SUNSHINE CANYON
Landfill

14747 San Fernando Road
Sylmar, CA 91342

May 11, 2018

Mr. Martin Aiyetiwa
Senior Civil Engineer
County of Los Angeles, Department of Public Works
900 South Fremont Avenue
Alhambra, CA 91803-1331

Subject: Sunshine Canyon Landfill, Quarterly Vegetation Report
First Quarter 2018 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 first quarter of 2018. 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

Based on the results of the trial project completed in August 2017, a 57 acre vegetative cover project using the approved seed mix was completed in mid-December 2017.

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 first quarter of 2018.

2.2 County

No vegetation activities were conducted on the permanent slope areas on the County portion of the site during the first quarter of 2018 (Drawing 1 – Sage Mitigation Area).

3.0 Non-Permanent Cut Slopes

Prior quarterly vegetation reports have illustrated one area above the front terminal sedimentation basin and one area near the temporary bypass road as "non-permanent cut slopes". An evaluation of these areas has been conducted and it has been determined that these areas are "permanent slopes" because no landfilling activities will be conducted against these slopes in the future.

4.0 Activities Conducted in Sage Mitigation Areas – 3Q2017

During the first quarter of 2018, 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:

- Maintenance activities removal of invasive plant species and weeding activities.
- Selective pruning of saltbush.

4.2 City South Deck B

The Deck B sage mitigation project began on April 9, 2018 and is anticipated to be completed by May 23, 2018 with a 90 day plant established to follow. Pacific Restoration Group, Inc (PRG) has been working with Architerra for the completion of project. A summary of the progress is included in Attachment 3.

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 first quarter of 2018, and, as noted in multiple JMA progress reports, the conditions in this mitigation area have remained unchanged for some time.

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 first quarter of 2018 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, First Quarter 2018

AREA	RECOMMENDATION		PROPOSED ACTION
LOWER DECK (Deck C)	1	Continue to monitor	Monitoring will be conducted and documented by our consultants on an ongoing basis
DECKS B AND A (Middle and Upper Decks)	2	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)	3	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	4	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. A weed control program on Decks B and A will be implemented along with the mitigation plans for these areas
DECKS B AND A	5	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	6	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, First Quarter 2018

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	Reseed 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

5.3 Architerra Inspection for City South Sage Mitigation Pilot Project Area – First Quarter 2018

The inspection report is included in Attachment 3 along with photos of the area taken at the photo stations.

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 first quarter of 2018 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. These trees continue to be monitored and maintenance activities will be conducted in this mitigation area for the remainder of 2018.

Please do not hesitate to contact me at (818) 362-2096 if you have any questions.

Sincerely,

Tuong-Phu Ngo, P.E.
Environmental Manager
Sunshine Canyon Landfill

Cc: Mr. David Thompson, SCL LEA
Ms. Shikari Nakagawa-Ota, 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
Mr. Wayde Hunter, SCL CAC
Mr. Jim Aidukus, UltraSystems
County DPW Landfill 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 – 1Q2018
Attachment 4	JMA Quarterly Monitoring Report - Coastal Sage Scrub Pilot Study, 1Q2018

Drawings

Drawing 1	1Q2018 Site Vegetation Areas

ATTACHMENT 1

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SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

City-Side Sage Mitigation Area

Submittal Date: May 7, 2018	**Inspection Date:** April 24, 2018
To: Tuong-phu Ngo, Environmental Manager	**From:** Greg Ainsworth, Monitoring Biologist **Prepared on behalf of Republic Services*

Lower Deck

General Comments:
Based on a qualitative visual assessment, the saltbush (*Atriplex polycarpa and A. lentiformis*) cover is currently thriving. Other native species such as *Encelia Californica*, *Artemisia californica, and Salvia sp.* are in a vegetative phase, are currently in bloom, and some regeneration is visible.

Wildlife species observed during the monitoring included sage sparrow, house sparrow, house finch, American crow, California towhee, spotted towhee, American goldfinch, ash-throated flycatcher, and side-blotched lizard.

Native Plant Cover:	**Plant Health Issues:**	**Height of Native Species:**	**Native Species Richness:**
[ ] Dense	[ ] Disease/pests	[ ] 0" – 12"	[X] Low
[X] Moderate	[ ] Plant stress	[ ] 12" – 24"	[ ] Medium
[ ] Minimal	[ ] Herbivory	[X] 24" and above	[ ] High

Weed Conditions

[ ] Dense weed coverage	[X] Weeds germinating /vegetative growth
[X] Moderate weed coverage (seeding in high density)	[X] Weeds flowering
[ ] Minimal weed coverage	[ ] Weeds setting seed
	[ ] Weed desiccant/dormant

Comments: Overall weed growth is moderate. It does not appear that any weeding had been conducted since the prior monitoring period due to the presence of dense brome grass mats. Mustard was also more prevalent than during recent-past monitoring visits.

Middle Deck

General Comments:

The Middle Deck has been ripped and was being planted with native vegetation during the monitoring visit. Ripping and planting primarily occurred in areas with compacted soils or where native species establishment was minimal. Large boulders have also been placed in various

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locations throughout the Middle Deck.

Within areas that were avoided, approximately 35% is dominated by sage scrub plantings/seedlings, 30% by non-native grasses, and approximately 40% is was ripped and is being planted with native species. There is a decent mixture of native species that have established on the Middle Deck that include California buckwheat (*Eriogonum fasciculatum foliosium*), black sage (*Salvia mellifera*), purple needlegrass (*Nessella pulchra*), California sagebrush, and chamise (*Adenostoma fasciculatum*).

Native Plant Cover:	**Plant Health Issues:**	**Height of Species:**	**Native Species Richness:**
[ ] Dense [ ] Moderate [X] Minimal	[ ] Disease/pests [ ] Plant stress [ ] Excessive herbivory	[ ] 0" – 12" [ ] 12" – 24" [X] 24" and above	[X] Low [ ] Medium [ ] High

Weed Conditions

[ ] Dense weed coverage [X] Moderate weed coverage (seeding in high density) [ ] Minimal weed coverage	[X] Weeds germinating /vegetative growth [X] Weeds flowering [ ] Weeds setting seed [ ] Weed desiccant/dormant

Comments:

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.

Wild oats (*Avena fatua*), brome grasses and mustard generally dominate the non-native cover throughout the upper deck. Buckwheat is the dominant native plant that is present and appears to be noticeably denser in areas where it occurs compared to previous monitoring visits, likely as a result of spring rains. Overall natural recruitment within the Upper Deck is low, due to poor soil conditions and a general lack of water.

Native Plant Cover:	**Plant Health Issues:**	**Height of Species:**	**Native Species Richness:**
[ ] Dense [ ] Moderate [X] Minimal	[ ] Disease/pests [ ] Plant stress [ ] Excessive herbivory	[ ] 0" – 12" [ ] 12" – 24" [X] 24" and above	[X] Low [ ] Medium [ ] High

Weed Conditions

[ ] Dense weed coverage [X] Moderate weed coverage (seeding in high density) [ ] Minimal weed coverage	[X] Weeds germinating /vegetative growth [X] Weeds flowering [ ] Weeds setting seed [ ] Weed desiccant/dormant

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Comments: Weeds continue to grow without any level of control within the Upper Deck. Wild oats, brome grasses and mustard are currently dominant.

RECOMMENDATIONS

Lower and Middle Decks

• **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.

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.

• **Prohibit access.** Continue to prohibit vehicle access to mitigation areas.

Upper Deck

• **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

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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.

• **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.

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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City-Side Sage Mitigation Area

Photo 1. Facing west at lower deck. View of *Atriplex* species and California sunflower (*Encelia californica*) that dominate the vegetation cover.

Photo 2. Facing east at lower deck from western boundary.

Photo 3. Facing east at middle deck with lower deck visible in background. View of the area that was ripped and is currently being planted with native species. Patches of native vegetation that are being preserved are visible.

Photo 4. Facing west at the easterly-facing slope located between middle and upper decks. The vegetation on the slopes below the upper deck is dominated with mustard and brome grasses. The dark areas of vegetation consist of California buckwheat.

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City-Side Sage Mitigation Area

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 brome grasses and wild oats; however, some natives such as California buckwheat are present.

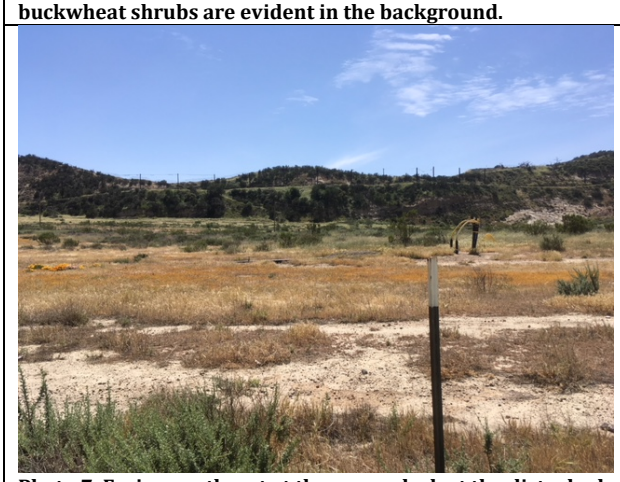

Photo 7. Facing southeast at the upper deck at the disturbed area that is currently dominated with brome grasses; however, patched areas of yellow pincushion (*Chaenactis sp.*) were present, which has not been observed during previous years.

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SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

County-Side Sage Mitigation Area

Submittal Date: May 7, 2018	**Inspection Date:** April 24, 2018
To: Tuong-phu Ngo, Environmental Manager	**From:** Greg Ainsworth, Monitoring Biologist ***Prepared on behalf of Republic Services***

STATUS OF HYDROSEEDING

Conditions:

[ ] Fully covered [ ] Moderately covered [X] Barely covered

Comments:

Conditions on the county-side sage mitigation area remain relatively 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).

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 California buckwheat, *Eriogonum fasciculatum*). 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.

SEED MIX

Conditions: [ ] No sign of germination [ ] No cover of native plants from seed mix [ ] Sparse cover of native plants from seed mix	[ ] Dense cover of native plants from seed mix [X] Moderate cover of native plants from seed mix (where vegetation is present)

Comments:

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.

Germination and plant growth from hydroseeding or seed mix is not discernible. Similar to

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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 (*Bromus sp.*), wild oats (*Avena fatua*) and shortpod mustard (*Hirschfeldia incana*) comprise approximately 25 percent of the total cover. California buckwheat dominates the native vegetation coverage with California sagebrush (*Artemisia californica*) and California sunflower (*Encelia californica*) as co-dominants. These native species comprise 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

Plant Cover:	**Plant Health Issues:**	**Height:**	**Species Richness:**
[ ] Dense [X] Moderate [ ] Minimal	[ ] Disease/pests [ ] Plant stress [ ] Excessive herbivory	[ ] 0" – 12" [X] 12" – 24" [ ] 24" and above	[ ] Low [X] Medium [ ] High

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 dominants 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

Conditions:	
[ ] Dense weed coverage [X] Moderate weed coverage (seeding in high density) [ ] Minimal weed coverage	[ ] Weeds germinating [X] Weeds flowering [X] Weeds setting seed [ ] Weed desiccant/dormant

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Comments:

Annual, non-native weed species consist primarily of brome grasses (*Bromus* sp.), shortpod mustard, and wild oats (*Avena fatua*). Other established weeds that were observed include red-stemmed filaree (*Erodium cicutarium*) and (native) telegraph weed (*Heterotheca grandiflora*). Russian thistle (*Salsola kali*) and tree tobacco (*Nicotiana glauca*) are scattered within the vegetated areas, but in less densities than the other non-native species noted above.

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

County-Side Sage Mitigation Area

Photo 1. Facing west at the county sage slope. Blooming California sunflower can be seen in this photos and a denser cover of native species that include sunflower and California buckwheat is present.

Photo 2. Facing west at the northern-half of the county sage hill, where plant growth has been problematic due to poor soil conditions.

ATTACHMENT 3

ARCHITERRA design group
landscape architecture and planning

ARCHITERRA DESIGN GROUP **FIELD OBSERVATION REPORT**

DATE OF VISIT:	04/24/18
PROJECT:	**Sunshine Canyon Mitigation Sites**
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:	Clear and Sunny 60°
ESTIMATED % COMPLETED:	100%
CONFORMANCE WITH SCHEDULE (+, -)	

WORK IN PROGRESS:	Weed abatement / Monitoring Period /Construction Observation
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):

- After the Winter and Spring rains, several weed species have emerges and are flowering/going to seed. These include: Russian Thistle (*Salsola* ssp.), Shortpod Mustard (*Hirshfeldia incana*), Red Brome Grass (*Bromus madritensis*), False Barley *(Hordeum murinum),* Tree Tobacco (*Nicotiana glauca*), and Eucalyptus Species. Architerra Design Group, Inc. recommends that the maintenance contractor immediately begin removal of these invasive species and weed abatement. The weeds should be bagged/wrapped prior to removal so that the weed seeding does not spread. Contractor should target the species above and take care to not remove/damage new seedlings intermixed amongst the weeds.
- Many of the CSS natives are currently flowering. Some of these include, Coast Sunflower (*Encelia californica*), Black Sage (*Salvia mellifera*), Purple Sage (*Salvia leucophylla*), White Sage (*Salvia apiana*), Creeping Wild Rye (*Leymus triticoides*), Deerweed (*Lotus scoparius*), Mexican Elderberry (*Sambucus mexicana*), Foothill Needle Grass, *Stipa (Nasella) pulchra and lepida* and California Buckwheat (*Eriogonum fasciculatum*), Scarlet Bugler (*Penstemon centranthifolius*). There are also some native wildflowers blooming.
- Over the last (3) three years the drainage swales have transitioned from a heavily populated dominance of Saltbrush to a more diverse mix of Venturan CSS species. It is obvious that the selective pruning of Saltbrush and termination of supplemental irrigation has helped to reduce the canopy and growth and has provided the structure for new seedlings to thrive.

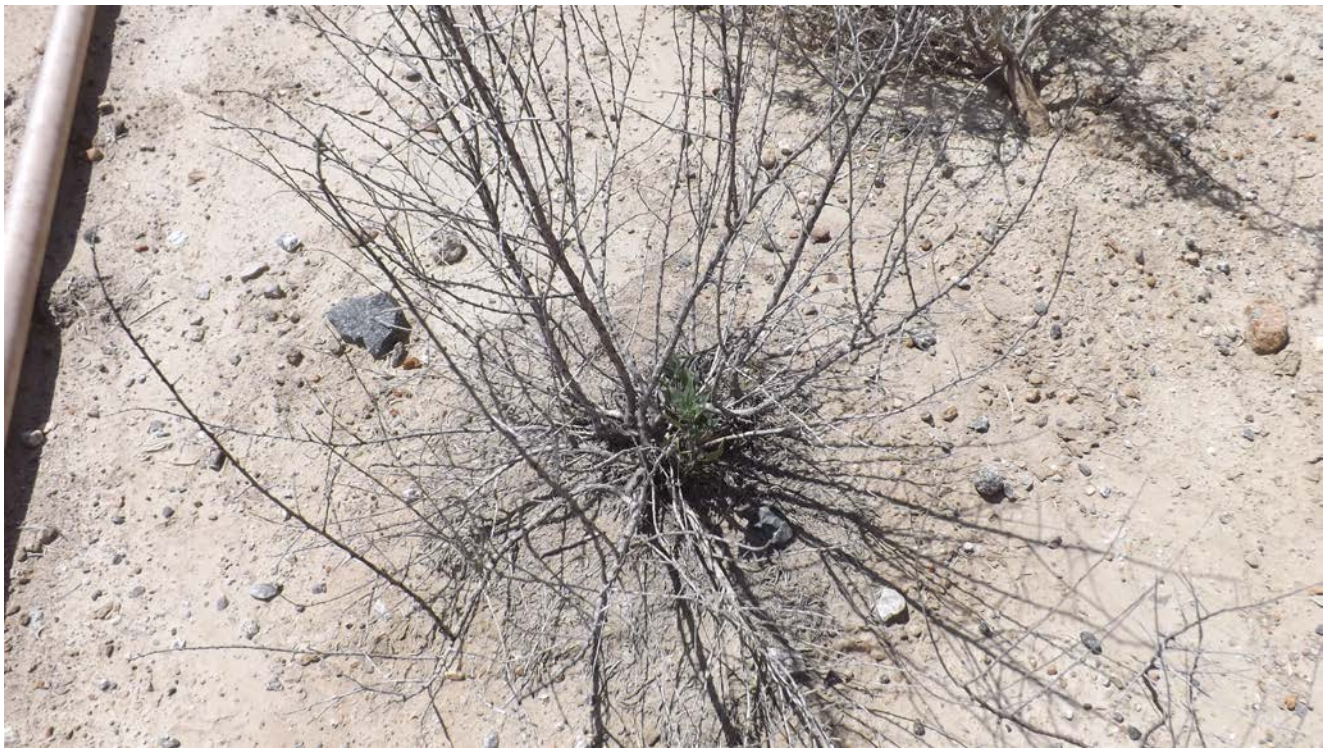
- Last year's installation of straw wattles has helped to minimize erosion and provided new opportunities for the germination of native species around the wattles; this was one of the benefits observed during the early stages of the Trial Site revegetation.

Shortpod Mustard and Red Brome Grass amongst new seedlings of Coast Sunflower

Invasive Shortpod Mustard blooming on Deck C

Seedlings of Coast Sunflower (*Encelia californica*) behind recently installed straw wattles.

Seedlings of California Sagebrush (*Artemisia californica*) and Black Sage (*Salvia mellifera*)



Seedling of Coast Sunflower (*Encelia californica*) within deadwood of Saltbrush

Flush of growth and flowering on Mexican Elderberry (*Sambucus Mexicana*)

Scarlet Bugler (*Penstemon centranthifolius*)

Blooming Coast Sunflower (*Encelia californica*) with volunteer *Eucalyptus* seedling (to be removed)

Blooming Black Sage (*Salvia mellifera*)

Blooming Coast Sunflower (*Encelia californica*) and Desert Encelia (*Encelia farinosa*) in foreground (left) and blooming spire of White Sage (*Salvia apiana*) emerging from Coast Sunflower (right)

Abundance of Coast Sunflower (*Encelia californica*) seedlings in drainage swale

Creeping Wild Rye (*Leymus triticoides*) and Deerweed (*Lotus scoparius*)

Creeping Wild Rye (*Leymus triticoides*) and California Poppy

ARCHITERRA DESIGN GROUP
10221-A TRADEMARK STREET, RANCHO CUCAMONGA, CA 91730
Phone (909) 484-2800, Fax (909) 484-2802

California Thrasher

City-Side Sage Mitigation (Deck B):

- Deck B is currently under construction and is scheduled for completion by Spring/Summer 2018. Current construction activities include, fine grading, boulder placement, irrigation installation and soil preparation for seeding.
- Final soil testing is currently being completed and once results are in, ADG will review and see if additional soil amendments or recommendations are required.
- ADG walked the site with a representative of PRG and discussed and identified exotic weed and plant species to be removed from the existing patches of Venturan CSS.
- Installation of the crushed asphalt will help stabilze the low point on the deck where water flows across the access road. ADG has recommended that crushed asphalt be installed along the entire access road versus using a soil stabilizer. This solution provides better stabilization, minimizes dust and erosion and is readily available at the landfill. Republic Services to review.
- A 2-wire system control has been recommended by PRG due to the lack of power at the Deck B site. They have suggested using the installed conduit as the communication cable for the irrigation controller and temporary deck irrigation valves.

Graded Deck B looking east

Disking of soils to loosen up compacted surface due to delay in construction and "crusting" of soil surface

View of Deck B looking southwest

Removal of weeds and loosening of soils adjacent to existing CSS habitat.

Boulder placement and area of deck to be loosened by disking

View of Deck B looking north

Irrigation mainline and galvanized sleeving over concrete drainage channel

On-Grade Irrigation mainline and valve manifold and hose bid

Signed: _____ Date: 9/7/18

DISTRIBUTION

Republic Services	☑	Contractor	☑
Project Manager (Gregg Denson)	☑	Other_____	☐

ARCHITERRA DESIGN GROUP
10221-A TRADEMARK STREET, RANCHO CUCAMONGA, CA 91730
Phone (909) 484-2800, Fax (909) 484-2802

Photo Station #1 - April 2017 (East)

Photo Station #1 - April 2018 (East)

Photo Station #1 - April 2017 (North)

Photo Station #1 - April 2018 (North)

Photo Station #1 - April 2017 (West)

Photo Station #1 - April 2018 (West)

Photo Station #2 - April 2017 (East)

Photo Station #2 - April 2018 (East)

Photo Station #2 - April 2017 (North)

Photo Station #2 - April 2018 (North)

Photo Station #2 - April 2017 (South)

Photo Station #2 - April 2018 (South)

Photo Station #3 - April 2017 (East)

Photo Station #3 - April 2018 (East)

Photo Station #3 - April 2017 (North)

Photo Station #3 - April 2018 (North)

Photo Station #3 - April 2017 (West)

Photo Station #3 - April 2018 (West)

Photo Station #4 - October 2017 (South)

Photo Station #4 - October 2018 (South)

Photo Station #4 - October 2017 (East)

Photo Station #4 - October 2018 (East)

Photo Station #4 - October 2017 (West)

Photo Station #4 - October 2018 (West)

Photo Station #5 - April 2017 (East)

Photo Station #5 - April 2018 (East)

Photo Station #5 - April 2017 (North)

Photo Station #5 - April 2018 (North)

Photo Station #5 - April 2017 (West)

Photo Station #5 - April 2018 (West)

Photo Station #6 - April 2017 (East)

Photo Station #6 - April 2018 (East)

Photo Station #6 - April 2017 (North)

Photo Station #6 - April 2018 (North)

Photo Station #6 - April 2017 (West)

Photo Station #6 - April 2018 (West)

Photo Station #7 - April 2017 (East)

Photo Station #7 - April 2018 (East)

Photo Station #7 - April 2017 (West)

Photo Station #7 - April 2018 (West)

Photo Station #7 - April 2017 (North)

Photo Station #7 - April 2018 (North)

Photo Station #8 - April 2017 (East)

Photo Station #8 - April 2018 (East)

Photo Station #8 - April 2017 (North)

Photo Station #8 - April 2018 (North)

Photo Station #8 - April 2017 (West)

Photo Station #8 - April 2018 (West)

Photo Station #9 - April 2017 (East)

Photo Station #9 - April 2018 (East)

Photo Station #9 - April 2017 (North)

Photo Station #9 - April 2018 (North)

Photo Station #9 - April 2017 (West)

Photo Station #9 - April 2018 (West)

ATTACHMENT 4

memorandum

date May 7, 2018

to Tuong-phu Ngo, Environmental Manager, Republic Services

from Greg Ainsworth, Consulting Biologist

subject Coastal Sage Scrub City South C Trial Plot Monitoring Report, Sunshine Canyon Landfill – 1st Quarter, 2018

INTRODUCTION

On April 23, 2018, biologist Greg Ainsworth monitored the coastal sage scrub revegetation area at the Landfill's City South 'C' Trial Plot, which constitutes the 1st quarter monitoring of the trial plot for 2018. The sample methodology generally followed 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). Quadrat sampling of the sage pilot study area consists of four, 50-meter quadrats that are randomly sampled within each of the following three seeded areas: hydroseed, imprint and hand broadcast. The quadrats were randomly selected prior to the first initial monitoring event from a grid that was placed over the entire trial plot, and each quadrat is delineated in the field with wooden stakes. 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 were sampled for each of the three seeded areas and the following data was collected in each quadrat that was sampled:

- **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 used, which consisted of data collection points every 0.5 meter along the perimeter of each quadrat. Sampling began at the southwest corner of each quadrat and continued around the quadrat in a clockwise direction. The species located precisely at every 0.5-meter point was tallied, including areas of bare ground, rock and other.

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) – 17% (13%)

Percent basil cover (herbs) – 17% (2%)

Percent bare ground – 44% (48%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 50% (45%)

Percent canopy (herb) – 8% (4%)

Average Imprint – Quadrats E, F, G H

Percent basil cover (shrubs) – 24% (25%)

Percent basil cover (herbs) – 11% (4%)

Percent bare ground – 43% (36%)

Percent rock or other – 8% (6%)

Percent canopy (shrub) – 41% (60%)

Percent canopy (herb) – 20% (4%)

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

Percent basil cover (shrubs) – 26% (35%)

Percent basil cover (herbs) –23% (18%)

Percent bare ground – 18% (19%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 58% (60%)

Percent canopy (herb) – 27% (19%)

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 mellifoluim		
Artemisia californica	1%	
Atriplex lentiformis	13%	
Atriplex polycarpa	20%	
Atriplex spinosa	1%	
Baccharis pilularis		
Encelia californica	14%	
Eschscholzia californica		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		1%
Salvia mellifera		
Sisyrinchium bellum		
Vulpia microstachys		
Echinochloa crus-galli		
Salsola kali		1%
Hordeum vulgare		4%
Bromus sp.		1%
Hirshfeldia incana		3%

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

Species	% Cover Shrub	% Cover Herb
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica		
Atriplex lentiformis	15%	
Atriplex polycarpa	19%	
Atriplex spinosa	1%	
Baccharis pilularis		
Encelia californica	5%	
Eschscholzia californica		
Eriogonum fasciculatum		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Sisyrinchium bellum		
Salvia apiana		
Salvia leucophylla	1%	

Salvia mellifera	
Echinochloa crus-galli	
Salsola kali	1%
Bromus sp.	14%
Hirshfeldia incana	3%
Centaurea melitensis	
Leymus triticoides	
Other herb	1%

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

Species	**% Cover Shrub**	**% Cover Herb**
Adenostema fasciculatum	1%	
Achillia mellifoluim		
Artemisia californica	1%	
Atriplex lentiformis	15%	
Atriplex polycarpa	13%	
Atriplex spinosa	1%	
Baccharis pilularis	1%	
Encelia californica	16%	
Eriogonum fasciculatum		
Eschscholzia californica		
Leymus triticoides		9%
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		
Salvia apiana		
Salvia leucophylla	1%	
Salvia mellifera	1%	
Sisyrinchium bellum		
Hirshfeldia incana		9%
Vulpia microstachys		
Salsola kali		1%
Bromus sp.		17%

DISCUSSION

There was not a substantial change in the density or richness of species within the pilot study area compared to the 4th quarter monitoring period of 2017. It appears that weed control has not been conducted since the last monitoring visit, based on the increase of non-native weeds within the quadrats. Most notably, mats of dense brome grass (*Bromus sp.*) have established in several of the quadrats that were sampled, including an increase of mustard (*Hershfeldia incana*) since the last monitoring visit. As depicted in several of the photos (attached), the density of California sunflower (*Encelia californica*) has increased throughout the pilot study area, including several of the quadrats that were sampled, and a noticeable amount of new seedlings is present within the understory.

Quadrats H, I and L have the greatest amount of relative cover, mostly comprised of *A. lentiformis and A. polycarpa*, because these plots are located at a low and relatively flat portion of the pilot study area, where water generally accumulates after rain events. The hand broadcast seeding method has the highest percentage of shrub

canopy cover (i.e., *A. lentiformis*) compared to hydroseed and imprint seeding methods. That said, the northwest portion of the hand broadcast area (quadrats I and J) is at a low-point compared to the rest of the pilot study area, and as indicated above, water tends to pool in this area and therefore the overall density of vegetation is greater compared to other areas. As noted in past monitoring reports, both the quadrat method and the point intercept method confirm that *A. lentiformis* has the greatest amount of relative cover throughout the pilot study site, with *A. polycarpa* as a co-dominant overall. The abundant cover of these two *Atriplex* species is also evident by a qualitative assessment of the plant cover throughout the trial site. Selective thinning of *Atriplex* in plots where this Genus has a closed canopy will create openings where recruitment and establishment of other native shrub seedlings can occur. 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.

Quadrat I. Facing northeast from southwest corner.

Quadrat J. Facing northeast from southwest corner.

Quadrat K. Facing northeast from southwest corner.

Quadrat L. Facing northeast from southwest corner.

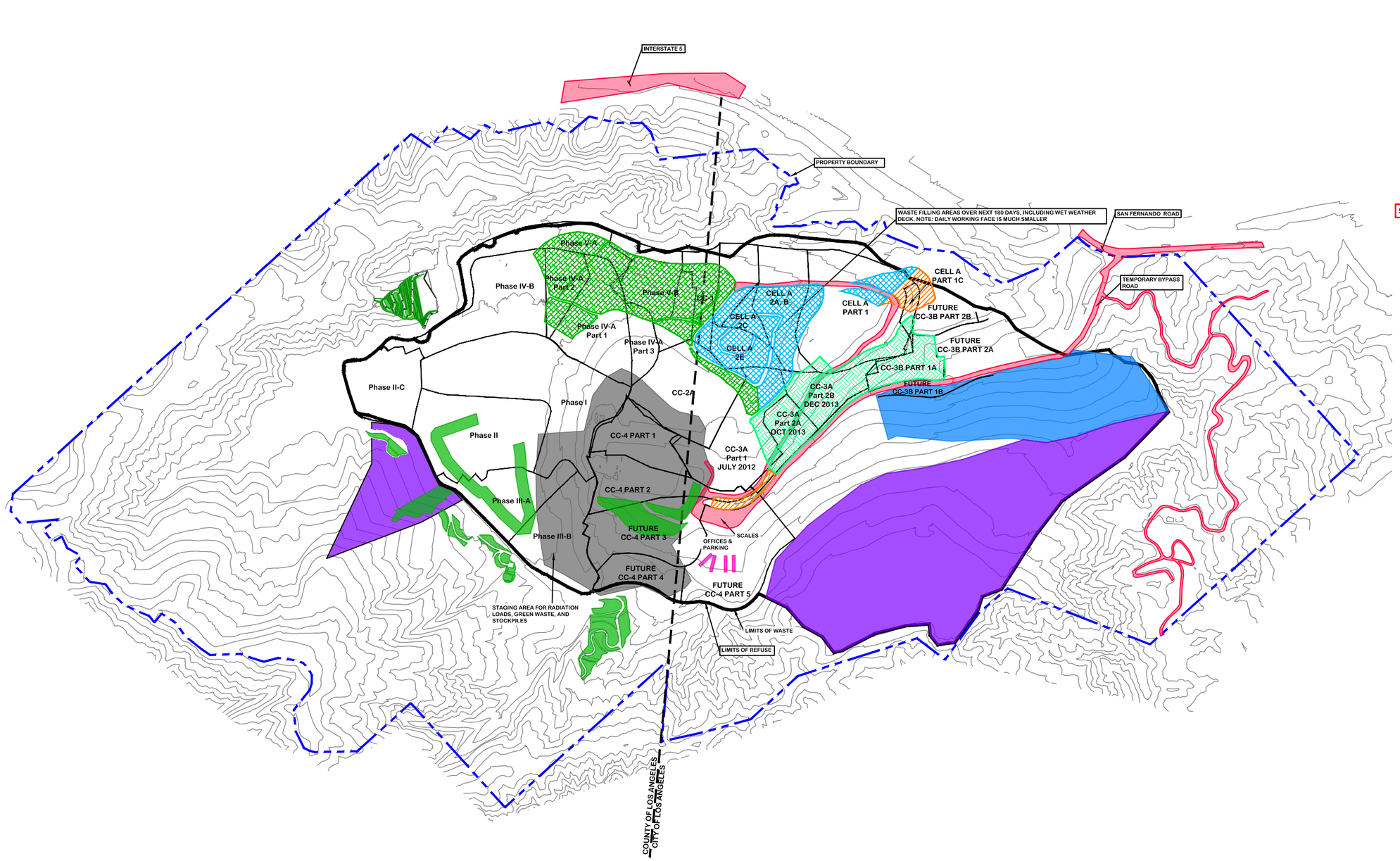
Quadrat Method: Raw Data

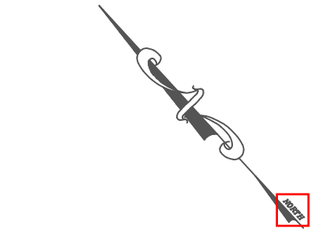
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
A	Encelia california	12%	35%	25%	2%	15%	
	Atriplex lentiformis					5%	
	Atriplex polycarpa					42%	
	Bromus sp						40%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
B	Encelia california	25%	15%	35%	2%	15%	
	Atriplex lentiformis					15%	
	Atriplex polycarpa					12%	
	Russian thistle						2%
	Bromus sp.						10%
	Mustard						10%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
C	Atriplex lentiformis	11%	2%	75%	4%	2%	
	Atriplex polycarpa					15%	
	Atriplex spinosa					1%	
	Black sage					2%	
	Bromus sp.						3%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
D	Encelia california	20%	15%	40%	3%	25%	
	Atriplex lentiformis					20%	
	Atriplex polycarpa					10%	
	Artemisia california					3%	
	Tocalote						3%
	Bromus sp.						3%
	Mustard						12%
	Russian thistle						3%
	Deerweed						3
AVERAGE		**17%**	**17%**	**44%**	**3%**	**50%**	**8%**
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
E	Atriplex lentiformis	20%	5%	50%	4%	15%	
	Atriplex polycarpa					15%	
	Encelia california					5%	
	Atriplex spinosa					3%	
	Mustard						8%
	bromus sp.						10%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
F	Atriplex lentiformis	18%	25%	55%	5%	15%	
	Atriplex polycarpa					20%	
	Bromus sp.						30%

	Russian thistle						1%
	Purple nightshade						1%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
G	Atriplex lentiformis	25%	10%	35%	3%	5%	
	Atriplex polycarpa					25%	
	Encelia california					7%	
	Bromus sp.						15%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
H	Atriplex lentiformis	32%	3%	30%	20%	25%	
	Atriplex polycarpa					20%	
	Encelia california					7%	
	Purple sage					3%	
	Mustard						5%
AVERAGE		**24%**	**11%**	**43%**	**8%**	**41%**	**20%**
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
I	Atriplex lentiformis	47%	30%	5%	2%	20%	
	Atriplex polycarpa					15%	
	Encelia california					20%	
	Purple sage					2%	
	Black sage					2%	
	Artemisia california					2%	
	Bromus sp.						25%
	Mustard						10%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
J	Atriplex lentiformis	25%	35%	5%	2%	25%	
	Atriplex polycarpa					5%	
	Atriplex spinosa					2%	
	Encelia california					20%	
	bromus sp.						40%
	Mustard						10%
	Russian thistle						1%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
K	Atriplex polycarpa	10%	25%	27%	3%	20%	
	Artemisia california					3%	
	Atriplex lentiformis					3%	
	Coyote bush					1%	
	Leymus triticoides						35%
	Mustard						2%
Quadrat	Species	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
L	Atriplex polycarpa	22%	3%	35%	3%	12%	
	Atriplex lentiformis					12%	
	Artemisia california					1%	
	Encelia california					22%	
	Deerweed					3%	
	Mustard						12%
	bromus sp.						3%
	Leymus triticoides						2%

AVERAGE	**26%**	**23%**	**18%**	**3%**	**58%**	**27%**

DRAWING 1





GRAPHIC SCALE

500' 0' 250' 500' 1000' 2000'

LEGEND

- 1500 — EXISTING 50 FT CONTOUR
- PROPERTY BOUNDARY
- EXISTING APPROVED LINERS
- EXISTING ROADS
- LIMITS OF REFUSE

VEGETATION STATUS MD ACTIVITY 1st QUARTER 2018	
	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.
	4Q2017 HYDROSEED APPLICATION
	VEGETATION PILOT PROJECT USING INTERIM SEED MIX
	CLOSURE TURF
	POSI-SHELL INSTALLATION
	VEGETATIVE COVER USING INTERIM SEED MIX
	VEGETATIVE COVER OVER DISKED POSI-SHELL

FOR_REVIEW_ONLY

EXISTING TOPOGRAPHY PREPARED BY COOPER AERIAL SURVEYS DATED FEBRUARY 5, 2018

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

DATE OF ISSUE: APRIL 2018
DESIGNED BY: C BARRETT
DRAWN BY: C BARRETT
CHECKED BY: C BARRETT
APPROVED BY: C BARRETT

DIGALERT 811

Geo-Logic ASSOCIATES
2777 E. GUASTI RD.
ONTARIO, CA 91761
909) 626-2282
www.geo-logic.com

REPUBLIC SERVICES

SUNSHINE CANYON LANDFILL
SYLMAR, CALIFORNIA
SITE VEGETATION STATUS AND ACTIVITY

Q1 2018

DWG NO. 1

PROJECT NO. 2014.0023

C:\Users\cbarrett\Documents\Allied-Republic\Sunshine Canyon LF\Exhibits\2014.0023 - VEGETATION STATUS AND ACTIVITY\01_CAD\B_GLA-OWS\2014.0023-SCL-201704-Vegitation Status Map.dwg Apr 27, 2018 - 3:49pm By: cbarrett