement program that was initiated at the Landfill in June 2008. SFBBO recorded a aggregate total of 549,668 observations of gulls using the Newby Island Landfill during 369 surveys between 26 February 2007 and 31 December 2008, representing a mean of nearly 1500 gulls/survey. However, as documented in the SFBBO gull abatement surveys at NISL, the number of gulls using the Landfill was significantly lower after the initiation of gull abatement activities than during the same month in 2007, prior to the implementation of the abatement program. (see Table 1 for details).

Table 1.
The Average Number of Gulls Observed Within Three Landfill Sections at NISL (active disposal area, recent disposal area, and non-disposal area)

	Gull Counts per Month											
Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2007	NA	3500	750	1000	500	800	1000	1200	1500	2000	3000	2800
2008	1800	2500	1000	5000	700	**100**	**250**	**175**	**75**	**250**	**300**	**400**
2009	700	1000	1100	250	300	250	400	50	250	350	800	1200

Legend	
	Pre-abatement Gull Counts
	Multi-abatement Approach Gull Counts
	Self-managed Abatement Gull Counts

Source: SFBBO, Gull abatement surveys at Newby Island Landfill, 2009.

The proportion of gulls counted on exposed refuse, as opposed to portions of the landfill where waste was not being actively dumped, varied from 23 percent in August 2007 to 93 percent in June 2007, with the remainder of gulls using non-refuse areas and partially exposed refuse areas (SFBBO 2007, Hudson 2008). On the exposed refuse, over 75 percent of the California gulls surveyed were foraging (Hudson 2008). Although the number of gulls present on the ground, and in surrounding ponds, declined considerably between 2007 and 2008, presumably in response to the gull abatement program, the proportion of gulls that were foraging at the active landfill face increased after the abatement program began (2008).

The gull abatement specialists worked on the site from June 2008 through January 2009. From January 2009 through December 2009, the landfill operator took over the abatement program and did not use falcons or dogs to deter birds from the landfill. The

data from SFBBO's Gull Abatement Survey Report (included in Appendix D) indicates that there was a substantial reduction in gulls between 2007 and 2008, with a slight increase in gull numbers in 2009, while when the Landfill took over gull abatement. Between the months of June and September in 2007, 2008 and 2009, average California gull numbers counted by SFBBO on the ground at NISL were estimated as 1,200 in 2007, 115 in 2008, and 190, respectively (see Table 2 for details) in 2009. The data indicates a slight increase in 2009; however, a substantial reduction is still evident from 2007. With an increase in gulls from 2008-2009, NISL reinitiated the use of a third-party gull abatement specialist. As of December 2009, Airstrike Bird Control, LLC is the current gull abatement specialist at NISL. Airstrike has reintroduced the use of falcons into the abatement program. In addition to falconry, the use is of pyrotechnics and scare tactics are also being used. Airstrike abatement specialists are onsite at NISL throughout the working day, normally from dawn to close. Falcons are flown throughout the day at the active face and other areas where gulls are seen loafing. In an effort to keep gulls from habituating, falcons are flown for unspecified intervals and periods. Pyrotechnics are utilized between falcon flights and during inclement weather conditions when falcons are not able to fly successfully. The landfill operator is continuing the use of SFBBO to monitor the success of the current program. SFBBO biologists are onsite at the NISL counting and assessing the abatement effectiveness twice a month, typically within the first and third week of every month. Caitlin Robinson-Nilsen (pers. comm., 2010), the SFBBO biologist that has conducted the first two months of surveys at NISL, stated that anecdotally speaking the gull numbers for December 2009 and January 2010 appear to be the lowest gull numbers for the same months in previous years.

Table 2.
The Average Number of Gulls Observed Within Three Landfill Sections at NISL (active disposal area, recent disposal area, and non-disposal area)

	California Gull Counts Per Month			
Year	June	July	Aug	Sept
2007	900	1100	1300	1500
2008	150	200	100	100
2009	250	500	75	200

Source: SFBBO, Gull abatement surveys at Newby Island Landfill, 2009.

Corvids. Populations of common ravens and American crows have increased markedly in recent decades throughout the Bay area, and common raven numbers in particular have increased considerably in the South Bay over the past 2 decades (Bousman 2007). These species feed on anthropogenic food waste and agricultural waste from other sources, as well as preying on other wildlife species.

Non-native Mammals. Several non-native mammal species occurring in the South Bay, including the red fox, Norway rat, roof rat, feral cat, Virginia opossum, and the common house mouse, take advantage of anthropogenic food sources and could, if uncontrolled, forage on food waste at Newby Island Landfill and the Recyclery. The feral cat is fairly common in upland habitats around the South Bay (Foerster and

Takekawa 1991, Takekawa 1993), whereas the Norway rat and roof rat occur in most habitat types in the region. These species may prey on sensitive native species in the South Bay.

Raccoons/Skunks. Although striped skunks and raccoons are native to the South Bay area, they have benefited from anthropogenic food sources. They are also known to prey on the nests of a number of native birds, including the California clapper rail, American avocet, and black-necked stilt nests (Foerster et al. 1990, Ackerman et al. 2006). Thus, in the context of the sensitive habitats surrounding the Newby Island Landfill, and the special-status species that those habitats support, raccoons and striped skunks are considered nuisance species.

Mosquitoes. Mosquitoes may breed in fresh and brackish pools, including pools of water in tires or other debris, at the Landfill and Recyclery. They serve as vectors for several diseases that pose health concerns for humans and domestic animals. The western encephalitis mosquito is a vector of avian malaria and the main vector of western equine encephalitis and St. Louis encephalitis in the western United States (Maffei 2000). Anopheles mosquitos carry the organism that causes malaria. The West Nile virus is a mosquito-borne disease that has been found in parts of Asia, Eastern Europe, Africa and the Middle East. First detected in the U.S. in 1999 in New York City, West Nile virus has since spread through most of the U.S. West Nile Virus is typically spread from an infected mosquito, usually in the genus *Culex*, to a bird that then disperses or migrates, spreading the virus after being bitten by other mosquitos. Most people and domestic animals that become infected with the virus have few or no symptoms, but in rare cases they can become seriously ill. From 2003 through 2007, 2,320 human infections from in California have been detected, with 75 West Nile virus-related fatalities to date in California (http://westnile.ca.gov/). Also, 1,083 infections of horses and 9,215 dead birds (most of which were corvids) tested positive for the virus in that time frame.

NUISANCE SPECIES ABATEMENT MEASURES

The main objective of the nuisance species abatement measures is to control access of nuisance species to food waste at the Landfill and Recyclery facilities (and, for mosquitoes, to limit areas providing suitable breeding habitat), which is expected to reduce the number of individuals of these species that receive sustenance from the Landfill and Recyclery. To achieve this, two groups of abatement measures will be implemented: 1) standard measures, and 2) adaptive measures. Standard measures will be incorporated into all Landfill and Recyclery management activities starting with the implementation of the abatement plan and continuing until landfilling activities cease on the site. These are measures that are known to be successful, even necessary, to control nuisance species numbers and/or facilitate the implementation of other measures. Adaptive measures are methods of nuisance species control that can be used in various combinations and tested for effectiveness via the monitoring and adaptive management program. It is anticipated that implementation of the standard measures alone may not be adequate to achieve the success criteria outlined in this plan. Rather, a combination of standard and adaptive measures may be necessary to

achieve adequate control of nuisance species numbers on the site. Abatement measures must be adaptable and can be modified as necessary, based on the measures' effectiveness, as determined by monitoring results.

For as long as food waste is processed at the Landfill and Recyclery, nuisance species may potentially be attracted to the site, and abatement measures will have to be employed. For any given nuisance species, there are no feasible measures that will provide long-term management of nuisance species numbers at the site without ongoing, rigorous implementation of abatement measures.

Standard Measures

Maintaining a Small Working Face of the Landfill. The active face of the landfill where food waste is being actively dumped and buried will be kept to the minimum size necessary to allow normal landfilling activities. Normally, the working face of the landfill is approximately 150 feet by 200 feet, which is less than an acre in size. Keeping the working face as small as possible has limited the availability of food to all nuisance species and also reduced the area required to implement other abatement measures, such as the flying of falcons or the use of noise-markers. Target species include gulls and all other nuisance species.

Compacting and Covering Refuse On Open Face All refuse material containing food waste at the landfill will be compacted and covered with compacted soil, or an approved alternative, as soon as it is feasible to do so while allowing normal landfilling activities; other materials may be used in lieu of soil if they are demonstrated to impede access to food waste by nuisance species, if they are stable (e.g., if substances such as foam do not dissipate or blow away), and if they will not have any unintended adverse effects (e.g., such as might result from chemical foams blowing into sensitive habitats outside the landfill). This will limit the ability of gulls and corvids to obtain food during the dumping process. To limit the availability of food waste to nocturnal mammals, all refuse material will be covered at the end of the work day and the active area will remain covered until the start of landfilling activities the following work day. This abatement technique will reduce available food to all nuisance species, including gulls, corvids, and all nuisance mammals. Outdoor food waste processing on the Recyclery property attracts gulls and other nuisance species to an area of the site where the various abatement measures (pyrotechnics, cannons, etc.) are not generally used and may be inconvenient. Measures to control access to food waste by gulls and other nuisance species at this location have been recently implemented, including a building enclosure.

Covering and Rapid Processing of Tires. Tires and other debris or materials that could collect water will be kept covered, either with a tarp or inside a container, and they will be processed as quickly as is feasible to prevent water from pooling inside the tires, thus reducing the availability of mosquito breeding sites. These measures are particularly important during the rainy season, when the tires and debris may contain water, but will be implemented year-round since tire piles may provide cover for nuisance mammals as well. Tire piles will not be located near sensitive habitats, such

as the wetlands surrounding the landfill, to avoid providing cover for large numbers of nuisance mammals close to areas where special-status species such as California clapper rails and salt marsh harvest mice occur. Tire piles, and other areas capable of holding stagnant water, will be inspected weekly for mosquitoes.

Minimization of Surface Water. The landfill site includes two detention basins that collect runoff from the landfill, thus preventing it from entering sensitive habitats adjacent to the landfill. The facility also has three bio-swales (with plans to build another) that are used for drainage control. All other, unnecessary surface waters, including puddles, unnecessary ditches, ruts, and pools, will be drained, filled, or otherwise eliminated. This measure will minimize breeding habitat for mosquitoes, bathing sites for gulls, and sources of drinking water for nuisance birds and mammals. Target species include all nuisance species. .

All piles of tires, debris, and equipment that have the capacity to collect water, as well as any other areas of standing water on the site, will be inspected periodically for the presence of mosquito larvae and other nuisance insects. If larvae are detected, the water sources will be removed, or they will be treated using one or more of the measures described under *Adaptive Measures* below, in consultation with the Santa Clara County Vector Control District.

Mammal Trapping. Trapping for medium-sized mammals (e.g., red foxes, feral cats, raccoons, and striped skunks) will occur at regular intervals along the entire perimeter of the landfill site, including storage and staging areas such as the “D-shaped Area” and around the perimeter of the Recyclery if such mammals are observed frequenting the project site. These traps may include Tomahawk traps or similar sized traps that will have large enough mesh to avoid trapping non-target small mammals, such as the salt marsh harvest mice. The inspection of traps, removal of captured nuisance animals, and release of non-target species will occur within 12 hours of trap deployment. Any non-target species (e.g., gray foxes) will be released in appropriate areas, with approval from the necessary resource agencies, while target species will be euthanized. Cats wearing collars will be transported to the Humane Society of Silicon Valley or the Silicon Valley Animal Control Authority, or if the collars bear owner contact information, then the owner will be contacted. All trapping procedures, including the euthanasia of nuisance animals, will follow CDFG regulations, and any necessary approvals from the CDFG will be obtained prior to implementation.

Small mammal traps (e.g., snap traps for mice and rats) will be deployed inside the Recyclery buildings. The traps will be checked and re-deployed weekly. This abatement technique will target small nuisance mammals including house mice, Norway rats, and roof rats. Because these traps will be indoors, they are expected to result in minimal mortality of native mammals, and they will not result in mortality of more sensitive native species such as salt marsh harvest mice.

Minimization of Cover near Nuisance Species Food Sources and Sensitive Habitats. Piles of debris, equipment, or non-food waste provide cover for nuisance

mammals. It is understood that piles of such materials will occur at various locations around the Landfill and Recyclery, as required by the normal landfilling process. However, an effort will be made to limit the number, duration and size of such piles, and to locate them far enough from the active face of the landfill and from the Recyclery that they do not provide optimal conditions for nuisance species (i.e., good cover close to food resources). These piles also will not be located near sensitive habitats, such as the wetlands surrounding the Landfill, to avoid providing cover for large numbers of nuisance mammals close to areas where special-status species occur.

Adaptive Measures

Pyrotechnics. Pyrotechnics such as rockets, shell crackers, blank shells, and propane cannons may be used at the locations where food waste is being processed, both at the landfill working face and at the Recyclery, particularly in conjunction with other abatement activities. Propane cannons can be manually operated or programmed to fire at regular or random intervals. Shell crackers are typically fired from a shot gun and blank shells can be fired from “starter pistols”. Blank shells can be in the form of “screamers” and “bangers” which are small projectiles that are manually fired from guns. Rockets are manually fired and typically have a relatively silent ascent followed by a loud explosion, thereby having a different effect than gas guns.

Exploding shells have been found to be effective in repelling and dispersing birds at landfills (Southern and Southern 1984, Davis and Davis 1984), and propane cannons are effective in some situations as well (Salmon and Conte 1981, Salmon et al. 1986, DeFusco and Nagy 1983). However, target species frequently habituate to these noisemakers, particularly if the noisemakers are not accompanied by other measures representing more of a direct biological deterrent, such as falcons, dogs, or alarm/distress calls (Transport Canada 2008). Colussy (pers. comm.) has found noisemakers to be effective in conjunction with trained falcons. Noisemakers were implemented at Newby Island Landfill prior to the initiation of a more comprehensive gull abatement program, with limited, short-term success. When combined with other measures, including the use of falcons, paintball guns, and vehicles, in June 2008, gull abatement at Newby Island became even more effective (SFBBO 2008). During the fall and early winter months of 2007, gull species ranged from approximately 1,600 to 3,200 gulls in 2007; however, when abatement measures were expanded in 2008 to include falconry, paintball guns and vehicles, counts were below 500 gulls during the same months (SFBBO 2008, SFBBO, 2010). See Table 1 for more details.

Noisemaker abatement techniques can be effective against birds such as gulls and corvids.

***Paintball Guns*.** Paintball guns serve both as noise-makers and non-lethal measures to discourage nuisance birds, such as gulls and corvids.

***Vehicles*.** The use of vehicles such as trucks or all terrain vehicles (ATVs) to flush birds, in combination with pyrotechnics and other measures, has been effective in reducing gull numbers at Ox Mountain Landfill (Robinson et al. 2009 in SFBBO 2008).

***Trained Dogs*.** Trained dogs, supervised by a qualified dog trainer, can be effective in preventing gulls, corvids, and other avian species from landing on the active face of the landfill and from roosting on other portions of the site.

Trained dogs can be used to hunt small and medium-sized nuisance mammal species out of buildings, debris piles, and other areas where mammals may hide (such as the Recyclery area). Additionally, "watchdogs" can be used in specific areas, such as the active face or Recyclery, at night to deter nuisance mammal species from foraging on food waste.

Such dogs will be well trained and supervised to prevent them from causing the injury or mortality of non-target species.

***Trained Falcons*.** A qualified falconer may use trained falcons, or other raptors, to prevent gulls and other avian species from obtaining food from the Landfill and Recyclery, and from roosting on the premises. Abatement falcons are trained to perform aerial maneuvers designed to frighten gulls and other species. Falcons have been a component of the effective gull abatement program initiated at the Newby Island Landfill in June 2008, and falconry techniques have been used successfully at landfill sites in a number of other locations, including Ontario (Blokpoel 1980), Simi Valley (Waste Management 2008), and Ox Mountain (Vasoncellos pers. comm., SFBBO unpublished data). Falconry is often used in combination with other techniques for nuisance bird abatement (Transport Canada 2008).

Falcons used for nuisance species abatement may occasionally interact with other raptors, and on rare occasions either the abatement falcon or naturally-occurring raptors injured during such interactions (Vasoncellos pers. comm.). As a result, only well trained falcons and falconers will be used for abatement purposes, and adverse effects on non-target species will be documented to ensure that the use of falcons has a net benefit on sensitive resources in the area.

***Human Disturbance*.** Active human disturbance can be used to chase nuisance species from the Landfill and Recyclery. This may include the use of ATV's or a combination of other abatement techniques. Target species include gulls, corvids, and medium-sized mammals.

***Distress Calls*.** An amplified recording of distress calls, especially of the most common gull species, may be used to dissuade gulls and other avian species from obtaining food from the Landfill and Recyclery, and from roosting on the premises. Distress/alarm calls seem to be more effective, and have lower rates of habituation, than other noisemakers because there is a biological basis for birds to be deterred by them. Distress/alarm calls have had some success at airports, landfills, and reservoirs (DeFusco and Nagy 1983,

Payson and Vance 1984, Transport Canada 1986, BSCE 1988, Howard 1992). Distress calls seem to be most effective in combination with pyrotechnics, models of dead or injured gulls, or other deterrent measures (Transport Canada 1986, 2008).

***Predator Calls*.** An amplified recording of the calls of predators, particularly raptors, have been used with some success in deterring birds. For example, taped peregrine falcon calls were effective in dispersing gulls from Vancouver International Airport (Gunn 1973, LGL Ltd. 1987). Such calls could be broadcast from speakers near the active face of the landfill, from mobile sources such as vehicles, or from the Recyclery. Care will be taken not to broadcast such calls in close proximity to marshes where California clapper rails occur.

***Decoys of Distressed Bird*s.** Decoys imitating wounded or dead birds, particularly gulls, can be deployed in strategic locations around the Landfill and Recyclery. Strategically placed or positioned models of dead or injured gulls, or dead gulls themselves, have been used to repel gulls at airports, breeding colonies, and other areas (Stout et al. 1974, Naef-Daenzer 1983, Koski and Richardson 1976, DeFusco and Nagy 1983). In some cases, these models (or dead gulls) are thrown in the air when noisemakers are employed to associate the pyrotechnics with injury to gulls (Transport Canada 2008). These decoys will be most effective when used simultaneously with distress calls, pyrotechnics, raptors, dogs, and other abatement techniques. Any necessary permits from the USFWS or CDFG to possess birds or parts of birds will be obtained prior to the use of dead gulls for this purpose.

***Visual Distraction/Deterrent Devices*.** Objects such as kites, balloons, flags, scarecrows, raptor or coyote effigies, and inflatable “scary man” devices can be used to deter nuisance avian species from foraging and roosting at the Landfill and Recyclery, particularly at times when human activities are limited on the site. Devices like raptor effigies and inflatable objects can be programmed to activate at regular or random intervals, or can be radar activated which has been shown to increase effectiveness (Ronconi et al. 2004, Ronconi and St. Clair 2006). These devices are likely to have a greater impact when used simultaneously with other abatement techniques, as gulls and corvids will likely acclimate to these disturbances without the presence of humans, raptors, or dogs. In areas where these measures have been effective, the devices need to be moved periodically to inhibit habituation (DeFusco and Nagy 1983, LGL Ltd. 1987). Target species included gulls and corvids.

***Vegetation Management*.** Gulls roost and forage primarily in areas with unobstructed views that are relatively devoid of vegetation. These areas include portions of the Landfill that have been recently active or areas that have short, sparse vegetation. Maintenance of taller vegetation has been found to deter gulls from roosting and foraging in some areas (Brough and Bridgman 1980, Hupf and Floyd 1995). To prevent gulls from roosting on the landfill, all areas of the landfill that are expected to be inactive for extended periods (i.e., more than a month) will be managed to produce vegetation to discourage gulls from roosting; provided that such measures are consistent with landfill fire prevention practices. Bare soils will be hydro-seeded with a mixture of appropriate

seed, mulch (can be obtained on-site), and fertilizer. Qualified biologists will be consulted to determine the appropriate species (natives preferred), timing of planting certain species, and the time of year that vegetation should be removed, if necessary, to avoid impacts to nesting bird species.

***Physical Barriers and Roost Deterrents*.** Physical barriers to impede avian nuisance species from obtaining access to food waste may be implemented in strategic areas. Wire mesh, or "gull wire" may be deployed in areas like the Recyclery to prevent gulls and other birds from landing on compost or other potential food sources. Physical barriers will not be placed in areas where they would pose a risk to non-target bird species flying through the area, and therefore consultation with a qualified biologist may be necessary. If gulls, corvids, or other birds are entering the Recyclery building, plastic strips may be hung in open entranceways to prevent access to the building. All rooftops, light posts, signs, and other structures can be fitted with stainless steel "bird spikes" that prevent avian species from roosting on the site. Also, electric shock strips or shock tracks may be installed and maintained to prevent birds from roosting.

Barriers at the bases of the fencing around the Recyclery can also be used to prevent small and medium-sized nuisance mammals from moving between the Recyclery and adjacent, more natural areas to the south. Smooth sheet metal, plastic, or other material at the base of the fencing can prevent small mammals from crawling through or climbing over the fence. Although these mammals would still be able to access the Recyclery from the Dixon Landing Road side, limiting access to certain areas may facilitate trapping by concentrating access in fewer areas.

***Rodenticides*.** If small mammal trapping is not sufficiently effective, then rodenticides may be used to reduce the number of nuisance rodents using the Landfill and Recyclery. The use of rodenticides is an adaptive abatement measure, rather than a required measure, because of the risk of secondary poisoning of raptors and other predators that may feed upon poisoned rodents. A qualified professional will recommend the appropriate type of rodenticides to be used (i.e., substances with little or no potential for secondary poisoning), and these rodenticides will be approved by the Director of Planning, Building, and Code Enforcement (see *Oversight and Enforcement* below). Only qualified, trained personnel will apply these rodenticides, and a program for finding and removing target animals killed by the rodenticides will be developed, approved by the Director of Planning, Building, and Code Enforcement, and implemented stringently.

***Mosquito Larvicides*.** If the covering of tires and minimization of surface water (source prevention) does not adequately control mosquito production at the Landfill and Recyclery, or if it is not feasible for all surface water to be drained at certain times of year when mosquitoes are hatching, then control of larvae through chemical means will be implemented. Larvicides employed by South Bay mosquito abatement agencies include "Golden Bear 11 11" (a short-lived petroleum distillate that is applied to the surface of the water and causes mosquito larvae to drown), methoprene (a juvenile growth hormone that specifically targets mosquito larvae and prevents their maturation),

and *Bacillus thuringensis israelis* (a bacterium that is toxic to mosquito larvae). Any chemical or biological methods used to control mosquitoes on the Landfill and Recyclery will be developed in consultation with the Santa Clara County Vector Control District, and both the Vector Control District and the Director of Planning, Building, and Code Enforcement will approve the specific substances used for mosquito control.

INITIAL ABATEMENT APPROACH

Initial abatement measures will include all of the standard measures listed above. Although mosquito control may require the use of chemical or biological control measures specified in the *Adaptive Measures* section, these standard measures are expected to be adequate to serve as initial mosquito and nuisance mammal control efforts.

The gull abatement measures implemented at Newby Island Landfill in June 2008, including the use of trained falcons, paintball guns, and trucks in addition to pyrotechnics and propane cannons, were shown to be highly effective at reducing the numbers of gulls using the landfill, and the initial approach of this NSAP is to use this multiple-technique approach to control gull and corvid numbers at the landfill. (SFBBO, 2010). However, SFBBO (2008) observed habituation by some birds to some of the abatement measures, and it is possible that variation in the techniques employed will be necessary to restrict nuisance bird use of the landfill to low levels. Also, it is recognized that some of the abatement measures listed in this document may not be completely successful at the Landfill and Recyclery, even in combination with other measures. The NSAP is therefore meant to be adaptive so that the abatement and monitoring measures can be adapted based on information provided by prior abatement efforts and monitoring results (see *Adaptive Management* below).

MONITORING

Monitoring of nuisance species' responses to abatement measures is a critical component of the NSAP and the adaptive management strategies employed at the Landfill and Recyclery. Monitoring is required to determine the number of areas requiring mosquito control (to gauge success in controlling the number of areas with mosquito breeding conditions), the number of mammals that are trapped (to gauge success in reducing numbers of nuisance mammals at the site and the site's attractiveness to these species), and the number of nuisance birds that are attracted to and using the landfill. The following sections outline the monitoring approach that will be implemented, under the direction of the site eneral Manager, for each group of species.

Gulls. Monitoring of gull responses to abatement measures will be the most critical component of the monitoring process, given that gulls, particularly California gulls, have the greatest potential to depredate and compete with sensitive species over a broad area, and they are the most numerous group of species that forage at the Landfill and Recyclery. Gull surveys will be conducted by qualified biologists or ornithologists (i.e., capable of identifying gulls to species and age class) to estimate numbers of gulls,

determine which species of gulls are at the landfill, and determine the general compass direction of gull arrivals and departures. These surveys will be critical in determining what effect abatement measures are having gulls and will help elucidate the impacts of gull foraging at the Landfill and Recyclery.

Gull monitoring will be conducted on an every other week weekly basis throughout the year for the first year the NSAP is implemented. After the first year, surveys may be reduced depending on the effectiveness of abatement measures (see *Adaptive Management* below). If abatement measures prove highly effective, survey frequency may be reduced even during the first year, pending review of monitoring data and approval by the Director of Planning, Building, and Code Enforcement. Every other week on a weekday when the landfill is receiving waste, one observer will be stationed at a viewing station that overlooks the active face of the landfill, beginning at first light, or about 30 minutes before sunrise, until dark. The observer will use binoculars and a spotting scope during survey periods. Counts of total numbers of gulls resting on the landfill, flying just above the landfill, and roosting or foraging on the open face will be tallied once every other hour. Following each count, an estimate of the proportion of each gull species and proportion of gull age classes will be made by counting sample subpopulations at the landfill. These surveys are expected to take approximately 15-20 minutes. After counting and estimating proportions of species and age classes, the observer will spend 15 minutes estimating numbers of incoming and outgoing gulls (by species if feasible), noting time and direction of arrival at and departure from the landfill. The observer will repeat the same survey process for the Recyclery the next hour, alternating between the landfill and the Recyclery in alternate hours. The observer will opportunistically record any interactions that raptors used for abatement have with native species (especially naturally occurring raptors), responses of gulls to abatement measures, and his/her impression of the effectiveness on gulls of various abatement techniques being employed Measurements of wind speed, temperature, and percent cloud cover will be taken at least three times daily. These observations will then be used to estimate, giving a low and high range, the number of different individual gulls and the turnover rate of gulls using the Landfill during the day.

Corvids. Surveys for American crows and common ravens may be conducted concurrent with the gull surveys as described above. Counts of total numbers of corvids (crows and ravens) resting on the landfill, flying just above the landfill, and on the open face will be tallied once every other hour. These surveys will be conducted by qualified biologists or ornithologists simultaneously with the gull surveys. After counting individuals, the observer will spend exactly 15 minutes counting incoming and outgoing corvids during the survey, noting time and direction of arrival at and departure from the landfill. The observer will then repeat the survey process for the Recyclery, ending the survey after one hour and repeating the process at the start of the next hour. The observer will record the responses of corvids to abatement measures and his/her impression of the effectiveness on corvids of various abatement techniques being employed. Measurements of wind speed, temperature, and percent cloud cover will be taken at least 3 times daily. These observations will then be used to estimate, giving a

low and high range, the number of individual corvids and the turnover rate of corvids using the landfill during the day.

Small and Medium-sized Mammals. A qualified biologist selected by the site General Manager with agreement by the Director of Planning, Building and Code Enforcement will survey the Landfill and Recyclery for signs of foraging by small and medium sized mammals to determine if further nocturnal monitoring is needed to provide a count of small and medium sized mammal foragers and determine if trapping is necessary.

If trapping is determined to be necessary, accurate trapping records will be kept. Each individual mammal captured in mammal traps will be identified to species, and the location of every trapping event will be recorded. These locations will be described at a level of detail (e.g., a certain part of the Recyclery, or UTM coordinates for each medium-sized mammal trap) adequate to inform future abatement efforts. A spatial analysis of the species captured and variability in seasonal abundance of nuisance mammals will inform the adaptive management process and allow for concentration of trapping efforts in locations and seasons that will be most effective in reducing nuisance species access to food waste.

If monitoring is determined to be necessary, a nocturnal survey of the site will be conducted monthly for a one year period, or more frequently if determined to be necessary by the biologist. After the first year, the frequency of surveys may be reduced depending on the effectiveness of abatement measures (see *Adaptive Management* below). This surveys will be conducted by a qualified biologist on two randomly selected nights within the calendar month. Surveys will begin 1 hour after sunset and will last 4 hours. The surveyor will drive and walk around the entire site, and inspect the active landfill face for nuisance species using spotlights and/or night-vision goggles. All nuisance species and their behaviors will be recorded.

Mosquitoes. Landfill staff (or others, if mosquito control is implemented by contractors or Vector Control District staff) will maintain records of the level of need for mosquito abatement, based on the number, size, or occupancy rate of locations supporting mosquito larvae or suitable breeding conditions. If chemical or biological measures are used to control mosquitoes, records will be kept of the type of measure, the intensity of control (based on the frequency and amount of the substance used), and the effectiveness of treatment.

SUCCESS CRITERIA

Completely eliminating nuisance species access to the Landfill and Recyclery is not feasible, and thus abatement success cannot be measured as the complete absence of nuisance species.

Although some data exist regarding the use of the Landfill and Recyclery by nuisance species, particularly gulls, these data have been collected rigorously for only relatively short time periods (i.e., by SFBBO since 2007). Given the potential for significant interannual variability in numbers of some nuisance species, longer-term monitoring

may be necessary to more accurately determine the levels of nuisance species use (and thus, the effectiveness of nuisance species management) that will be considered successful. The following sections provide some information on baseline numbers and describe the process by which the monitoring results will be evaluated to determine the success of abatement activities. These evaluations will be conducted by qualified biologists selected by the site General Manager with agreement by the Director, in the context of the annual report (see *Report and Review* below). .

Gulls.

Previous gull counts conducted in 2006 by SFBBO and USGS indicate that California gulls are the most numerous gull species between April and August. The average abundance of California gulls at NISL during those survey counts was 3,877 gulls (Ackerman et al. 2006) in 2006 (SFBBO 2007). See Table 2 on Page 70 for more information on California gulls. Other high counts of gulls at NISL have included 33,000 (including 8,000 California gulls) on 22 December 1998 and 24,000 (including 8,000 California gulls) on 24 February 1998 (Santa Clara County Bird Data). Other gull species observed in high numbers at Newby Island include herring gulls (9,000 on 19 December 1997; 24,000 on 22 December 1998; 20,000 on 8 March 2000), western gulls (200 on 19 February 1997; 400 on 22 December 1998), glaucous-winged gulls (300 on 19 December 1997; 800 on 24 February 1998), and Thayer's gulls (300 on 19 December 1997; 350 on 24 February 1998; Santa Clara County Bird Data).

These counts represent the highest number of individuals observed at any one time. However, observations of gulls here and elsewhere in the South Bay over the years show a high rate of turnover, with gulls constantly moving in and out of the landfill during the day. As a result, the number of different individuals using the landfill in a given day is substantially higher than the maximum number recorded at a given time. Tri-Cities Landfill reduced the amount of waste it accepts in 2007; however, high gull counts prior to 2007, may have been the result of the availability of food at, and the close proximity of, both landfills simultaneously, as gulls were frequently observed moving between the two landfills prior to 2007.

Analysis of SFBBO's annual data indicates a continuing reduction in the number of gulls observed/sample from an average of 2,597 in 2007, to 987 in 2008, and 609 in 2009 (Table 3). This represents a 77 percent reduction in three years.

Table 3. Descriptive Statistics of Gull Counts/Sampling Period By Year

Statistic	Year		
	2007	**2008**	**2009**
Mean	2597.3	987.0	609.2
Standard Error	297.4	133.6	109.0
Median	2328.8	501.6	442.1
Mode	4692.5	13.3	N/A
Standard Deviation	1629.1	1149.3	511.0
Sample Variance	2653869.4	1320786.9	261146.61

Kurtosis	-0.5	4.9	4.8
Skewness	0.5	1.9	1.8
Range	6163.5	6232.5	2298.3
Minimum	34	0	13.8
Maximum	6197	6232	2312
Sum	77915	73038.6	13402.7
Count	30	74	22
Confidence Level	608.3	266.3	226.6

Analysis of the quarterly data indicated that the highest numbers of gulls were generally observed in winter and fall, with the lowest numbers generally occurring in summer or spring, but these were inconsistent among years (Appendix ___).

Analysis of the reproductive period, defined as the period between April 15 and October 1 (Winkler, 1996 and Howell and Dunn, 2007), indicated that the mean number of gulls/sample by date was consistently greater during the non-breeding period than the breeding period for 2007, 2008, and 2009 (Appendix ___).

Abatement activities were initiated on November 16, 2007, and were limited to periodic pyrotechnical measures. The use of falcons and dogs was begun on July 18, 2008. The logical baseline condition, therefore, was represented by the period between the initiation of pyrotechnical abatement and the start of falcon/dog abatement measures. While this period represents less than a full year of data, it does include portions of both the breeding and non-breeding periods, as well as portions of the winter, spring, and summer seasons.

The baseline to be used in determining the average number of gulls/survey at the start of the EIR period should be the 1,994, rounded up to 2,000. The established action threshold is 1,000 gulls/sample/day, which represents a 50 percent reduction of the baseline level, and a 97 percent reduction from the historic high of 33,000 gulls in 1998.

In order to evaluate the need for increased gull abatement measures, the following two independent trigger events shall be implemented:

1. If the Action Threshold is exceeded for four consecutive sampling episodes (e.g., two consecutive months), the Land Managers Committee (LMC) will determine the level and duration of enhanced abatement measures to be implemented to respond to an irruption of nuisance species. Enhanced abatement can be discontinued when the Action Threshold has not been exceeded for two consecutive months, or on the advice of the LMC.
2. In the event that the falconer observes a large influx of gulls, he/she will estimate the number by conducting spot counts from near the center of the active landfill cell. In each cardinal direction (e.g., west, east, north, and south), the falconer will visually estimate the number of gulls, and sum the four counts. If the count

exceeds the Action Threshold, NISL management will be notified to deploy additional harassment staff until the gulls have been dispersed from the landfill.

In order to determine the success in reducing the numbers of gulls foraging at the landfill , the gull baseline will be compared to future monitoring results. The baseline will be compared to the mean number of gulls on the ground per survey,—compiled by month for future years. A Land Manager's Committee established by the Director of Planning, Building, and Code Enforcement, and others (see Oversight and Enforcement section) will review monitoring data and provide recommendations to the Director of Planning, Building, and Code Enforcement regarding any changes in success criteria as well as any necessary changes in abatement measures, monitoring measures, or other program components.

In addition to monitoring the nuisance species numbers at NISL, the Land Manager's Committee will also review on-going SFBBO or its successor's monitoring studies of California gull colonies, tern colonies (three species), western snowy plover scrapes, and avocet and stilt nests. Draft reports on the findings from these monitoring studies should be produced each year and provided to the Committee to correlate trends in the population levels of the monitored species with the reduction in the number of nuisance species feeding at NISL. A direct cause and effect relationship cannot be established, but trend analysis may prove helpful in identifying confounding factors and projects affecting population health of at-risk species.

***Mammals*.** No rigorously collected data are currently available regarding populations of nuisance mammals at the Landfill and Recyclery, and therefore there are currently no baseline levels for comparison of future trapping success.

Predator management data from the Don Edwards San Francisco Bay National Wildlife Refuge provides some information regarding what could be expected to occur at the Landfill and Recyclery. In 1991, the Refuge implemented a predator management plan directed at the removal of red foxes, raccoons, striped skunks, and feral cats to protect the federally listed California clapper rail and western snowy plover (Harding et al. 1998). From spring 1991 to fall 1996, the average number of individuals removed from Refuge lands per year included 90 red foxes, 27 feral cats, 26 striped skunks, and two raccoons. In addition, 38 non-native opossums and 25 native gray foxes were captured and released. The numbers of red foxes trapped were consistent from 1991 to 1996, but trapping rates declined because more traps were used in successive years. Successful trapping required 46 traps/fox in 1991-1992 and 83 traps/fox in 1995-1996, suggesting that the trapping program was successful in reducing fox populations.

Because there is no existing baseline for nuisance mammal abundance at the Landfill and Recyclery, mammal trapping success criteria will be established within 1 year after regular, rigorous monitoring according to the monitoring approach described above has been initiated. These criteria will be determined by qualified biologists identified and

convened by the City of San Jose to review the Year 1 monitoring data, as described for gulls above.

***Mosquitoes*.** Because the presence of mosquitoes, and other nuisance insects, at the Landfill and Recyclery have previously been within acceptable levels (with ongoing management and monitoring), success criteria for abatement measures will be met if mosquito abundance does not exceed current levels. If mosquito abatement measures are followed and the operator's staff continues to work with the Vector Control District, then the success criteria will be met for these abatement practices. The Director of Planning, Building, and Code Enforcement will monitor success of mosquito abatement through communication with the Vector Control District and/or review of monitoring reports from the landfill.

***Interpretation of Monitoring Data Relative to Success Criteria*.** Although the success of the NSAP will be defined as no increase in abundance of nuisance species, it is necessary to acknowledge that short-term increases in abundance of certain species above baseline levels may occur from time to time. This may occur due to habituation of nuisance birds to certain abatement measures; short-term problems with implementation of certain measures (e.g., failure of mammal traps or lack of availability of trained falcons); temporal variability in abundance of species such as gulls in the South Bay as a whole (independent of food availability at Newby Island Landfill); or inappropriate identification of baseline levels (e.g., if the single year of data on gull abundance since multiple-technique abatement was initiated is not representative of a typical year). If monitoring data indicate an increase in abundance of nuisance species, the General Manager of the landfill operator with Guidance from the Land Manager's Committee , will determine whether the short-term increase in nuisance species reflects a deficiency in the abatement program and will determine whether (and what) changes to the abatement program are necessary to remediate the deficiency. This decision will be subject to reasonable review by the Director of Planning, Building, and Code Enforcement. The goal of NSAP is long-term abatement of nuisance species issues, and thus success is most important over the long term.

ADAPTIVE MANAGEMENT

Due to uncertainties regarding the effects of various abatement measures on nuisance species (including the potential for habituation of nuisance animals to certain measures), all abatement measures for nuisance species at the Landfill and Recyclery, as well as the monitoring program outlined in this NSAP, are meant to be adaptive. After the initial abatement approach described above is implemented (standard measures) monitoring will determine the responses of nuisance species to abatement efforts. In some cases, the effectiveness (or lack thereof) of certain abatement techniques will be apparent after a few days, weeks, or months. It is expected that the General Manager of the landfill operator will coordinate communication between personnel implementing these techniques and personnel performing the monitoring on an ongoing basis, and that ineffective or particularly effective techniques will be identified and discussed. Therefore, abatement techniques may be modified on a weekly or monthly basis if previous efforts were not sufficiently successful. In other

cases, the effectiveness of abatement measures may not be apparent until the monitoring efforts for an entire season or year are assessed and discussed (as described in *Reporting and Review* below). Whatever the circumstances, abatement measures will be adapted as needed to increase their success. When abatement measures are modified, records will be maintained of what changes were made and when to inform monitoring.

Each phase of management activities will be conducted based on the results of previous efforts and will take into account new information gathered by monitoring or as new techniques are developed. For instance, if certain abatement measures appear to be successful in reducing gulls access to food waste at the landfill, then those measures can be enhanced, while other, less successful, measures can be reduced or dropped completely. In the case of mammal trapping, monitoring may indicate that certain nuisance mammal species use particular regions of the site more than others, perhaps using certain levees as movement corridors. Therefore an increase in trapping effort in those areas, and a reduction in others, could increase the efficacy of overall trapping efforts. In some instances, a combination of measures may be required to be successful; therefore various combinations may have to be attempted until desired results are achieved.

Monitoring efforts will also be adaptive. For example, if abatement measures are determined to be highly successful for avian species, then gull and corvid monitoring could be reduced from weekly to bi-weekly or monthly. Also, nocturnal foraging surveys could be reduced in duration based on monitoring results.

The General Manager of the landfill operator, the Director of Planning, Building, and Code Enforcement, and those performing the monitoring, reporting, and review should draw on the experiences of the Land Manager's Committee to modify and improve the abatement measures in this plan as needed. Flexibility, even with the standard measures, is a key component of the NSAP and therefore it is expected that the operators will work with the Director of Planning, Building, and Code Enforcement, and the site General Manager and the Land Manager's Committee to find the combination of techniques that is most successful and efficient in reducing nuisance species foraging at the Landfill and Recyclery while allowing for normal landfill and recycling operations to continue.

This NSAP itself is intended to be a living document. Every two years, it will be updated as needed to describe the latest abatement and monitoring methods being implemented; this update will also include a review of "new" abatement techniques being implemented at other facilities for consideration at Newby Island Landfill.

OVERSIGHT AND ENFORCEMENT

Oversight of the NSAP will be the responsibility of the Director of Planning, Building, and Code Enforcement. The Director shall establish a Land Manager's Committee, comprised of non-affiliated third-party entities with technical expertise to oversee the consistent implementation, monitoring, and adaptation of the NSAP. The Land

Manager's Committee will be composed of technical experts, and will be responsible for providing informed analysis and review of monitoring results, recommendations for changes or refinements in operational processes, review of relevant regional studies of shorebirds and protected species, etc. Suggested members of the Land Manager's committee will include:

- U.S. Fish and Wildlife Service, Office of Endangered Species, Bay/Delta Branch
- City of San Jose, Department Environmental Services
- California Department of Fish and Game
- Don Edwards South San Francisco Bay National Wildlife Refuge
- San Francisco Bay Bird Observatory

The Land Manager's Committee will also review on-going monitoring by SFBBO, or its successor, of California gull colonies, tern colonies (three species), western snowy plover scrapes, and avocet and stilt nests. Draft reports on the findings from these monitoring studies should be produced each year and provided to the Committee to correlate any trends in the population levels of the monitored species with the reduction in the number of nuisance species feeding at NISL, which may prove helpful in identifying confounding factors and projects affecting population viability of at-risk species.

REPORTING AND REVIEW

A reporting and review process will be established by the site General Manager and the Director of Planning, Building, and Code Enforcement to assess the effectiveness of nuisance species abatement, and to help inform the modification of measures as necessary, with the goal of reducing nuisance species access to food waste at the Landfill and Recyclery. The reporting and review process will involve the following:

- A quarterly review of the success or failure of abatement measures. This review will be conducted by a consultant or contractor conducting the abatement monitoring, and the findings of this review will consist of a brief memo submitted to the Director of Planning, Building, and Code Enforcement.
- An annual report, compiled by a consultant or contractor conducting the abatement monitoring, will be presented to the Director of Planning, Building, and Code Enforcement by the end of February of each year, describing abatement measures and monitoring results for the prior year. The report will contain the following sections:
    - Abatement Methods – a description of all nuisance species abatement measures attempted during the year; this description will include the types of

abatement, when and where they were used, and by whom they were implemented

- Monitoring Methods – a description of all abatement measure monitoring activities that were conducted during the year
- Monitoring Results – a summary and analysis of all the monitoring data collected throughout the year. The data will be summarized in text and also presented in the form of tables and figures as appropriate to clearly and concisely describe the monitoring data collected.
- Discussion – a discussion section comparing the effectiveness of abatement measures
- Recommendations – a discussion of recommendations for the next year outlining recommended changes in abatement or monitoring activities
- Letters and Responses – a copy of all comment letters to the operators or the Director of Planning, Building, and Code Enforcement concerning nuisance species at the Landfill and Recyclery will be attached to the annual report. Responses to comment letters addressing issues outlined in the letters will also be included.

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NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
Introduction Section	
The current version of the EIR NSAP specifies that the funding of the NSAP will be the responsibility of the landfill operator. The applicant's NSAP does not specify funding.	The Applicant's NSAP says the project proposes to implement the NSAP, but the entity responsible for funding the NSAP needs to be clearly identified.
Nuisance Species Abatement Measures; Standard Measures	
Tarps are included as a possible material to be used in lieu of soil to cover refuse material at the landfill in the EIR NSAP, but reference to foams was deleted because of concerns expressed by the refuge. The applicant's NSAP does not specifically identify tarps as a possible cover material, and contains several negative references to foams.	The adaptive management, reporting and review, and oversight requirements within the plan will allow for techniques to be assessed and improved if shown to be ineffective or result in unintended consequences. The use of foams as a possible cover material was deleted from the EIR NSAP. (Refer to Comment/Response C.19.)
The EIR NSAP specifically requires that a building or netting must enclose all food waste processing at the Recyclery. A qualified biologist must approve the type of enclosure installed to ensure impacts to non-target species are minimized. The applicant's NSAP says that measures, including a building enclosure, have been "recently implemented" at the Recyclery facility.	Since no permit was issued, the City has not verified or approved a building and does not know that whatever enclosure is referenced here as "recently implemented" is code-compliant or adequate as an avoidance measure for predators. The City and the City's approved biologist will verify the measures used to protect the Recyclery property from nuisance species. Approval by a qualified biologist will ensure any enclosure approved by the City is effective and does not harm non-target species.
In order to avoid accumulations of standing surface water, the EIR NSAP states that all piles of tires, debris, and equipment that have the capacity to collect water, as well as any other areas of standing water on the site (except approved swales and ponds on-site), should be inspected *at least once per week*. The applicant's NSAP states that standing water would be inspected *periodically*.	"Periodically" is not a verifiable standard. The Adaptive Management section of the EIR NSAP states that the frequency of management and monitoring activities can be changed if verified on-site experience indicates that it is appropriate to do so. To ensure the success of the NSAP, and to avoid triggering off-site mitigation measures, the NSAP starts with specified levels of management and monitoring which will allow subsequent efforts to be reduced in intensity and/or frequency if and

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
	when it is demonstrated that the purpose of the individual efforts can be achieved without compromising the success of the plan.
In regards to mammal trapping, the EIR NSAP states that medium-sized mammals would be trapped at least twice per month during the first year the NSAP is implemented. The applicant's NSAP say that trapping for medium-sized mammals around the landfill site will occur at "regular intervals," and around the Recyclery site, if such mammals are observed frequenting the site.	The EIR NSAP proposes the efforts described as the "Initial Abatement Approach," while rigorous monitoring provides better information on the presence and location of the nuisance species. The success criteria proposed, to maintain the populations of nuisance species at or below existing levels, cannot be met without accurate data on what those levels are for all of the species. Accurate data will never be compiled if the only effort made to assess their numbers is by chance sightings. The Adaptive Management section of the EIR NSAP states that the frequency of management and monitoring activities can be changed if verified on-site experience indicates that it is appropriate to do so. To ensure the success of the NSAP, and to avoid triggering off-site mitigation measures, the NSAP starts with specified levels of management and monitoring which will allow subsequent efforts to be reduced in intensity and/or frequency if and when it is demonstrated that the purpose of the individual efforts can be achieved without compromising the success of the plan. The trapping of mammals at "regular intervals," as specified by the applicant's NSAP is not a verifiable standard.
Nuisance Species Abatement Measures; Adaptive Measures	
In the section on the use of pyrotechnics, the EIR NSAP states specifically that "…care will be taken to ensure that these measures [*rockets, shell crackers, propane cannon, etc.*] are not employed in close proximity to sensitive habitats and species, such as California clapper rails."	Loud, percussive noises generated from pyrotechnics could cause California clapper rails to abandon their nests and/or breeding territories if conducted too close to clapper rail habitat. In section 1.4.3.14 of the Draft EIR (*Proposed Biological Measures*), it states that "any new

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
The applicant's NSAP does not include this sentence, although it includes the rest of the paragraph.	activities that generate loud noises and vibration substantially greater than existing levels (as determined by a qualified acoustical consultant in consultation with a qualified biologist) will not be located within 700 feet of California clapper rail nesting habitat in Coyote Creek, South Coyote Slough, or associated tidal marsh habitats to the south, west, and north portions of the Newby Island site." Since the percussive noisemakers are an existing use at the landfill, this clarification about the proposed mitigation measure is considered necessary to ensure that the prohibition on increased noise within 700 feet of clapper rail nesting habitat ***includes prohibition of the use of such extremely loud noises*** at any point in the future when the active landfill face may move closer to sensitive habitat.
For vegetation management, the EIR NSAP states that vegetation on inactive portions of the landfill will be at least 10 inches tall to discourage gulls from roosting and that qualified biologists will take into consideration the potential presence and habitat requirements of burrowing owls when selecting vegetation management techniques. The applicant's NSAP states that the vegetation "will" (not "may") be managed to produce "vegetation to discourage gulls from roosting"; it does not specify how the vegetation is to be maintained on inactive portions of the landfill, and it does not include language that qualified biologists will take into consideration the potential presence and habitat requirements for burrowing owls when selecting vegetation management techniques.	Vegetation management is an adaptive measure in the NSAP and thus is not necessarily a requirement. However, since the sole purpose specified for managing vegetation on inactive portions of the site is to discourage gulls from roosting, a minimum effective height (i.e., 10 inches) should be included in the NSAP. Since the presence of burrowing owls on inactive areas of the landfill is a possibility, the EIR NSAP requires that a qualified biologist must be consulted if this measure or other vegetation management techniques are chosen to deter gulls from roosting, in order to consider potential presence and habitat requirements of burrowing owls.

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
Monitoring	
In response to a significant number of comments on the Draft EIR received by the City, including suggestions from the Refuge staff, the EIR NSAP was modified to include more detail about the monitoring and reporting program in the EIR itself, especially in the NSAP. The EIR NSAP now specifies that the biologists conducting the gull monitoring will be selected by the General Manager or Director of Infrastructure Development of the landfill and approved by the San José Director of Planning, Building and Code Enforcement. The applicant's NSAP does not include this clarification.	Questions from the public asked how the Director of Planning, Building and Code Enforcement could have the appropriate level of expertise and the staff capacity to adequately oversee the highly technical mitigation program required to reduce and avoid biological impacts from this project. The EIR NSAP was modified to specify that biologists doing the monitoring would be selected by responsible level managers of the landfill and must also be approved by the City's Director of Planning, Building and Code Enforcement. (See Comments C.23 and C.24)
In response to a comment and suggestion from Refuge staff on the Draft EIR, the EIR NSAP now specifies that the monitoring biologist will not inform the landfill operator which days the gull surveys will be conducted to avoid possible bias resulting from variance in landfill and Recyclery operations and abatement techniques. This is not specified in the applicant's NSAP.	To preclude inadvertent bias in monitoring data resulting from modifications in landfill and Recyclery operations and abatement techniques, the biologist(s) conducting gull surveys will not inform the landfill operator as to which days the surveys will be conducted.
For corvids, the EIR NSAP requires surveys for American crows and common ravens be conducted twice per month at the landfill and Recyclery, and that these surveys may be conducted concurrent with gull surveys. The applicant's NSAP states that corvid surveys *may* be conducted concurrent with gull surveys.	It is not clear whether the permissive language in the applicant's NSAP is intended to apply to the timing of the corvid surveys or to the need for the surveys themselves. Corvids are identified as nuisance species in the EIR and surveys for these species are necessary to establish a baseline and to monitor the success of the NSAP in reducing the numbers of corvids to baseline levels or lower. Doing the surveys in parallel with the gull surveys is suggested as a convenience, not a necessity, however.

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
The EIR NSAP requires that the site be monitored for the first year of implementation of the NSAP to determine how many of what kinds of mammals use the site, what portions of the site they use, the seasons of greatest abundance, and the effectiveness of ongoing abatement techniques. A specific and detailed monitoring program, including nocturnal surveys, is described to achieve this goal. The landfill NSAP says that a qualified biologist will survey the landfill and Recyclery for signs of foraging to determine if further surveys or monitoring are necessary. Some of the monitoring techniques are described, should the biologist determine that they are necessary.	This is not a measurable mitigation measure because there are no criteria for whether it will be implemented nor for determining success. Without accurate baseline monitoring, the effectiveness of whatever mitigation and avoidance techniques are implemented cannot be evaluated. The EIR NSAP states that surveys may be reduced *after the first year* depending on the effectiveness of abatement measures. The Adaptive Management section of the EIR NSAP states that the frequency of management and monitoring activities can be changed if verified on-site experience indicates that it is appropriate to do so. To ensure the success of the NSAP, and to avoid triggering off-site mitigation measures, the EIR NSAP starts with specified levels of management and monitoring which will allow subsequent efforts to be reduced in intensity and/or frequency if and when it is demonstrated that the purpose of the individual efforts can be achieved without compromising the success of the plan.
Success Criteria	
The EIR NSAP specifies that for each group of nuisance species addressed in the plan, success of this abatement plan will be defined as maintaining or reducing the abundance of nuisance species using the landfill relative to baseline conditions. This statement is omitted from the applicant's NSAP, although the rest of the same paragraph from the EIR NSAP is included.	While the determination of success of the NSAP may be implied in the applicant's NSAP, it is necessary to clearly state how success will be determined to eliminate any question in the years ahead. The success criteria for the NSAP were developed to ensure that project impacts would be reduced to a less than significant level under CEQA.
The EIR NSAP states that the Director of Planning, Building and Code Enforcement and qualified biologists will evaluate monitoring	The Director of Planning, Building, and Code Enforcement is responsible by law for issuing the land use permits and is also designated by the

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
results. The applicant's NSAP states that qualified biologists will evaluate monitoring results.	City Council for implementation of CEQA in the City of San José. The Director will be responsible for the oversight and enforcement of the NSAP. Therefore, the Director will evaluate the monitoring results and consult with approved qualified biologists at his/her discretion.
In the EIR NSAP, the first event that would trigger increased gull abatement measures is identified in the EIR NSAP as *two* consecutive surveys (i.e., *one* month according the EIR NSAP) during which gull numbers exceed the action threshold. The applicant's NSAP states that the first trigger event would be *four* consecutive sampling periods (i.e., *two* months according to the applicant's NSAP) during which the gull numbers exceed the action threshold. The EIR NSAP says that if this trigger is met, then the NSAP Oversight Committee will meet within 10 business days after the final (i.e., second) week of non-compliance to determine how to respond. The applicant's NSAP does not specify a time period in which the committee should meet. (Note that the applicant's NSAP "Land Managers Committee" is equivalent to the EIR NSAP's "NSAP Oversight Committee.")	An increase in gulls beyond the established baseline for two months could result in substantial predation among sensitive South Bay species; during the breeding season, the impact could be disastrous. This would be a significant impact. The proposed EIR NSAP is specifically configured to minimize any unexpected damage to the decreasing populations of sensitive species in the adjacent Refuge, hence the very short reporting intervals between reports. The NSAP Oversight Committee as modified in this First Amendment to the Draft EIR is proposed to provide a higher level of involvement by interested stakeholders with extensive expertise and knowledge of the special status species and their habitats. It is also structured to minimize the potential for unanticipated damage to these species, especially during the first year when baselines are being established. Specifying when the NSAP Oversight Committee must meet provides a greater level of public confidence in the process and in the likelihood that, should the action threshold be exceeded, there is a procedure that will be followed and a reasonable expectation that impacts are not allowed to accumulate for extended periods.
If the NSAP's second trigger event (large influx of gulls and spot counts exceed the action threshold) occurs, the EIR NSAP states that	The language in the EIR NSAP identifies specific actions (i.e., adaptive measures) that would be taken immediately if the standard

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
additional measures including adaptive measures (e.g., ATV, paintball gulls) will be immediately initiated until gull numbers are below the action threshold. The applicant's NSAP states only that additional harassment staff will be deployed until the gulls have been dispersed from the landfill.	measures aren't working. The purpose and much of the power in this NSAP is vested in the use of both standard and adaptive measures, with the understanding that the adaptive measures are well understood and are to be deployed quickly and whenever needed. This specificity will eliminate confusion and ambiguity as to what actions additional deterrence staff will engage in.
The EIR NSAP requires that NISL staff notify the landfill's General Manager and Director of Infrastructure Development when the action threshold has been exceeded. The applicant's NSAP says that "NISL management" will be notified to deploy the additional harassment staff.	Notifying the General Manager and Director of Infrastructure Development when the action threshold has been exceeded ensures that the senior managers identified in the NSAP as being responsible for NSAP implementation are immediately made aware when NISL is not in compliance.
The EIR NSAP includes a third trigger event. If the Director of Planning, Building, and Code Enforcement receives at least three credible public complaints regarding an excess of 1,000 gulls at the landfill or Recyclery, the Director has the option to initiate additional unannounced gull surveys. This third trigger event is not identified in the applicant's NSAP.	The third trigger will allow the Director discretion to respond to public complaints (and establishes a quantitative threshold for such complaints) in the event that the landfill may not be in compliance between surveys. The importance of this third trigger may increase if the NSAP Oversight Committee and the Director of Planning, Building and Code Enforcement determine that monitoring can be reduced in future years.
Modifications made to the EIR NSAP as part of the First Amendment include (under Success Criteria) the completion of regular, rigorous monitoring of corvids to establish existing baseline data (because none currently exists) and the establishment of an action threshold for corvids that would trigger the implementation of additional abatement measures. (This responds to comments received on the Draft EIR.) These measures are not included in the applicant's NSAP.	Corvids forage at NISL and these species have been documented to benefit from anthropogenic food resources and impact special-status species, including those that inhabit the South Bay. For this reason, corvids are considered nuisance species and the City's consulting biologists agree that they need to be managed through the implementation of the NSAP. (See Comments A.4, M.44, and M.75)

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
Oversight and Enforcement	
The "NSAP Oversight Committee" in the EIR NSAP would consist of qualified biologists (including representatives from the Don Edwards San Francisco Bay National Wildlife Refuge and a Bay-area bird observatory, possibly SFBBO), City of San José staff, and others with relevant expertise such as other City staff, City consultants, and other Bay-area biologists, as approved by the Director of Planning, Building, and Code Enforcement. The applicant's NSAP "Land Managers Committee" is said to include members from non-affiliated third-party entities with technical expertise such as personnel from the U.S. Fish and Wildlife Service, City of San José Department of Environmental Services, California Department of Fish and Game, Don Edwards South San Francisco Bay National Wildlife Refuge, and San Francisco Bay Bird Observatory.	The members of the two oversight committees described in the EIR NSAP and applicant's NSAP could consist of the same members. Both NSAPs specify that members of the oversight committee have relevant expertise. However, while the applicant's NSAP provides suggestions for possible members, the EIR NSAP specifies that qualified biologists from the Don Edwards San Francisco Bay National Wildlife Refuge and a Bay-area bird observatory, and City of San José staff will be on the committee. The requirements in the EIR NSAP were made more specific in the First Amendment, partly in response to concerns expressed in comments on the Draft EIR. The advisory committee is proposed, in part, to assure the public that sufficient technical expertise is available to the Director of Planning, Building, and Code Enforcement and the City in implementing the protections proposed.
The EIR NSAP specifies that the Director of Planning, Building, and Code Enforcement will be responsible for reviewing reports (including the regular monitoring reports), conducting periodic inspections of the landfill and Recyclery to ensure abatement measures are being implemented, and responding to complaints from third parties if nuisance species are not adequately controlled by the NSAP The applicant's NSAP states that the Director of Planning, Building and Code Enforcement will be responsible for supervising and enforcing the NSAP, but assigns review of the reports to the "Land Manager's Committee", and is silent on responsibility for inspections and responding to complaints.	Since the Director of Planning, Building, and Code Enforcement is responsible for the oversight and implementation of the NSAP and all other components of the zoning and land use permits, the Director is responsible for the tasks listed. (See Comments A.5, A.7, A.9, M.19, M.82, M.83 and O.45.)

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
Reporting and Review	
The EIR NSAP specifies that funding for the NSAP and biological consultants will be provided by the landfill operator. The applicant's NSAP does not identify a source of funding.	As stated previously, the Applicant's NSAP says the project proposes to implement the NSAP, but the entity responsible for funding the NSAP, including the biological consultants conducting the surveys, needs to be clearly identified.
The EIR NSAP specifies that biological consultants may be chosen by the General Manager or Director of Infrastructure Development of the Landfill, but must be approved by the City's Director of Planning, Building, and Code Enforcement. The applicant's NSAP does not specify that biologists be approved by the Director. The EIR NSAP requires a *monthly* review of the success or failure of abatement measures by a consultant or contractor conducting the abatement monitoring. The applicant's NSAP requires a *quarterly* review of the success or failure of abatement measures by an approved biological consultant conducting the abatement monitoring. The EIR NSAP requires coordination between multiple consultants conducting different monitoring activities and a timeframe to prepare the monthly report and complete the monthly report. The applicant's NSAP does not include such detail. The EIR NSAP requires coordination between multiple consultants for preparation of the annual report, and a timeframe for submission of required information necessary for report completion. The applicant's NSAP does not	It is important that the General Manager (or the Director of Infrastructure Development) of the landfill has the flexibility to choose the third-party consultants to conduct monitoring and reporting activities; however, approval by the Director of Planning, Building, and Code Enforcement is essential to ensure that the consultants are qualified in the appropriate fields, non-biased and operate independently as third-party experts. A monthly review, rather than a quarterly review, will ensure that actions are taken promptly enough to minimize damage to sensitive species, should programs in place fail to meet targets, especially when patterns are not immediately obvious. A more frequent review, especially in the first year or two of the program will ensure that NISL staff and the NSAP Oversight Committee coordinate and initiate adaptive measures more effectively, creating a higher potential for the NSAP to be successful. The EIR NSAP states that monitoring activities are to be adaptive such that they can be reduced if the NSAP Oversight Committee agrees that such activities can be reduced. To ensure the success of the NSAP, and to avoid triggering off-site mitigation measures, the NSAP starts with specified levels of management and monitoring which will allow subsequent

NSAP COMPARISON TABLE	
Primary Differences Between the EIR NSAP (as revised) **and the Applicant/ESP NSAP**	**Discussion**
include such detail.	efforts to be reduced in intensity and/or frequency if and when it is demonstrated that the purpose of the individual efforts can be achieved without compromising the success of the plan. It is important to outline the coordination between consultants and the timing for completion of reports to avoid confusion.
The EIR NSAP includes details about the NSAP Oversight Committee responsibilities and timing of tasks that the applicant's NSAP does not.	This program will likely be in place for many years. NISL employees will change, as will City staff. Specifying the details in the NSAP, which will be tied to both the PD zoning and the PD Permits, will minimize confusion and misunderstandings on both sides.

CITY'S RESPONSE TO PERTINENT SECTIONS OF THE ESP SUPPLEMENTAL BIOLOGICAL REPORT

The project applicant retained *Environmental Stewardship & Planning* (ESP) to provide supplemental biological information for the City to consider in the Final EIR. ESP's report titled Recommendations on the Newby Island Sanitary Landfill and The Recyclery California Environmental Quality Act (CEQA) Documentation contains a number of general statements and extensive background information regarding nuisance species abatement issues. The City's consulting biologists have reviewed this report and have incorporated some of the information from ESP's report into the EIR and biological resources report prepared for the EIR (which includes the NSAP as an appendix). Revisions to the text of the EIR and Appendix D (which is the biological resources report prepared for the EIR) is provided in **Section 5.0 Revisions to the Text of the Draft EIR** of the First Amendment. ESP's report also contains specific comments on the Draft EIR and NSAP and recommendations for revisions to these documents. Responses have been provided to those main comments and recommendations below.

Note that CEQA Guidelines Section 15151, Standards for Adequacy of An EIR, states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

The City's consulting biologists agrees and disagrees with specific comments and recommendations made by the applicant's biologists (ESP) in their Recommendations on the Newby Island Sanitary Landfill and The Recyclery California Environmental Quality Act (CEQA) Documentation report, as discussed in the responses below. The City, as the Lead Agency, has the authority to determine what impacts are considered significant, in light of the whole record [CEQA Statute Section 21082.2(a)].

Section 2.3 Baseline Selection (pages 4-9 of ESP's report): Analysis of the annual data indicates a continuing reduction in the average number of gulls/survey from an average of 2,597 in 2007, to 987 in 2008, and 609 in 2009 (Table 2). The empirical data suggests that the reduction in the average number of gulls/survey is due to the implementation of the abatement program by NISL. This represents a 77 percent reduction in three years.

Analysis of the quarterly data indicated that the highest average numbers of gulls/survey was generally observed in winter and fall, with the lowest numbers generally occurring in summer or spring, but these findings were inconsistent among years (Table 3).

Analysis of the reproductive period, defined as the period between April 15 and October 1 (Winkler, 1996 and Howell and Dunn, 2007), indicated that the average number of gulls/survey was consistently greater during the non-breeding period than the breeding period for 2007, 2008, and 2009 (Table 3).

As noted above, abatement activities were initiated on November 16, 2007, and were limited to periodic pyrotechnical measures. NISL commenced the use of falcons and dogs on July 18, 2008. The Notice of Preparation (NOP) was issued by the City of San Jose on December 3, 2007. Consequently, at the time of the NOP, only pyrotechnical abatement was in use by NISL, and this lasted approximately eight months. The logical baseline condition, therefore, is represented by the period between the initiation of pyrotechnical abatement and the start of falcon/dog abatement measures. The appropriateness of this period is reinforced by the fact that the NOP was issued in this time frame. While this period represents less than a full year of data, it does include portions of both the breeding and non-breeding periods, as well as portions of the winter, spring, and summer seasons.

To determine the baseline condition assessed in the EIR, the average number of gulls/survey was calculated for the period between November 16, 2007 (the start of pyrotechnic abatement) and July 18, 2008 (the start of falcon/dog abatement). This resulted in a mean or average of 1,994 gulls/survey (s= 192) for the 66 aggregate samples, and a range between 34 and 6,232 (Table 3). Figure 4 is a graph of the average number of gulls/survey in the time period analyzed.

Based on the statistical evaluation presented in the previous sections, and the timing of the NOP, it is our opinion that the baseline to be used in the EIR is 1,994/survey, rounded up to 2,000.

Response: The establishment of a baseline using less than one year of data, given the tremendous variation in gull abundance at NISL (and in the South Bay) between years, seasons, days, and even hours, is problematic. Nonetheless, the City's consulting biologists agree that using 2,000 gulls (i.e., a mean of hourly census data on a given survey of 2,000 gulls resting on the landfill, flying just above the landfill, and roosting or foraging on the open landfill face) as the baseline is the best approach for NSAP implementation. In fact, given that numbers of gulls observed at NISL have been considerably higher at times in the past, and given that the baseline of 2,000 is actually lower than the 3,500-gull average observed during surveys in December 2007 (when the NOP was issued), a baseline of 2,000 gulls provides substantial protection of sensitive species in the South Bay against future subsidies of gulls.

Section 3 Baseline Maintenance and 3.1 Action Threshold (page 10 of ESP's report): Once the baseline was established as discussed in Section 2, an appropriate Action Threshold for gull populations at Newby Island Sanitary Landfill was considered to ensure that foraging gull populations are maintained at levels below the baseline. For the purposes of this report, the Action Threshold is the level of the foraging gull populations, which would trigger increased gull abatement measures. The following discussion provides a summary of how the Action Threshold was calculated, how gull counts in relation to the Action Threshold will be determined, and what measures will be implemented in the event the Action Threshold is exceeded.

The recommended Action Threshold is 1,000 gulls/survey over four consecutive sampling episodes, which represents a 50 percent reduction of the baseline level, and a 97 percent reduction from the historic high of 33,000 gulls in 1998. The approach represents a significant reduction in the number of gulls, as compared to the baseline. Based on the post-baseline data, the Action Threshold has not been triggered (Figure 6).

Response: The EIR NSAP has been revised to indicate an Action Threshold of 1,000 gulls/survey. It is not proposed that the actions triggered by failure to meet the threshold be delayed for almost two months before any action is taken, instead of within two weeks (as required by the EIR NSAP).

Section 3.2 Monitoring and Response Protocol (pages 10-11 of ESP's report): We recommend the following protocol:

A qualified organization, such as SFBBO, shall monitor gull population numbers at the NISL on a twice-monthly basis. Raw data from the sampling episodes shall be provided to NISL, which will analyze the data in the same manner as detailed in Section 2 of this report to determine the average number of gulls/survey.

We recommend two independent trigger events to warrant increased gull abatement measures:

1. If the Action Threshold is exceeded, the Land Managers Committee (LMC) shall advise with regard to the level and duration of enhanced abatement measures to be implemented to respond to an irruption of nuisance species. Enhanced abatement would be discontinued when a sampling episode indicates gulls are below 1,000 gull/survey level, or on the advice of the LMC.

2. In the event that the falconer observes a large influx of gulls, he/she shall estimate the number by conducting spot counts from near the center of the active landfill cell. In each cardinal direction (e.g., west, east, north, and south), the falconer shall visually estimate the number of gulls, and sum the four counts. If the count exceeds the 1,000 gulls, NISL management shall be notified to deploy additional harassment staff until the gulls have been dispersed from the landfill.

Over time, as more data are collected and analyzed, seasonal, cyclic, and other trends in gull levels may change such that the LMC may recommend enhancement abatement on a preemptive basis. Similarly, if trends begin to show a diminution of nuisance species numbers due to extrinsic factors, such as emigration of gulls from the South Bay to new feeding and breeding areas, the level of abatement activities may be modified.

Response: Based on discussion with SFBBO, who is currently monitoring gulls on the landfill, the City's consulting biologists agree that the NSAP should be modified to indicate that monitoring twice per month during the first year is appropriate unless the landfill operator is substantially modifying its abatement techniques or changing abatement contractors to make sure that the new methods/contractors are successful.

The term "NSAP Oversight Committee" was chosen because this committee will be advising the Director of Planning, Building, and Code Enforcement, who will determine if the NISL is in compliance with CEQA mitigations for impacts from nuisance species.

As outlined in the DEIR NSAP, the raw data will be summarized by a qualified biologist, chosen by the NISL but approved by the Director of Planning, Building, and Code Enforcement. The biologist will produce monthly memos and an annual report. The memos and annual report will contain other data collected at the NISL, including mammal trapping data and nocturnal surveys. The NSAP Oversight Committee will use information based on the survey results and summarized by the consultant(s) to establish, and modify if necessary, the success criteria outlined in the NSAP. The City's consulting biologists agree that surveys and measures can be reduced over time if the NSAP is shown to be effective.

ESP also suggested a revision to the NSAP stating that the enhanced abatement measures would be triggered if the Action Threshold is exceeded in four consecutive surveys, which would allow up to two months to elapse before action is taken, using ESP's suggested frequency. Text in the NSAP has been revised to state that enhanced measures will be initiated if the threshold is exceeded in two consecutive surveys. The NSAP Oversight Committee must meet within 10 days after the second week of non-compliance to determine a suitable action.

Section 4.1 Population Growth (page 13 of ESP's report): Surrounding land uses, including the Don Edwards San Francisco Bay National Wildlife Refuge, provide suitable nesting and foraging habitat for a number of species in South San Francisco Bay. The Refuge was founded in 1972, and by 1979 the Refuge had acquired 18,000 acres of land. As of 2004, the Refuge was comprised of 30,000 acres of open bay, salt pond, salt marsh, mudflat, upland and vernal pool habitats. As shown in Figure 7, the number of breeding California gulls in the South San Francisco Bay have gradually increased since 1982. The increase in the number of breeding California gulls has increased from less than 1,000 breeding gulls in 1982 to more than 33,000 in 2006 (Ackerman et al. 2006).

As discussed by Shuford (2008), it does not appear that gull-nesting habitat is currently a limiting factor of gull population sizes, suggesting that gull populations could continue to increase based on the availability of nesting habitat. Eighteen landfills (potential sources of food for gulls) have closed in Alameda, San Mateo and Santa Clara counties since 1980 (Table 4), yet the number of breeding California gulls has continued to increase. Suitable habitat has increased from 18,000 acres in 1979 to 30,000 acres in 2004 but the number of available food sources (landfills) has decreased since 1980, suggesting that the availability of suitable nesting habitat rather than landfill food sources have contributed to the growth of gull populations in the South Bay over the past three decades.

Response: The City's consulting biologists agree with Shuford's assessment that gull nesting habitat is not currently a limiting factor in the South Bay. However, they disagree with the above assessment that:

> Suitable habitat has increased from 18,000 acres in 1979 to 30,000 acres in 2004 but the number of available food sources (landfills) has decreased since 1980, suggesting that the availability of suitable nesting habitat rather than landfill food sources have contributed to the growth of gull populations in the South Bay over the past three decades.

The approximately 30,000-acre refuge is comprised of open bay, salt pond, salt marsh, mudflat, upland, and vernal pool habitats. Of these six habitats (there are actually more habitat types in the Refuge boundary than six), only salt ponds provide suitable nesting habitat. Of the salt ponds, only inactive (not in production) and dry (no water during nest initiation) portions provide suitable habitat for California gulls. Therefore, the actual acreage of breeding habitat for California gulls on the Refuge is closer to two orders of magnitude less than the 30,000 acres.[1]

The above conclusion that the abundance of nesting habitat in the South Bay has a greater influence on the abundance of gulls than food availability is also flawed in that it ignores immigration from other sites. The California gull population at Mono Lake has decreased significantly during the same period of increase in the South Bay, and color band re-sightings indicate movement of individuals between the two populations. While other factors at the Mono Lake breeding site (e.g., predation, food availability) may influence emigration of gulls from that area, the abundance of food in the South Bay, coupled with abundance of breeding habitat is likely a major factor in gull immigration, since gulls likely experience higher reproductive success in South Bay than at Mono Lake (because of a higher abundance of food). In fact, when considering larger spatial scales (e.g., the state of California) there is an abundance of suitable nest sites for California gulls in many areas of California (and beyond), but not an abundance of food. Food is clearly a more important factor in determining population size of this species. Other factors including social attraction cannot be dismissed as well. The previously unabated gull attendance at landfills (e.g., 33,000 gulls in one survey) represents a social cue that may prompt migrant gulls to suspend migration and begin breeding in the South Bay.

This analysis also neglects the effect that the superabundance of food has on wintering gulls that may impact sensitive species in other breeding areas.

Also, the reference to 18 landfills closing is misleading since several of the landfills listed effectively closed (stopped operating) long before the official closure date and some never accepted food waste.

<u>Section 4.3 Gulls Potential Impact On California Clapper Rails (page 15-16 of ESP's report):</u>
The California clapper rail (*Rallus longirostris levipes*) is a federal Endangered species and a California fully protected species. The California clapper rail is one of the largest members of the family rallidae at approximately 13 to 19 inches in height. Due to its large size combined with the lack of observed attacks on clapper rails by gulls during winter high-tide surveys, Shuford (2008) suggests gulls are not important predators of the California clapper rail. Although it is possible that gulls might occasionally prey on an exposed rail chick or nest, it is speculative that gull predation would have a population-level effect on California clapper rails. To date, no evidence has been found supporting or refuting that the availability of foraging opportunities for gulls at the Landfill has

[1] The acreage of suitable nesting habitat is in the hundreds of acres, rather than thousands or tens of thousands. The actual acreage may vary from year to year, depending on how individual ponds are managed; if a certain pond is managed to be dry in a certain year, gulls could use it for nesting, whereas if it is wet, they could not.

any relationship to predation on clapper rails. However, to ensure that potential impacts to California clapper rails are minimized, the Landfill is proposing the gull abatement program described in this report as part of the project.

Non-native predators, such as red fox, Norway rats and feral cats are known to prey on California clapper rails and their eggs. Although nuisance species, such as red fox and feral cats, are most likely foraging in the vicinity of The Recyclery and not the working face of the Landfill (Gambelin, pers. comm.. 2010), water prevents predators such as the red fox and feral cats from crossing to adjacent land uses and preying on species (Dakin et al. 1998). The Landfill property is surrounded by Coyote Creek (to the north, northeast and east), South Coyote Slough (to the west and southwest), and the San Jose/Santa Clara Water Pollution Control Plant (to the south). Coyote Creek and South Coyote Slough would likely prevent access by red fox and feral cats to the adjacent suitable habitat for California clapper rail. Because of the relative size of the California clapper rail, physical barriers to suitable habitat for sensitive species, and the current abatement practices implemented by the Applicant, it is anticipated that nuisance species would have a less-than-significant impact on the California clapper rail and their eggs.

Additionally, the Landfill utilizes the services of a weekly pest extermination service, which controls the rat population on the Landfill property. Because the Landfill is implementing measures to control the rat population potentially foraging on the Landfill site, it is not anticipated that the availability of foraging opportunities for rats at the Landfill is correlated to predation on the California clapper rail and their eggs.

Response: The City's consulting biologists disagree that nuisance species foraging at the landfill will have a less than significant impact on California clapper rails in the absence of mitigation. Although California gulls have not been recorded preying on clapper rail eggs or chicks, such predation is certainly possible. Given the extremely low global population of California clapper rails, any predation on the species at all could have a population-level effect on the species.

Red foxes are known to cross water to depredate other species. A fox depredated an entire Caspian tern colony on an island within a salt pond in Eden Landing Ecological Reserve in 2005 and the colony has since been abandoned. A red fox also depredated an entire American avocet colony in a Napa/Sonoma salt pond during the same year. There are several other instances were foxes have crossed water for food. Raccoons, rats, and other nuisance mammals frequently cross water as well. The assumption that feral cats do not cross water is likely correct, however this is the only nuisance mammal species that is not likely to cross water. Therefore, nuisance mammals obtaining food subsidies at NISL could certainly impact clapper rails in other parts of the South Bay.

CITY'S RESPONSE TO PERTINENT SECTIONS OF THE ESP SUPPLEMENTAL BIOLOGICAL REPORT

Section 4.4 Gulls Potential Impact on Salt-Marsh Harvest Mouse (pages 16-17 of ESP's report): The salt-marsh harvest mouse is a small rodent that lives in the salt marshes of the San Francisco Bay and feeds primarily on the stems and leaves of salt marsh plants. The species is generally nocturnal and is active throughout the year.

Howard Shellhammer, PhD. noted in his "A Marsh is a Marsh is a Marsh . . .But not Always to a Salt Marsh Harvest Mouse" that with recent habitat loss and development closer to the native salt-marsh harvest mouse habitat, new predators, such as feral and domestic cats and nonnative red fox, have been introduced into the harvest mouse's environment (1998). These animals, in addition to native predators such as hawks, owls, herons and clapper rails, prey on the harvest mouse (Shellhammer 1998). Predation by the animals referenced above and diminished habitat quality and size are the greatest threat to salt-marsh harvest mouse population numbers (Shellhammer 1998; USFWS 2010).

As discussed above, Coyote Creek and South Coyote Slough would likely prevent access by red fox and feral cats to the adjacent suitable habitat for salt-marsh harvest mouse. The water barriers surrounding the Landfill property are likely preventing predation on adjacent land uses by cats and red foxes foraging on the Landfill site; therefore, it is not anticipated that the availability of foraging opportunities for red fox and feral cats at the Landfill is correlated to predation on the salt-marsh harvest mouse.

Biologists conducting winter California clapper rail surveys have observed gulls taking rodents, including harvest mice, while foraging in salt marshes (Shuford 2008); however, Shuford states that it seems unlikely that gull predation alone would have a population-level effect on salt-marsh harvest mice. Studies conducted at Alviso in 1983 and 1984 (shortly after colony establishment) indicate that the diet of the gulls sampled were comprised of only approximately 5 to 6 percent rodents (Shuford 2008). The available gull diet data for the breeding season indicates very few rodents are taken. Because available gull diet data indicates rodents are not a primary dietary component, habitat modification contributed to significant reductions in salt-marsh harvest mouse populations, physical barriers to suitable habitat for sensitive species would limit predation by terrestrial nuisance species, and implementation of the current abatement practices at the Landfill, it is not anticipated that the availability of foraging opportunities for gulls and other nuisance species at the Landfill would result in significant predation on the salt-marsh harvest mouse.

Response: This section of the report ignores the presence of Santa Clara Valley Water District's salt marsh harvest mouse mitigation site directly south of the Recyclery. As noted in the response above, most nuisance mammals can cross water, but in this instance there is no water barrier to deter mammalian predators from accessing this site. Further, gulls are frequently observed foraging at the Recyclery and roosting in the adjacent harvest mouse mitigation site in the pickleweed marsh (high marsh plain) where salt marsh harvest mice are known to occur based on trapping data collected by *H.T. Harvey & Associates*. If the diet composition of gulls using NISL are similar to those cited in Shuford (2008), then five to six percent of gull diets consist of small mammals. If only a small fraction of the small mammal diet in gulls using the NISL consists of salt marsh harvest mice, a federally-listed species, the impacts from gull predation would be considered significant under CEQA.

The comment regarding Shuford's statements about gull predation effects on salt marsh harvest mouse populations is taken out of context. Shuford's statements (and his entire report) refer to the effects of South Bay-breeding California gulls. However, Shuford's comments regarding gull predation on harvest mice include observations of predation of small mammals during high winter tides. During winter, when extremely high tides practically cover the marsh plain, small mammals are forced out of vegetative cover, and predation on small mammals during such events (by gulls and other birds) is very high; *H.T. Harvey & Associates* senior wildlife ecologist Steve Rottenborn has observed such predation during high-tide events in Palo Alto and East Palo Alto on a number of occasions. NISL provides subsidies not only to South Bay-breeding California gulls, but also to wintering gulls of a number of species; if those subsidies result in increased winter numbers of gulls in the South Bay, those gulls are likely responsible for at least some high-tide predation on salt marsh harvest mice.

Therefore, it can be assumed that nuisance species from the NISL are affecting harvest mice and other marsh species in adjacent habitats and this impact would be significant under CEQA in the absence of mitigation.

Section 4.5 Gulls Potential Impact on Salt-Marsh Wandering Shrew (pages 17-18 of ESP's report): The salt-marsh wandering shrew is a small-to medium-sized shrew that occurs historically in salt marshes adjacent to South San Francisco Bay. As discussed in Collins (2008), salt-marsh wandering shrews are fairly good swimmers and have been observed diving underwater to avoid capture.

The loss of available marsh habitat in South San Francisco Bay has influenced the size and distribution of salt-marsh wandering shrew populations and is the primary reason for concern of this species (Collins 1998). Although habitat loss is the primary reason for reduction in population size and distribution of the salt-marsh wandering shrew, known predators of the species include northern harrier, white-tailed kite, short-eared owl, egrets, herons, feral cats, red fox, raccoon, long-tailed weasel, and Norway rats (Collins 1998; Josselyn et al. 2005).

As discussed above, Coyote Creek and South Coyote Slough would likely prevent access by red fox and feral cats to the adjacent suitable habitat for salt-marsh wandering shrew. The water barriers surrounding the Landfill property are likely preventing predation by cats and red foxes foraging on the Landfill site; therefore, it is not anticipated that the availability of foraging opportunities for red fox and feral cats at the Landfill is correlated to predation on the salt-marsh wandering shrew.

Additionally, the Landfill utilizes the services of a weekly pest extermination service, which controls the rat population on the Landfill property. Because the Landfill is implementing measures to control the rat population potentially foraging on the Landfill site, it is not anticipated that the availability of foraging opportunities for rats at the Landfill is correlated to predation on the salt-marsh wandering shrew.

Little data is available on the salt-marsh wandering shrew, and to date no evidence has been found supporting or refuting potential gull predation on salt-marsh wandering shrew. Because the shrew is

known to dive underwater to evade capture, it is anticipated that the availability of foraging opportunities for gulls at the Landfill is correlated to predation on the salt-marsh wandering shrew.

Response: The City's responses to comments regarding nuisance species impacts on the salt marsh harvest mouse apply to the wandering shrew as well.

Section 4.6 Conclusion Regarding Impacts on Sensitive Species (page 18 of ESP's report): The first significance threshold in Section 3.6.2.1 of the September 2009 Draft EIR states that project would result in a significant biological resources impact if it would "have substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service". The Draft EIR identifies that the proposed project could potentially impact three sensitive species: California clapper rail, salt-marsh harvest mouse, and salt-marsh wandering shrew. As discussed above, because of the relative size of the sensitive species, physical barriers to suitable habitat for sensitive species, and the current abatement practices implemented by the Applicant, the conditions suggests that continued operations and proposed activities associated with the project would not likely result in a significant impact to the California clapper rail, salt-marsh harvest mouse, or the salt-marsh wandering shrew.

As discussed above, the evidence suggests that the availability of suitable nesting habitat rather than foraging opportunities at landfills have contributed to the growth of gull populations in the South Bay over the past three decades. Suitable habitat has increased from 18,000 acres in 1979 to 30,000 acres in 2004 but the number of available food sources (landfills) has decreased since 1980. As landfill food sources have declined, nesting habitat has increased and so have gull populations. Therefore, because nesting habitat has continued to increase since 1980, while potential foraging opportunities have decreased due to landfill closures, nesting habitat is likely the primary limiting factor in gull population growth, not landfills.

Response: The City does not agree that available evidence presently supports these conclusions. Please refer to the previous responses to previous sections of the report regarding potential effects of gulls on the California clapper rail, salt-marsh harvest mouse, and salt-marsh wandering shrew and on the likely influence of landfill access on South Bay-nesting California gull populations.

Section 4.7 Off-site Mitigation (page 19 of ESP's report): If NISL limits the number of gulls foraging at the landfill to a level below the defined significance threshold, there is no nexus to provide off-site mitigation habitat for sensitive species in light of the potential for restoration projects, such as the South Bay Salt Pond Restoration Project, to cause sensitive species to be displaced from their historical nesting habitat by increased populations of gulls. NISL has no control or authority over actions taken outside the limits of the landfill with respect to the increase in habitat for gulls. NISL can only control gull numbers at the landfill. If restoration projects in the South Bay displace existing gull populations to sites currently occupied by sensitive species, and alternative foraging sites are used by gulls, NISL will have no authority to remedy any impact on off-site sensitive species from the increased gull population caused by external actions. These are impacts unrelated to the operation of the landfill. Further, the provision of off-site habitat for sensitive species that are displaced by habitat restoration projects would in no way guarantee a viable

mitigation measure since there is no assurance that that would not further exacerbate the gull population problem by providing even more potential habitat. Consequently, off-site habitat creation would be "mitigating" for an impact unrelated to the project.

There is no guarantee that the creation of or contribution to off-site habitat for sensitive species would be successful. Although the off-site habitat may successfully provide additional habitat in South San Francisco Bay, there is no assurance that sensitive species would not compete with nuisance species or other non-protected species for breeding and/or foraging habitat at the mitigation site. There would be no assurance that gulls or other species would not compete with waterbirds for available nesting habitat, lessening the success of the off-site mitigation. Measures would need to be implemented by the land manager to ensure that creation of the off-site mitigation would benefit the intended species and would not benefit nuisance species.

Response: First, it should be noted that off-site mitigation measures would be required to offset the effects on sensitive species of NISL subsidies of nuisance species only if abatement is unsuccessful. The City agrees with the above statement, "NISL can only control gull numbers at the landfill," and if NISL is successful at doing so, off-site mitigation would not be required under mitigation measures MM BIO – 13.3 and MM BIO 14.1 in Section 3.6.3 of the Draft EIR (and as revised in Section 5.0 of the First Amendment to the Draft EIR).

The off-site mitigation measures (MM BIO – 13.3 and MM BIO – 14.1), as described in the Draft EIR, are exclusive of the success other projects, such as the South Bay Salt Pond Restoration Project (SBSPRP). It is correct that actions of other projects may confound the success of off-site mitigations funded by NISL; however, a qualified biologist will determine the amount and type of off-site mitigation and thus will consider effects of other off-site actions, such as the displacement of California gulls at Pond A6 (which will occur in 2010-2011). A knowledgeable biologist would take into account the presence or absence of nesting gulls in a potential restoration site prior to initiated restoration actions. The supposition that all restoration activities displace gulls is incorrect. Most potential habitat restoration sites (e.g., active salt ponds) are not occupied by California gulls (or other gulls species).

Further, the above statement "If restoration projects in the South Bay displace existing gull populations to sites currently occupied by sensitive species…" is an unsupported supposition. As stated in ESP's report, California gulls have the "**potential** to outcompete other waterbirds for nesting habitat" (emphasis added). The Strong et al. (2004) paper does not make the assumption that gulls will displace sensitive species, but states that there is potential for that to happen (so that the occurrence can be avoided).

The City's consulting biologists agree with the above statement that "impacts from displacement of gulls at Pond A6" is "unrelated to the operation of the landfill" and they are also unrelated to this CEQA analysis.

The City's consulting biologists agree that "Measures would need to be implemented by the land manager to ensure that creation of the off-site mitigation would benefit the intended species and would not benefit nuisance species." Therefore, a monitoring plan with performance criteria, as required by CEQA, is included in mitigation measure MM BIO – 13.3 of the Draft EIR.

Nonetheless, if the NSAP is implemented correctly and NISL does due diligence to ensure its success, off-site mitigations are not necessary and will not be required.

Section 5 Corvids (page 20 of ESP's report): The September 2009 Draft EIR claims that "wintering and breeding gulls and corvids have been documented foraging in large numbers on refuse at the Newby Island Landfill," although no corvid surveys or corvid counts were cited. The Biological Resources Chapter of the Draft EIR is primarily based on information contained within the H.T. Harvey & Associates September 2009 *Biological Resources Report for Newby Island Landfill Expansion Planned Development* EIR. The H.T. Harvey report states that "corvids (crows and ravens), forage regularly at Newby Island Landfill, and these species depredate western snowy plover and California clapper rail nests in the South Bay (N. Wilson 2004, S. Rottenborn, pers. obs., SFBBO, unpublished data)."

ESP attempted to research the sources referenced above. On June 15, 2010, Kevin Crouch from Padre Associates, Inc. contacted Caitlin Robinson-Nilsen from SFBBO. Ms. Robinson-Nilsen said she was unaware of the unpublished data and also noted that SFBBO has not conducted corvid surveys. She said that N. Wilson had been an intern at SFBBO in 2004 and that she (Ms. Wilson) had conducted clapper rail surveys, but Ms. Wilson did not conduct corvid surveys and had never been to the Landfill.

On June 16, 2010, Mr. Crouch from Padre Associates, Inc. contacted Stephen C. Rottenborn, Ph.D. from H.T. Harvey & Associates to discuss the citations referenced above and on Page 48 of the biological resources report. Dr. Rottenborn noted that the citation was added in support of the text regarding predation by corvids on California clapper rail nests and not in support of the statement that corvids regularly forage at the landfill. Dr. Rottenborn noted that he had observed a common raven predating a clapper rail nest, but he had not conducted corvid surveys at the Landfill. He had observed ravens at the Landfill "while birding or conducting surveys in adjacent areas," but he had not recorded numbers.

Response: To clarify, the citation "S. Rottenborn, pers. obs." supported both the statement that corvids forage regularly at NISL and the statement that corvids have been observed depredating clapper rail nests in the South Bay. The Wilson and SFBBO citations were provided in support of the statement that corvids have been observed depredating snowy plover nests in the South Bay.

The text of the Biological Resources Report and Draft EIR has been revised to be clearer regarding corvid use of NISL. The words "and corvids" from the sentence describing wintering and breeding gulls foraging in large numbers at Newby Island Landfill in the Draft EIR have been deleted, as there have been no formal counts of corvids at the landfill and it is not appropriate to include corvids in that statement.

However, "in large numbers" is relative to the species, and a flock of 20 ravens or crows, for instance, would be considered a large flock, unlike gulls which can flock in the 100's, 1,000's, or 10,000's. Flock size is a function of the species natural history and behavioral ecology.

Section 5 Corvids (page 21 of ESP's report): To date no evidence has been found that the Landfill is significantly encouraging the growth of the corvid population or that corvids are a significant factor in predation on any sensitive species.

Response: The City's consulting biologists disagree with this statement. The availability of anthropogenic food resources, including food at landfills, is thought to be the most important factor in the increase in corvid populations in western North America (Boarman and Heinrich 1999[2]). The availability of anthropogenic food resources is thought to subsidize corvid populations (Boarman 1993[3], Marzluff et al. 2001[4]) and an important source of these subsidies is food from landfills (Boarman 2003[5], as cited in Liebezeit and George 2002[6]).

A review of predation by corvids on listed species in California revealed 55 published and unpublished sources providing evidence that corvids are predators of eight special status species in California or neighboring states (Liebezeit and George 2002). Corvids have been documented preying on the nests or young of California condors, greater sandhill cranes, western snowy plovers, California least terns, marbled murrelets, San Clemente Island loggerhead shrikes, least Bell's vireo, and desert tortoises (Liebezeit and George 2002). The majority of these sources implicate the common raven and American crow, two corvid species observed using the NISL for foraging and roosting. Further, American crows and common ravens have been documented as the most important predators of California least terns and western snowy plovers in several locations in California (Liebezeit and George 2002), two species that breed in San Francisco Bay. Common ravens have been observed foraging on endangered species in the South Bay, including the California clapper rail (S. Rottenborn pers. obs.) and western snowy plovers (SFBBO unpublished data, see: http://www.vimeo.com/4536839). Given the extremely low size of the California

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[2] Boarman, W. I. and B. Heinrich. 1999. Common Raven (*Corvus corax*). *in* A. Poole and F. Gill, eds. The Birds of North America, No. 476. The Academy of Natural Sciences, Philadelphia, PA and The American Ornithologists' Union, Washington, D.C.

[3] Boarman, W. I. 1993. When a native predator becomes a pest: a case study. Pages 191- 206 *in* S. K. Majumdar, E. W. Miller, D. E. Baker, E. K. Brown, J. R. Pratt, and R. F. Schmalz (Eds.) Conservation and resource management. Pennsylvania Academy of Sciences, Easton, PA.

[4] Marzluff, J. M., K. J. McGowan, C. Caffrey, R. E. Donnelly, and R. L. Knight. 2001. Causes and consequences of expanding American Crow populations. Page 33 *in* J. M. Marzluff, R. Bowman, and R. A. Donnelly, (Eds.). Avian conservation and ecology in an urbanizing world. Kluwer Academic Publishers, Norwell, MA.

[5] Boarman, W. I. 2003. Managing a subsidized predatory population: reducing common raven predation on desert tortoises. Environmental Management 32: 208-207.

[6] Liebezeit, J. R. and L. George. 2002. A summary of predation by corvids on threatened and endangered species in California and management recommendations to reduce corvid predation. Species Conservation and Recovery Program Report, 2002-02. California Department of Fish and Game Habitat Conservation Branch.

clapper rail population, any corvid predation on the species could have population-level effects.

The most effective method to limit long-term population growth in corvids is likely controlling their access to anthropogenic food resources (Boarman and Heinrich 1999). Further, the Liebeziet and George (2002) report suggest "a reduction in food sources adjacent to areas of listed species activity may be one of the most important and cost effective means of immediately curtailing corvid activity at specific sites." Thus, controlling access of food resources to corvids at NISL would likely benefit the recovery of special status species in San Francisco Bay.