

August 13, 2015

TO: Members of the Facility & Plan Review Subcommittee  
Los Angeles County Solid Waste Management Committee/  
Integrated Waste Management Task Force

FROM: Russell Bukoff, Staff



**STAFF REPORT  
SECOND QUARTER 2015 VEGETATION PROJECT STATUS REPORT  
AT SUNSHINE CANYON CITY/COUNTY LANDFILL**

Republic Services, Inc. (Republic) submitted the Second Quarter 2015 Vegetation Project Status Report for the Sunshine Canyon City/County Landfill, dated August 3, 2015 (attached). The Status Report is a requirement of Condition No. 18 of the Finding of Conformance granted to the Landfill by the Task Force on December 18, 2008.

The Status Report provides the progress of revegetation projects undertaken during the second quarter of 2015 as well as revegetation projects anticipated to be implemented during the third quarter of 2015.

General Comment

- The Status Report includes revisions and clarifications to terms and definitions discussed in Section 1, 2, and 3, as requested by the Subcommittee at the February 2015 meeting.

Update on County Side Sage Mitigation Area

- Conditions remain unchanged; however, plans will be developed by Architerra Design Group (ADG), Republic Services general vegetation consultant, for a trial site in the sage mitigation areas to test stepped terracing and straw wattles with niche pockets. [[Republic's report, Section 4.3](#)]

Update on City Side Sage Mitigation Area

*Middle and Upper Decks:*

- There have been no changes to the middle or upper decks. The vegetated areas within the Middle Deck continue to be dominated by non-native species. Report also noted a decent mixture of native species are present. [[Attachment 1, pages 1 and 2](#)]
- JMA, Republic Service's consultant on sage mitigation, reports that weeds continue to grow out of control and recommends a year-round weed control program be implemented. [[Attachment 1, pages 3 and 4](#)]
- Republic states that a weed control program will be implemented on these decks. [[Republic's report, page 5](#)]

*Lower Deck (Pilot Sage Mitigation Area):*

- Saltbush species dominate the cover and is taller than other plant species. These species are out-competing the endemic natives and should be selectively thinned. They are establishing outside of the pilot project area and should be controlled to avoid spread of saltbush onto natural native habitats. [[Attachment 3, page 1](#)]
- All bioswales and Salvia, Encelia, and Artemesia species look healthy in appearance. [[Attachment 3, page 1](#)]
- Many new seedlings have emerged and hardened off, but they are still alive and are beginning to show signs of returning to dormancy with leaf drop. [[Attachment 3, page 1](#)]
- ADG recommends reseeding of the pilot project area along with scarification and addition of straw wattle placement. [[Attachment 3, page 1](#)]
- Two large California/San Diegan Tiger Whiptails (lizards) were spotted through the understory of the Lower Deck. [[Attachment 3, pages 1 and 5](#)]

If you have any questions, please contact me at (626) 458-2186, Monday through Thursday, 7 a.m. to 5:30 p.m.

RWB  
Attach.

# SUNSHINE CANYON LANDFILL

August 3, 2015

Mr. Martins Aiyetiwa  
Senior Civil Engineer, Environmental Programs Division  
County of Los Angeles| Department of Public Works,  
900 S. Fremont  
Alhambra, CA 91803

Subject: Sunshine Canyon Landfill, Quarterly Vegetation Report – REVISED  
Second Quarter 2015 Vegetation Report

Mr. Aiyetiwa,

This report has been prepared in accordance with the following:

- Condition 18B of the Finding of Conformance;
- Condition 44A of the Condition Use Permit (CUP)
- Los Angeles City Condition [Q] C.8 of the Ordinance No. 172,933.

This report presents the progress of the site's landscaping and revegetation activities for the second quarter of 2015. The intent of these reports will continue to be to provide detailed information regarding the site's efforts related to vegetation including vegetation of interim and permanent slopes and activities conducted for the on-site sage mitigation areas.

Architerra Design Group continues to assist site personnel in evaluating current site conditions relating to vegetation and provide recommendations for future efforts. This report includes their assessment of the pilot sage vegetation area as well as recommendations for this area. Architerra's evaluation is in addition to the required quarterly monitoring performed by our consulting biologist.

## 1.0 Interim Slopes

For the purposes of this report, interim slopes are those defined as slope areas where no activities have taken place for 180 days or longer. CUP Condition 44A requires "a temporary hydroseed vegetation cover on any slope or landfill area that is projected to be inactive for a period of greater than 180 days".

### 1.1 Hydroseeding Activities

As reported in the vegetation report for the first quarter of 2015, hydroseeding activities were conducted on approximately 12 acres of interim slopes (Drawing 1).

As of the date of this report, no vegetation growth has been observed on the 12 acres of hydroseeded areas.

No hydroseeding activities are planned for the third quarter of 2015.

### 2.0 Permanent Slopes

Permanent slopes are defined as those where no landfilling activities will be conducted in the future.

#### 2.1 City

The permanent slopes on the City portion of Sunshine Canyon Landfill are located on the closed City South and City North areas of the site where no overliner will be placed during future cell development (Drawing 1 – Sage Mitigation Area). No vegetation activities were conducted on the permanent slopes on the City portion of the site during the second quarter of 2015.

#### 2.2 County

No vegetation activities were conducted on the permanent slope areas on the County portion of the site during the second quarter of 2015. Slope areas at the site formerly designated as permanent are being reviewed to determine which of these slopes are in fact permanent and require vegetation efforts.

### 3.0 Non-Permanent Cut Slopes

Prior quarterly vegetation reports have illustrated areas located just north of the County portion of the site and one area above the front terminal sedimentation basin as “non-permanent cut slopes”. An evaluation of these areas will be conducted to determine if these areas have been categorized correctly, and what, if any vegetation activities are appropriate for these areas. Non-permanent cut slopes are shown on Drawing 1.

As of the date of this report, no determination has been made with respect to an evaluation of these areas or any proposed actions.

#### 4.0 Activities Conducted in Sage Mitigation Areas – 2Q2015

During the second quarter of 2015, the following activities were conducted in the sage mitigation areas at the landfill.

##### 4.1 City South Sage Pilot Project Area – Deck C

The following activities were conducted:

- Continued weekly maintenance activities including minor repairs to the irrigation system and weeding activities.

##### 4.2 City South Decks B and A

No activities were conducted on City South Decks A and B.

##### 4.3 County Sage Mitigation Area

The County sage mitigation area is located on the western side of the County portion of Sunshine Canyon Landfill (Drawing 1). No revegetation activities were conducted in this area during the second quarter of 2015, and, as noted in multiple JMA progress reports, the conditions in this mitigation area have remained unchanged for some time.

During the last vegetation meeting on May 12, 2015, a slope revegetation pilot project was discussed for the County sage mitigation area. A formal proposal and plan for this pilot project will be developed.

#### 5.0 Assessments of Sage Mitigation Areas

Assessments of the site's sage mitigation areas are conducted by a qualified biologist on a quarterly basis. The following sections present a summary of the recommendations for the sage mitigation areas from JMA (City and County sage mitigation areas) and Architerra (City South Sage Pilot Project Area (Deck C)) and the proposed actions in response to the recommendations.

## 5.1 JMA Recommendations for City Sage Mitigation Areas

JMA's progress reports for the City Sage Mitigation Areas for the second quarter of 2015 are provided in Attachment 1. These reports include recommendations based on the assessments. Table 1 presents a summary of these recommendations and the proposed actions.

**Table 1 – JMA Recommendations and Proposed Actions – City Sage Mitigation Areas, Second Quarter 2015**

AREA	RECOMMENDATION	PROPOSED ACTION
LOWER DECK (Deck C)	1  Selectively thin Atriplex vegetation where coastal sage scrub seedlings are present	The contractor hired to perform maintenance activities will continue to address this recommendation throughout 2015.
LOWER DECK (Deck C)	2  Modify irrigation schedule appropriately – reduce frequency of supplemental irrigation beginning in late spring through summer months	Appropriate actions will be taken based on recommendations from our contractors.
DECKS B AND A (Middle and Upper Decks)	3  Improve root zone and soil conditions	This will be addressed when the plans for Decks B and A are developed. Actions were taken to address improving the root zone in the pilot project area (Deck C); it is expected these same actions will be incorporated into the plans for Decks B and A.
DECKS B AND A (Middle and Upper Decks)	4  Plant Natives in Areas Dominated with Non-Natives. Use various planting methods (i.e. container plants and hydroseeding) to re-establish native plants on the middle and upper decks where non-natives currently dominate	This will be addressed when the plans for Decks B and A are developed. Various planting methods were used for the construction of the Pilot project on Deck C; it is expected these same actions will be incorporated into the plans for Decks B and A.
DECKS B AND A	5  Weed Control - implement a year-round weed control program to control non-native species	A weed control program is currently in place on Deck C as part of the pilot project and will continue for the duration of the pilot project. A weed control program on Decks B and A will be implemented along with the mitigation plans for these areas.
DECKS B AND A	6  Reseeding - apply native seeds during the rainy season after soil mounds have been established	This will be addressed when the plans for Decks B and A are developed.
DECKS B AND A	7  Prohibit access - continue to prohibit vehicle access to mitigation areas	Repairs to the T-post fencing will be made as needed.

JMA also recommended that a monitoring biologist should be present during weed control activities or the native plants should be flagged to ensure only non-native species are removed. A monitoring biologist will be consulted prior to any weed control activities to ensure native plants are protected.

5.2 JMA Recommendations for County Sage Mitigation Area

Table 2 presents a summary of the recommendations proposed by JMA based on the assessment of the County Sage Mitigation Area and the proposed actions. Please refer to the full recommendations in the JMA reports in Attachment 2.

**Table 2 – JMA Recommendations and Proposed Actions – County Sage Mitigation Area, Second Quarter 2015**

AREA	RECOMMENDATION		PROPOSED ACTION
COUNTY SAGE MITIGATION AREA	1	Create benches to control soil erosion and improve soil conditions to improve plant establishment and seed dispersal.	This recommendation will be considered at a later date.
COUNTY SAGE MITIGATION AREA	2	Re-seed and plant container plants	This recommendation will be considered at a later date.
COUNTY SAGE MITIGATION AREA	3	Plant within view sheds	This recommendation will be considered at a later date.
COUNTY SAGE MITIGATION AREA	4	Use soil amendments	This recommendation will be considered at a later date.
COUNTY SAGE MITIGATION AREA	5	Signage	This recommendation will be considered at a later date.
COUNTY SAGE MITIGATION AREA	6	Weed control	This recommendation will be considered at a later date.
COUNTY SAGE MITIGATION AREA	7	Prohibit access	This recommendation will be considered at a later date.
COUNTY SAGE MITIGATION AREA	8	Employee awareness	This recommendation will be considered at a later date.

5.3 Architerra Inspection and Recommendations for City South Sage Mitigation Pilot Project Area – Second Quarter 2015

Architerra personnel inspected the pilot project area during the second quarter of 2015. Their report is included in Attachment 3 along with photos of the area taken at the photo stations. Recommendations from Architerra are presented in Table 3 below along with the proposed actions.

**Table 3 – Architerra Recommendations and Proposed Actions – City South Sage Pilot Project Area, Second Quarter 2015**

RECOMMENDATION		PROPOSED ACTION
1	Scarification and additional straw wattle placement so movement of soil is limited and water more available	Project planning will address this recommendation for implementation in Winter 2016.
2	Recommend eliminating Atriplex species from any new seeding within the Trial Site.	Atriplex will not be included in any new seeding within the Trial Site.
3	Install new straw wattles where surface flow and minor erosion is obvious.	The placement of new straw wattles will be evaluated in the third quarter of 2016 and installation of new material will be done in the Spring of 2016.
4	Replace dead container planted species that are irrigated via bubblers and potentially replace with adapted CSS species.	This will be evaluated during the work proposed in #1 above and will be implemented in the Winter 2016.
5	Make modifications to the existing bubbler irrigation system so that established plants are capped off and new irrigation laterals are placed on grade to support new container planted species and locations, especially in areas where vegetation is sparse.	Site personnel will work with Architerra and the maintenance contractor to plan and implement the modifications to the bubbler irrigation system.

In addition, Architerra provided cost estimates to Republic Services for potential implementation of Trial Site revegetation for Fall/Winter 2016. The recommendations have been included in Attachment 3. This will be discussed at the next vegetation meeting.

5.4 Quarterly Assessment of City South Sage Pilot Project Area

The methodology for assessment of the City South Sage Pilot Project Area developed by JMA was included in the First Quarter 2015 Vegetation Report. The evaluation report for the second quarter of 2015 based on this methodology is included in Attachment 4.

6.0 Status of Other Vegetated Areas

Big Cone Douglas Fir Tree Mitigation

As reported in the vegetation report for the first quarter of 2015, 200 Big Cone Douglas fir tree saplings were planted the third week of March 2015. By mid-April, new growth on numerous trees was observed.

These trees continue to be monitored and maintenance activities will be conducted in this mitigation area for the remainder of 2015.

Please do not hesitate to contact me at (818) 362-2145 if you have any questions.

Sincerely,



Ricky Dhupar  
Environmental Specialist  
Sunshine Canyon Landfill

Cc: Mr. David Thompson, SCL LEA  
Mr. Gerardo Villalobos, SCL LEA  
Ms. Ly Lam, City of Los Angeles, Department of City Planning  
Mr. Nicholas Hendricks, City of Los Angeles, Department of City Planning  
Dr. Wen Yang, Los Angeles Regional Water Quality Control Board  
Ms. Maria Masis, County of Los Angeles, Department of Regional Planning  
Ms. Becky Bendikson, SCL CAC  
Mr. Wayde Hunter, SCL CAC  
Mr. Jim Aidukus, UltraSystems  
County DPW Landfills' Unit

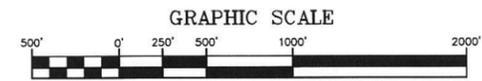
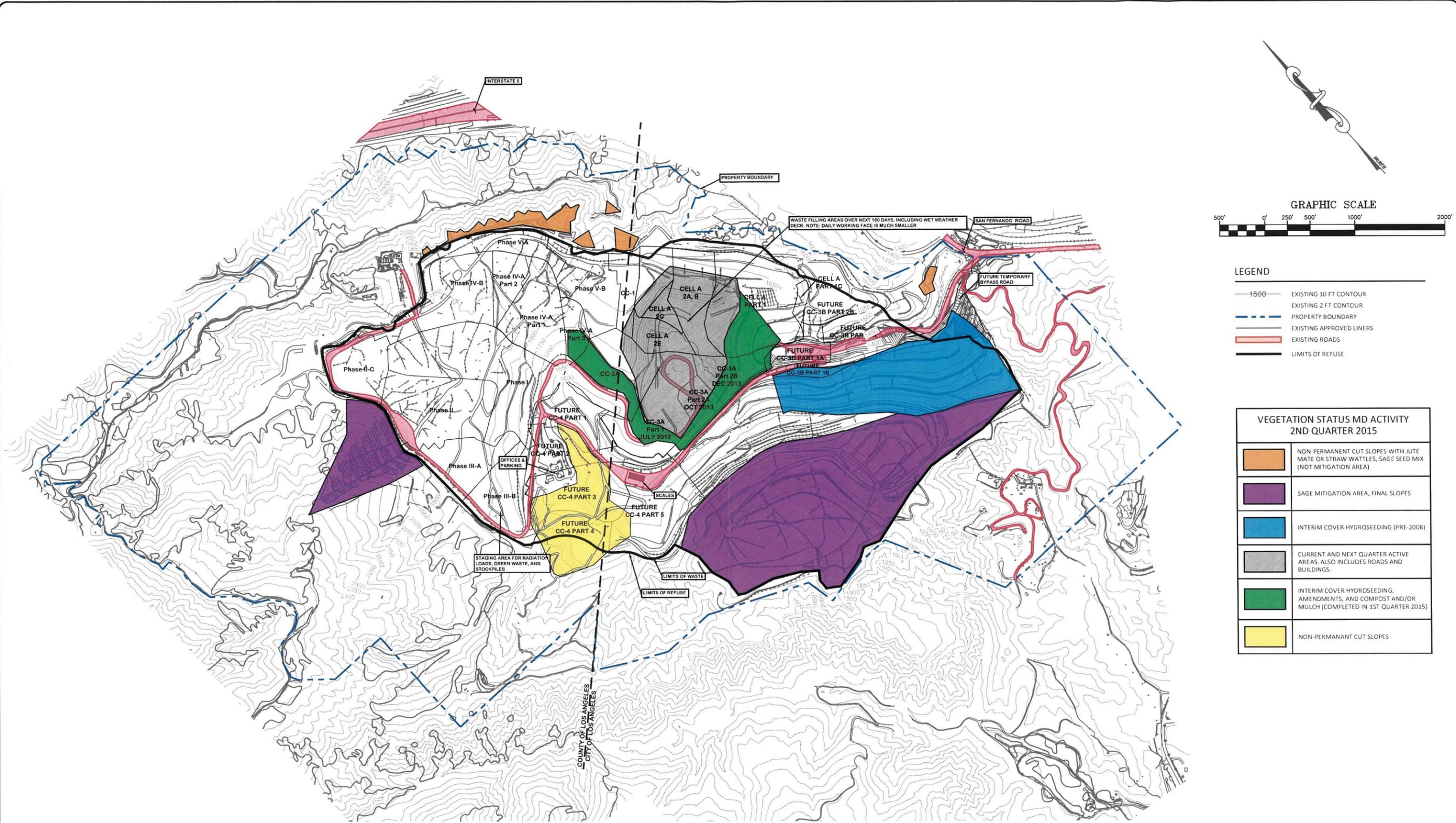
*Attachments*

Attachment 1	JMA Progress Report, City-Side Sage Mitigation Area
Attachment 2	JMA Progress Report, County-Side Sage Mitigation Area
Attachment 3	Architerra Design Group, Field Observation Report, South City Sage Mitigation Pilot Project – 2Q2015
Attachment 4	JMA Quarterly Monitoring Report - Coastal Sage Scrub Pilot Study, 2Q2015

*Drawings*

Drawing 1	2Q2015 Site Vegetation Areas
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D:\Projects\2014\2014.0023 - VEGETATION STATUS AND ACTIVITY\01\_CAD\01\_SLR-DWGS\2014.0023-SL-02-Vegetation Status Map.dwg Jul 27, 2015 - 7:20m Dr. alfo-user



**LEGEND**

	EXISTING 10 FT CONTOUR
	EXISTING 2 FT CONTOUR
	PROPERTY BOUNDARY
	EXISTING APPROVED LINERS
	EXISTING ROADS
	LIMITS OF REFUSE

**VEGETATION STATUS MD ACTIVITY 2ND QUARTER 2015**

	NON-PERMANENT CUT SLOPES WITH JUTE MATE OR STRAW WATTLES, SAGE SEED MIX (NOT MITIGATION AREA)
	SAGE MITIGATION AREA, FINAL SLOPES
	INTERIM COVER HYDROSEEDING (PRE-2008)
	CURRENT AND NEXT QUARTER ACTIVE AREAS. ALSO INCLUDES ROADS AND BUILDINGS.
	INTERIM COVER HYDROSEEDING, AMENDMENTS, AND COMPOST AND/OR MULCH (COMPLETED IN 1ST QUARTER 2015)
	NON-PERMANENT CUT SLOPES

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FOR REVIEW ONLY  
EXISTING TOPOGRAPHY PREPARED BY COOPER AERIAL SURVEYS DATED FEBRUARY 9, 2015

REV. NO.	DATE	DESCRIPTION	APPROVED BY
REV1	DATE1	DESCRIPTION1	DRAWN1
REV2	DATE2	DESCRIPTION2	DRAWN2
REV3	DATE3	DESCRIPTION3	DRAWN3
REV4	DATE4	DESCRIPTION4	DRAWN4
REV5	DATE5	DESCRIPTION5	DRAWN5
REV6	DATE6	DESCRIPTION6	DRAWN6

DATE OF ISSUE:        JULY 2015  
 DESIGNED BY:        C. BARRETT  
 DRAWN BY:        J. GAINES  
 CHECKED BY:        C. BARRETT  
 APPROVED BY:        C. BARRETT



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SUNSHINE CANYON LANDFILL  
 SYLMAR, CALIFORNIA  
 SITE VEGETATION STATUS AND ACTIVITY  
 Q2 2015

DWG NO.  
**1**  
PROJECT NO.  
2014.0023

**ATTACHMENT 1**



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## SUNSHINE CANYON LANDFILL MITIGATION SITES

### Progress Report

#### City-Side Sage Mitigation Area

<b>Submittal Date:</b> July 23, 2015		<b>Inspection Date:</b> July 22, 2015	
<b>To:</b> Patti Costa		<b>From:</b> Greg Ainsworth, Monitoring Biologist <i>*Prepared on behalf of Republic Services</i>	
<b>Lower Deck</b>			
<b>General Comments:</b> Based on a qualitative visual assessment, the saltbush ( <i>Atriplex polycarpa</i> and <i>A. lentiformis</i> ) cover has noticeably increased since the first quarter assessment and continues to dominate the vegetation cover. Other native species such as <i>Encelia Californica</i> and <i>Artemisia californica</i> are also prevalent and interspersed throughout; however, in much less densities. In fact, the dense <i>Atriplex</i> cover is outcompeting the endemic natives and should be selectively thinned. In addition, <i>Atriplex</i> is establishing outside of the pilot study area to the north and should be controlled to avoid spread of <i>Atriplex</i> onto natural native habitats (however, the habitat further north is disturbed).  Numerous avian species continue to be observed within the pilot study area, as well as evidence of terrestrial species including deer and brush rabbits, and reptiles such as side-blotched lizard.			
<b>Native Plant Cover:</b> <input type="checkbox"/> Dense <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Minimal	<b>Plant Health Issues:</b> <input type="checkbox"/> Disease/pests <input type="checkbox"/> Plant stress <input type="checkbox"/> Herbivory	<b>Height of Native Species:</b> <input checked="" type="checkbox"/> 0" - 12" <input checked="" type="checkbox"/> 12" - 24" <input checked="" type="checkbox"/> 24" and above	<b>Native Species Richness:</b> <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
<b>Weed Conditions</b>			
<input type="checkbox"/> Dense weed coverage <input type="checkbox"/> Moderate weed coverage (seeding in high density) <input checked="" type="checkbox"/> Minimal weed coverage		<input type="checkbox"/> Weeds germinating /vegetative growth <input type="checkbox"/> Weeds flowering <input type="checkbox"/> Weeds setting seed <input type="checkbox"/> Weed desiccant/dormant	
<b>Comments:</b> The overall presence of weeds at the lower deck is relatively low and has been adequately maintained. The maintenance crew was hand pulling weeds during the qualitative assessment.			
<b>Middle Deck</b>			
<b>General Comments:</b>  There is no change to report on the Middle Deck from previous monitoring reports. Evidence of			



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seed mix coverage is no longer discernible.

Currently, approximately 30% of the middle deck is dominated by sage scrub plantings/seedlings, 35% by non-native grasses, and approximately 35% is bare ground, much of which appears to be a result of recent grading near the southwest corner for an apparent installation of a gas pipeline. The vegetated areas within the Middle Deck continue to be dominated by non-native herbaceous species such as (but not limited to) brome grasses, wild oats, mustards, and Russian thistle. Russian thistle and desiccant and emergent mustard plants and brome grasses currently dominate the non-native cover. There is a decent mixture of native species to note consisting of California buckwheat (*Eriogonum fasciculatum foliosium*), black sage (*Salvia mellifera*), purple needlegrass (*Nessella pulchra*), California sagebrush, and chamise (*Adenostoma fasciculatum*).

<b>Native Plant Cover:</b> <input type="checkbox"/> Dense <input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Minimal	<b>Plant Health Issues:</b> <input type="checkbox"/> Disease/pests <input type="checkbox"/> Plant stress <input type="checkbox"/> Excessive herbivory	<b>Height of Species:</b> <input type="checkbox"/> 0" – 12" <input type="checkbox"/> 12" – 24" <input checked="" type="checkbox"/> 24" and above	<b>Native Species Richness:</b> <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High
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### Weed Conditions

<input checked="" type="checkbox"/> Dense weed coverage <input type="checkbox"/> Moderate weed coverage (seeding in high density) <input type="checkbox"/> Minimal weed coverage	<input checked="" type="checkbox"/> Weeds germinating /vegetative growth <input type="checkbox"/> Weeds flowering <input type="checkbox"/> Weeds setting seed <input checked="" type="checkbox"/> Weed desiccant/dormant
--	---

**Comments:** Non-native grasses and forbs consisting of brome grasses, wild oats (*Avena fatua*), mustard, and Russian thistle dominate the vegetation cover within the middle deck. Annual grasses are currently dormant, while Russian thistle is thriving.

### UPPER DECK

**General Comments:** Overall, the upper deck continues to be sparsely covered with native vegetation, and total vegetation coverage is sparse due to compacted and poor soil conditions. Specifically, the soils to the north of the central access road are heavily compacted and gravelly and vegetation coverage in this area is especially sparse. Evidence of previous seeding is no longer discernible.

Additionally, evidence of vehicle use and ongoing disturbances is apparent on the western portion of the upper deck. With the exception of Russian thistle and brome grasses, virtually no other vegetation has emerged in the areas that have been disturbed within the past couple of years. Like the middle deck, annual grasses are currently dormant, while Russian thistle is thriving.

<b>Native Plant Cover:</b> <input type="checkbox"/> Dense <input type="checkbox"/> Moderate	<b>Plant Health Issues:</b> <input type="checkbox"/> Disease/pests <input type="checkbox"/> Plant stress	<b>Height of Species:</b> <input type="checkbox"/> 0" – 12" <input type="checkbox"/> 12" – 24"	<b>Native Species Richness:</b> <input checked="" type="checkbox"/> Low <input type="checkbox"/> Medium
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<input checked="" type="checkbox"/> Minimal	<input type="checkbox"/> Excessive herbivory	<input checked="" type="checkbox"/> 24" and above	<input type="checkbox"/> High
<b>Weed Conditions</b>			
<input checked="" type="checkbox"/> Dense weed coverage	<input type="checkbox"/> Moderate weed coverage (seeding in high density)	<input type="checkbox"/> Minimal weed coverage	<input checked="" type="checkbox"/> Weeds germinating /vegetative growth
			<input type="checkbox"/> Weeds flowering
			<input type="checkbox"/> Weeds setting seed
			<input checked="" type="checkbox"/> Weed desiccant/dormant
<b>Comments:</b> Weeds continue to grow without any level of control within the upper deck. Currently, Russian thistle is abundant.			



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## RECOMMENDATIONS

### Lower Deck

- **Selectively thin Atriplex vegetation where coastal sage scrub seedlings are present.** Closely monitor the seedlings that are growing within the understory of the Atriplex plants. Currently, the Atriplex plants are providing shade and good growing conditions for seedlings of coastal sage scrub species to become established. However, as the seedlings grow, the Atriplex plants should be thinned to reduce competition for space, water and available nutrients and to allow sunlight to reach the seedlings to increase photosynthesis.
- **Modify irrigation schedule appropriately.** Reduce the frequency of supplemental irrigation during in spring and summer months. Irrigation may be suppressing the coastal sage scrub species; whereas Atriplex is more tolerant of supplemental watering and is thriving. It may be necessary to irrigate during extensive periods of hot and dry weather conditions; however, this should be determined based on close inspection of the soil moisture.

### Middle and Upper Decks

- **Improve root zone and soil conditions.** Continue to investigate ways to import the soil layer to improve the root penetration and saturation zone to enable plant growth in heavily compacted areas. Consider applying soil in random undulations or uneven mounds to improve soil porosity and filtration and to control soluble salts from leaching from existing layer.

If permissible, prior to seeding (broadcast, hydroseeding, or drilling) native species, incorporate a soil amendment or mulch with high organic content by tilling into the top 12 inches of the existing compacted soils to improve soil texture, drainage, porosity, and aerobic conditions. If an organic mulch or soil amendment is not feasible or available, incorporate available soil from on-borrow sites within the landfill that have the appropriate, so long as these borrowed soils have been determined to not have toxic conditions such as boron or high salinity.

- **Plant Natives in Areas Dominated with Non-natives.** The vegetated areas on the middle deck that are currently dominated with annual, non-native species have decent soil-texture conditions. These areas are not near as compacted as adjacent areas that are gravelly and mostly void of vegetation. In general, the soil texture within the vegetated areas with non-native vegetation is friable down to approximately 8-12 inches in depth. Various planting methods (i.e., planting container plants and hydroseeding) may be used to re-establish native plants on the middle and upper decks where non-natives currently dominate. A temporary irrigation source would aid in establishing container plants and a consistent weed abatement program is important to control non-native species so that native can thrive and regenerate.
- **Weed control.** Implement a year-round weed control program to control non-native species. The weed control program should incorporate both chemical and mechanical control practices. Following weed control, any dead material harboring seeds should be removed to an off-site location to the extent feasible.



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A monitoring biologist should be present during weed control activities or flag the native plants that should remain to ensure only non-native species are removed. A biologist should verify that the weed removal methodology is sound and does not encourage re-colonizing of non-natives. Weeding is best performed just before, or at the onset of flowering, but before seed set. If seeds are already present, additional care should be taken to remove the plants with the seeds attached, or the seeds should be removed from the plants prior to the plant removal. A consistent weed abatement schedule will reduce the potential for non-natives to set seed. Soil disturbance should be limited by hand weeding, where possible, and weeds should be disposed of off-site to avoid any reinfestation through reseeding or from plant propagules. If hand weeding is not possible, the monitoring biologist should be consulted regarding the appropriate method of weed removal. If there continues to be high incidence of weed infestation, weed control may need to be increased to every four to six weeks. Otherwise, weeds should continue to be monitored and controlled on a quarterly basis.

- **Reseeding.** Following the application of soil mounds as previously described, apply native seed (by means of broadcast seeding, hydroseeding or drilling) during the rainy season, between December and March, or prior to a forecasted rain event.
- **Prohibit access.** Continue to prohibit vehicle access to mitigation areas.



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## Progress Report

### City-Side Sage Mitigation Area

#### Photo Locations





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## Progress Report

### City-Side Sage Mitigation Area



Photo 1. Facing west at lower deck. View of *Atriplex* species that dominate the vegetation cover and distribution within the pilot study area.



Photo 2. Facing east at lower deck. The vegetation seen in this photo is dominated by *Atriplex lentiformis* and *A. polycarpa*.



Photo 3. Example of dense *Atriplex* out-competing purple sage (*Salvia leucophylla*).



Photo 4. Facing east at middle deck with lower deck visible in background. View of non-native and native plant composition with areas of bare ground in the foreground. It is evident in this photos that the herbaceous non-natives (grasses) dominate the vegetation cover in the middle deck with patches of native interspersed in varying densities.



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## Progress Report

### City-Side Sage Mitigation Area



**Photo 4.** Facing west at the easterly-facing slope located between middle and upper decks. The vegetation on this slope (as well as all slopes below the upper deck) is dominated with mustard and brome grasses. CA buckwheat is present in patches as depicted in the foreground of this photograph.



**Photo 5.** Facing northeast at upper deck. This area is compacted and gravelly and continues to be problematic for supporting vegetation. Non-native grasses and some CA buckwheat shrubs are evident in the background.



**Photo 6.** Facing southwest at upper deck. The area shown in this photo is dominated by annual non-native grasses.



**Photo 7.** Facing south at the upper deck at the disturbed area that is currently dominated with Russian thistle, mustard and brome grasses.

**ATTACHMENT 2**

## SUNSHINE CANYON LANDFILL MITIGATION SITES

### Progress Report

#### County-Side Sage Mitigation Area

<b>Submittal Date:</b> July 23, 2015	<b>Inspection Date:</b> July 22, 2015
<b>To:</b> Patti Costa	<b>From:</b> Greg Ainsworth, Monitoring Biologist <i>*Prepared on behalf of Republic Services</i>
<b>STATUS OF HYDROSEEDING</b>	
<b>Conditions:</b> <input type="checkbox"/> Fully covered <input type="checkbox"/> Moderately covered <input checked="" type="checkbox"/> Barely covered	
<b>Comments:</b> <p>Conditions on the county-side sage mitigation area remain visibly unchanged. Areas that are moderately covered with vegetation (native and non-native) are concentrated. A substantial portion of the county-side mitigation area continues to be bare and problematic for establishment of vegetation, primarily because of highly eroded soils, steep slopes and toxic soils (See Recommendations).</p> <p>Native plant coverage is similar to the previous quarterly monitoring reports. The southern-half of the mitigation area contains the most vegetation that is noteworthy, which consists of the highest concentration of native species (mostly buckwheat, <i>Eriogonum</i>). Native plant coverage is assumed to be a direct result of hydroseeding; however, some natural recruitment is apparent based on the dense cover where native vegetation is present and the various sizes of shrubs. Due to rocky (hydrophobic) soil conditions, soil erosion and Boron toxic soils on the northern-half of the county-side mitigation area, minimal plant growth is present.</p>	
<b>SEED MIX</b>	
<b>Conditions:</b> <input type="checkbox"/> No sign of germination <input type="checkbox"/> No cover of native plants from seed mix <input type="checkbox"/> Sparse cover of native plants from seed mix	<input type="checkbox"/> Dense cover of native plants from seed mix <input checked="" type="checkbox"/> Moderate cover of native plants from seed mix (where vegetation is present)
<b>Comments:</b> <p>Similar to the hydroseeded areas, the other areas that are moderately covered with vegetation are concentrated. A substantial portion of the county-side mitigation area continues to be bare and problematic for vegetation to become established. However, in areas where vegetation is present, there is a moderate coverage of native species, mostly California buckwheat (<i>Eriogonum fasciculatum</i>).</p>	



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Germination and plant growth from hydroseeding or seed mix is not discernible. Similar to the previous monitoring periods, a moderate cover of native plants exists within vegetated areas. Annual non-native grasses and forbs currently dominate the understory and serve as ground cover in most of the vegetated areas. Brome grasses and mustard seedlings continue to comprise of approximately 25 percent of the total cover. California buckwheat dominates the native vegetation with California sagebrush (*Artemisia californica*) as a co-dominant; comprising of approximately 75 percent of the native vegetation cover (in areas where vegetation is present). Other less dominant native species observed include golden bush (*Ericameria linearifolia*), coyote brush (*Baccharis pilularis*), black sage (*Salvia millifera*), laurel sumac (*Malosma laurina*) and a small cluster of arroyo willow (*Salix lasiolepis*) trees that continue to thrive along the v-ditch that extends east-west through the center of the mitigation site.

**OVERALL NATIVE PLANT CONDITIONS**

<b>Plant Cover:</b> <input type="checkbox"/> Dense <input checked="" type="checkbox"/> Moderate <input type="checkbox"/> Minimal	<b>Plant Health</b> <b>Issues:</b> <input type="checkbox"/> Disease/pests <input type="checkbox"/> Plant stress <input type="checkbox"/> Excessive herbivory	<b>Height:</b> <input type="checkbox"/> 0" - 12" <input checked="" type="checkbox"/> 12" - 24" <input type="checkbox"/> 24" and above	<b>Species Richness:</b> <input type="checkbox"/> Low <input checked="" type="checkbox"/> Medium <input type="checkbox"/> High
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**Comments:**  
 It should be noted that the plant cover rating above applies where vegetation is dominant in the southeastern portion of the mitigation area. Vegetation cover is moderate in the southeastern portion of the county-sage mitigation area and sparser along the upper slopes where rocky conditions occur. The majority of the northern and upper portions of the mitigation area continue to have minimal coverage. Bare areas and non-native annual grasses are intermixed; however, the northern and upper areas continue to be mostly bare where erosion and rocks are apparent. Native vegetation coverage is good in vegetated areas and the amount of non-native grasses that are present is expected when compared to sparsely covered areas of California buckwheat in the region.

As indicated previously, California buckwheat dominates the native cover with *Encelia californica* as a co-dominant. Establishment of vegetation is problematic due to rocky soils with poor soil structure, and boron toxicity has made plant growth (i.e., seed germination and recruitment) difficult. The species richness is low to medium within vegetated areas; however, species richness is considerably low when considering the entire county-sage mitigation area.

**WEED CONDITIONS**

<b>Conditions:</b> <input type="checkbox"/> Dense weed coverage <input checked="" type="checkbox"/> Moderate weed coverage (seeding in high density) <input type="checkbox"/> Minimal weed coverage	<input checked="" type="checkbox"/> Weeds germinating or vegetative growth <input type="checkbox"/> Weeds flowering <input type="checkbox"/> Weeds setting seed <input checked="" type="checkbox"/> Weed desiccant/dormant
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**Comments:**  
 Annual, non-native weed species consist primarily of brome grasses (*Bromus* sp.), shortpod mustard (*Hirschfeldia incana*), and wild oats (*Avena fatua*). Other established weeds that were observed include red-stemmed filaree (*Erodium cicutarium*) and (native) telegraph weed



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(*Heterotheca grandiflora*). Russian thistle (*Salsola kali*) and tree tobacco (*Nicotiana glauca*), which are scattered within the vegetated areas, but in less densities.

### MISCELLANEOUS

**Conditions:**

Trash

Vandalism

Erosion

**Comments:**

None

### RECOMMENDATIONS

- **Create benches.** Consider creation of benches throughout the mitigation area to control soil erosion and to improve soil conditions to improve plant establishment and seed dispersal. This technique has been widely used on steep slopes and in areas where soil erosion is problematic. This technique also allows for opportunities to introduce a high quality soil layer above the poor soils that exist.
- **Reseed and plant container plants.** If creation of benches is feasible, planting methods should include Hydroseeding and broadcast seeding just before a forecasted rain event and planting with container plants with supplemental irrigation during the period of establishment. Container plants should only be planted if temporary irrigation source is available.
- **Plant within view sheds.** Consider planting native species on upper portion of the slope that is visible from public view sheds with appropriate native species. Planting should occur prior to fall/winter rains.
- **Use soil amendments.** Incorporate a soil amendment or mulch with high organic content in select areas as determined by a restoration specialist.
- **Signage.** Install signs indicating that the area is undergoing revegetation.
- **Weed control.** Continue weed control program as needed on a quarterly basis.
- **Prohibit access.** Continue to prohibit vehicle access to mitigation area. Extend fencing around southeastern and southern boundary of lower deck and review fencing on the upper deck to determine if additional area can be reasonably enclosed.
- **Employee awareness.** Conduct an employee awareness program to inform staff on the importance of preserving all restoration areas.



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## Progress Report

### County-Side Sage Mitigation Area

#### Photo Locations





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## Progress Report

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### County-Side Sage Mitigation Area

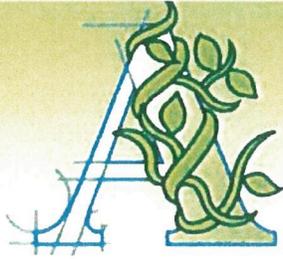


**Photo 1.** Facing west at established sage scrub on the southern half of the county-side mitigation area. Vegetation is dominated with CA buckwheat, with scattered California sunflower (*Encelia californica*). Annual, non-native grasses and forbs dominate the ground cover, as well as Russian thistle.



**Photo 2.** Facing west at the bare slope on the northern-half of the county-sage mitigation area. Plant growth remains to be problematic due to erosion, a hard soil surface layer, and boron toxicity.

**ATTACHMENT 3**



# ARCHITERRA design group

landscape architecture and planning

## ARCHITERRA DESIGN GROUP

## FIELD OBSERVATION REPORT

DATE OF VISIT:	6/30/15
<b>PROJECT:</b>	<b>Sunshine Canyon Mitigation Sites</b>
PROJECT NUMBER:	1214
PROJECT MANAGER:	Gregg Denson
SITE INSPECTION #:	
PURPOSE OF VISIT:	Review site conditions/Photo Catalog
TIME OF SITE VISIT:	10:00am
WEATHER/TEMPERATURE:	Cloudy 90°
ESTIMATED % COMPLETED:	100%
CONFORMANCE WITH SCHEDULE (+, -)	

WORK IN PROGRESS:	Weed abatement / Monitoring Period
PRESENT ON SITE:	Gregg Denson

A walk through was held this date to review plant establishment of Trial Site, Photo Catalog current growth and review weed abatement. Additional items noted during the site visit are as follows:

### City-Side Sage Mitigation (Trial Site):

- Many new seedlings have emerged and have hardened off, but are still alive and are beginning to show signs of returning to dormancy with leaf drop.
- Salvia, Encelia and Artemesia species are ending the flowering cycle but look healthy in appearance and appear to reseed locally.
- Due to the aggressive growth of the Salt Brush, selective pruning was performed to help reestablish maintenance pathways and access to irrigation valves and controls.
- There are still a lot of juvenile Russian Thistle (*Salsola* spp.) and spraying is evident, but new seedlings are spouting up quickly with heat and additional moisture. This is an on-going issue and will need to be managed to eliminate infestation.
- All bioswales appear healthy and vigorous in growth and have helped to provide cover to a number of new germinated natives. More Sage, Encelia and California Buckwheat seedlings can be found within the shaded portions of the mosaics.
- While navigating through the site, a large California Whiptail – *Aspidoscelis tigris munda* or San Diegan Tiger Whiptail – *Aspidoscelis tigris stejnegeri* was spotted racing through the understory. The lizard paused just enough to catch a quick photo (see below). Upon further inspection of the photo, it appears that a second lizard or mate was in the vicinity.

### Recommendations:

- We have mapped out the existing vegetation and have provided a graphic to illustrate areas that are recommended for additional seeding. In addition, we are recommending scarification and additional straw wattle placement so that the movement of soil is limited and water more available. This seeding should occur in the Fall/Winter of 2015/2016 to maximize germination and establishment of new seedlings. These areas will be staked and photographed prior to construction (4<sup>th</sup> Quarter) so that there is a baseline set for comparison in the future.
- Due to the frequency of Atriplex species at the trial site, we are removing those from any new seeding. Pound rates may be increased to help establish more CSS species within areas currently barren or where minimal coverage exists. Seeding techniques may include hand-broad seeding with light raking/scarification of soil surface or hydroseeding, but should remain consistent depending upon original seeding locations staked on site. Soil imprinting is not suggested given the limited access and existing on-grade irrigation.

- Installation of new straw wattles (every twenty linear feet) where surface flow and minor erosion is obvious. This may help to slow the movement of water and also provide additional moisture for seedlings to germinate during next year's winter months.
- Replace dead container planted species that are irrigated via bubblers and potentially replace with adapted CSS species such as *Salvia mellifera*, *Salvia apiana*, *Salvia leucophylla*, *Eriopyhlym confertiflorum* and *Artemesia californica*. Other potential species may include *Yucca whipplei* and *Opuntia littoralis*. Many of the *Sambucus mexicana* are struggling and are dying back due to the lack of moisture. Many of these shrubs may have succeeded if planted closer to the swales, however in the current locations where they have died back, we are recommending switching out the species to one of those listed above. New planting is recommended during Winter/Spring 2016. It is recommended that mulch be removed from future plant basins and be replaced with jute netting.
- Modifications to the existing bubbler irrigation system will be evaluated during the next quarter (Fall 3<sup>rd</sup> Quarter) to determine if heads are capped or expanded for additional planting.



White Sage (*Salvia apiana*) growing from beneath existing Salt Bush species.



Evidence of chemically sprayed Russian Thistle with new germinated seedlings adjacent to it. This will be an on-going maintenance issue to keep it from establishing and taking over areas where planting mosaic is more open.



Healthy stand and mix of natives. Mexican Elderberry - *Sambucus Mexicana* are performing much better within the northern area of the Trial Site versus other areas where it was planted as a containerized plant.



Removals of Salt Bush to unveil irrigation valves boxes and gate valves.



California Whiptail or San Diegan Tiger Whiptail. Notice large tail in top of photo of second lizard.  
County-Side Sage Mitigation (New Trial Site):

- Cost estimates were provided to Republic Services for potential implementation of Trial Site revegetation for Fall/Winter 2016. As part of that process ADG meet with Republic Services and Sukut to determine opportunities and constraints for grading the existing slope. Costs were added to the estimate and irrigation delivery to the site will most likely be via gravity feed and will require the placement of new storage tanks above the site.

Signed: Gregg Denson Date: 8-3-15

DISTRIBUTION

Republic Services	<input checked="" type="checkbox"/>	Contractor	<input checked="" type="checkbox"/>
File <input checked="" type="checkbox"/> Project Manager (Gregg Denson)	<input checked="" type="checkbox"/>	Other _____	<input type="checkbox"/>

**ATTACHMENT 4**



# memorandum

date July 24, 2015  
to Patty Costa, Sunshine Canyon Landfill  
from Greg Ainsworth, Consulting Biologist  
subject Coastal Sage Scrub City South C Trial Plot, Sunshine Canyon Landfill

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## INTRODUCTION

On July 22, 2015, biologist Greg Ainsworth monitored the planted vegetation at the Landfill's City South 'C' Trial Plot, which constitutes the Second Quarter monitoring of the trial plot for 2015. The sampling generally followed the methodology described in the *Methodology for Monitoring Percent Cover and Species Richness within Each Seeded Application Method on the Coastal Sage Scrub Pilot Project at the Sunshine Canyon Landfill* (JMA, April 23, 2014). However, some modifications to the methodology were implemented. The **quadrat** sampling included four 50-meter quadrats that were randomly sampled within each of the three seeded areas: hydroseed, imprint and hand broadcast. These quadrats were randomly selected from a grid that was placed over the entire trial plot and each quadrat was delineated with wood stakes and flagging prior to sampling. As shown on the attached planting plan, each quadrat that was sampled was given a corresponding letter from A-L.

A total of 200 meters was sampled for each of the three seeded areas. The following data was collected for each quadrat:

- **Percent basil cover (shrubs)** – Visual estimate of the amount of basil cover within each quadrat for all shrub species.
- **Percent basil cover (herbs)** – Visual estimate of the amount of basil cover within each quadrat for all herb species.
- **Percent bare ground** – Visual estimate of the amount of available bare ground with no vegetation, but suitable for plant growth.
- **Percent rock or other** – Visual estimate of the amount of unavailable ground for supporting plant growth. Inhibitors generally included rocks and boulders, irrigation lines and valve boxes, and mulch.
- **Percent canopy** – Visual estimate of the percent canopy of each shrub and herbaceous species.
- **Photographs** – A photograph was taken from the southwest corner (facing northeast) of each quadrat.

To obtain estimate cover of each species, the **point intercept** method was conducted at 50 meter transects along the perimeter of each 50 square meter quadrats (A-L). A total of four transects were walked within each planting method (hydroseed, imprint and hand broadcast). Points were taken at approximately every 0.5 meters, while moving clockwise from the southwest corner of each quadrat. The species located precisely at every 0.5 meter point was noted.

## RESULTS

Below are the average data collected for the hydroseed, imprint, and hand broadcast application areas. The number in parenthesis represents the previous quarterly monitoring results.

### **Quadrat Sampling:**

#### *Average Hydroseed – Quadrats A, B, C, D*

Percent basil cover (shrubs) – 10% (10%)

Percent basil cover (herbs) – 2% (1%)

Percent bare ground – 54% (56%)

Percent rock or other – 4% (4%)

Percent canopy (shrub) – 48% (41%)

Percent canopy (herb) – 3% (2%)

#### *Average Imprint – Quadrats E, F, G H*

Percent basil cover (shrubs) – 13% (13%)

Percent basil cover (herbs) – 2% (1%)

Percent bare ground – 65% (68%)

Percent rock or other – 8% (8%)

Percent canopy (shrub) – 45% (44%)

Percent canopy (herb) – 5% (4%)

#### *Average Hand Broadcast – Quadrats I, J, K L (average)*

Percent basil cover (shrubs) – 15% (15%)

Percent basil cover (herbs) – 14% (14%)

Percent bare ground – 41% (46%)

Percent rock or other – 4% (4%)

Percent canopy (shrub) – 58% (55%)

Percent canopy (herb) – 11% (10%)

### Point Intercept

The representation of each species within a quadrat was estimated by broad cover classes (<1%, 1-5%, 5-25%, 25-50%, 50-75% and >75%). The percent cover of each species based on the point intercept method is as follows:

#### *Hydroseed– Quadrats A, B, C, D (average)*

Species	% Cover Shrub	% Cover Herb
Acmispon glaber	1%	
Adenostema fasciculatum		
Achillia mellifolium		
Artemisia californica	1%	
Atriplex lentiformis	33%	
Atriplex polycarpa	10%	
Atriplex spinosa	1%	
Baccharis pilularis	1%	
Encelia californica	1%	
Eschscholzia californica		
Leymus triticoides		2%
Mimulus aurantiacus longiflorus		
Nasella pulchra		1%
Other herb		1%
Salvia mellifera	1%	
Sisyrinchium bellum		
Vulpia microstachys	1%	

#### *Imprint – Quadrats E, F, G H (average)*

Species	% Cover Shrub	% Cover Herb
Adenostema fasciculatum		
Achillia mellifolium		
Artemisia californica	1%	
Atriplex lentiformis	18%	
Atriplex polycarpa	16%	
Atriplex spinosa	1%	
Baccharis pilularis	1%	
Encelia californica	1%	
Eschscholzia californica		
Eriogonum fasciculatum	1%	
Leymus triticoides		
Mimulus aurantiacus longiflorus	1%	
Nasella pulchra		
Other herb		4%
Sisyrinchium bellum		
Salvia apiana	1%	
Salvia leucophylla	1%	
Salvia mellifera	1%	

### *Hand Broadcast – Quadrats I, J, K L (average)*

Species	% Cover Shrub	% Cover Herb
Adenostema fasciculatum	1%	
Achillia mellifolium		
Artemisia californica	1%	
Atriplex lentiformis	35%	
Atriplex polycarpa	15%	
Atriplex spinosa		
Baccharis pilularis	3%	
Encelia californica	1%	
Eschscholzia californica		
Leymus triticoides		2%
Mimulus aurantiacus longiflorus		
Nasella pulchra		1%
Other herb		7%
Salvia apiana	1%	
Salvia leucophylla	1%	
Salvia mellifera	1%	
Sisyrinchium bellum		
Vulpia microstachys		

### DISCUSSION

There has been an increase in the percent shrub canopy cover, and a slight increase in the overall herbaceous cover. Based on the quadrat sampling method, the overall native shrub canopy is increasing as saltbush continues to dominate the vegetation cover throughout the pilot study area. Similarly, the amount of bare ground capable of supporting plant growth has slightly decreased as the shrubs continue to grow. The hand broadcasted and imprint areas experienced a slight (1%) increase in the percent canopy cover of shrub species; whereas hydroseed had a 7% increase. Quadrat H continues to have the greatest amount of relative cover, mostly comprised of *Atriplex lentiformis*. Hand broadcast, imprint and hydroseed all experienced a 1% increase in herbaceous cover since the April 2015 sampling. Both the quadrat method and the point intercept method confirm that *Atriplex lentiformis* has the greatest amount of relative cover throughout the trial site, with *Atriplex polycarpa* as a co-dominant. The abundant cover of these two *Atriplex* species is also evident by a general visual observation of the plant cover throughout the trial site. These species are also seeding in adjacent areas to the north of the study area and should be controlled to avoid spreading in natural areas in the vicinity. Photographs of each quadrat are provided on the following pages, as well as the raw data obtained within each quadrat sampled.

## Photograph Log



Quadrat A. Facing northeast from southwest corner.



Quadrat B. Facing northeast from southwest corner.



Quadrat C. Facing northeast from southwest corner.



Quadrat D. Facing northeast from southwest corner.



Quadrat E. Facing northeast from southwest corner.



Quadrat F. Facing northeast from southwest corner.



Quadrat G. Facing northeast from southwest corner.



Quadrat H. Facing northeast from southwest corner.