SUNSHINE CANYON LANDFILL

November 7, 2017

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
Third Quarter 2017 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 third quarter of 2017. 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 is currently underway. It is anticipated that the project will be complete by the 1st quarter of 2018.

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 third quarter of 2017.

2.2 County

No vegetation activities were conducted on the permanent slope areas on the County portion of the site during the third quarter of 2017 (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 third quarter of 2017, 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.
- Restaking of quadrats with new taller stakes and marker paint.

4.2 City South Deck B

The Deck B sage mitigation project is currently under construction. It is anticipated that the project will be complete by the 2nd quarter of 2018.

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 third quarter of 2017, 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 third quarter of 2017 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, Third Quarter 2017

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, Third Quarter 2017

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 – Third Quarter 2017

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 third quarter of 2017 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 2017.

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
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 4	Architerra Design Group, Field Observation Report, South City Sage Mitigation Pilot Project – 3Q2017
Attachment 4	JMA Quarterly Monitoring Report - Coastal Sage Scrub Pilot Study, 3Q2017

Drawings

Drawing 1	3Q2017 Site Vegetation Areas

ATTACHMENT 1

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SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

City-Side Sage Mitigation Area

Submittal Date: November 7, 2017	**Inspection Date:** October 31, 2017
To: Patti Costa	**From:** Greg Ainsworth, Monitoring Biologist **Prepared on behalf of Republic Services*

Lower Deck

General Comments:
Based on a qualitative visual assessment, there was not a noticeable amount of growth or increase in density of the saltbush (*Atriplex polycarpa and A. lentiformis*) cover at the lower deck compared to the lsat monitoring event in August 2017. Native species such as *Encelia Californica*, *Artemisia californica, and Salvia sp.* continue to be interspersed; however, these species were dormant during the assessment. Few native seedlings were observed within the dense saltbush canopy and overall regeneration is low. Desiccant creeping wild rye (*Leymus triticoides*) is the dominant native herbaceous cover, especially in the southwestern portion of the lower deck. Few non-native grasses were observed, while Russian thistle (*Salsola tragus*) is in a vegetative stage of growth and occurs sporadically throughout the lower deck.

A few common passerine (bird) species and a garter snake were observed during the assessment.

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

Weed Conditions

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

Comments: Overall weed growth is moderate, which dominated by (desiccant) common barley (*Hordeum vulgare*), ripgut brome (*Bromus diandrus*), red brome (*B. madritensis*), mustard (*Hirshfeldia incana*) and Russian thistle.

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Middle Deck

General Comments:

There is minimal change in the native plant cover to report on the Middle Deck from previous monitoring reports. Evidence of seed mix coverage is no longer discernible. Approximately 45 percent of the middle deck has been graded since the pervious monitoring event in August; however, the area where the grading occurred was previously comprised on compacted and gravelly substrate, with patches of non-native grasses. It appeared that the areas with native vegetation were largely avoided.

Currently, approximately 30% of the middle deck is dominated by sage scrub plantings/seedlings, 40% by non-native grasses, and approximately 30% is bare ground. 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, mustard, and Russian thistle. 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*).

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 [ ] Weeds flowering [ ] Weeds setting seed [X] Weed desiccant/dormant

Comments: Non-native grasses and forbs consisting of desiccant brome grasses and wild oats dominate the vegetation cover within the middle deck. Russian thistle is currently prominent throughout the middle deck.

UPPER DECK

General Comments: Overall, the upper deck continues to be sparsely covered with native vegetation and total vegetation coverage is patchy due to compacted and poor soil conditions in most areas. 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 within the upper deck area. The above-average winter rains promoted a substantial increase in non-native herbaceous growth on the upper deck.

Desiccant brome grasses and wild oats, as well as Russian thistle dominate the non-native cover throughout the upper deck. Buckwheat is the most dominant native plant that is present, which is primarily concentrated at the southwestern portion of the upper deck. Natural recruitment of native species is low overall, due to poor soil conditions and a general lack of maintenance.

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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 [ ] Weeds flowering [ ] Weeds setting seed [X] Weed desiccant/dormant
Comments: Weeds continue to grow without any level of control within the upper deck. Annual grasses and Russian thistle are currently dominant.	

RECOMMENDATIONS

Lower Deck

• **Continue to monitor.** Continue to monitor the lower deck quarterly to document the vegetation cover from the coastal sage pilot study.

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. 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.

• **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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City-Side Sage Mitigation Area

Photo 1. Facing west at lower deck. View of *Atriplex* species that dominate the vegetation cover.

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

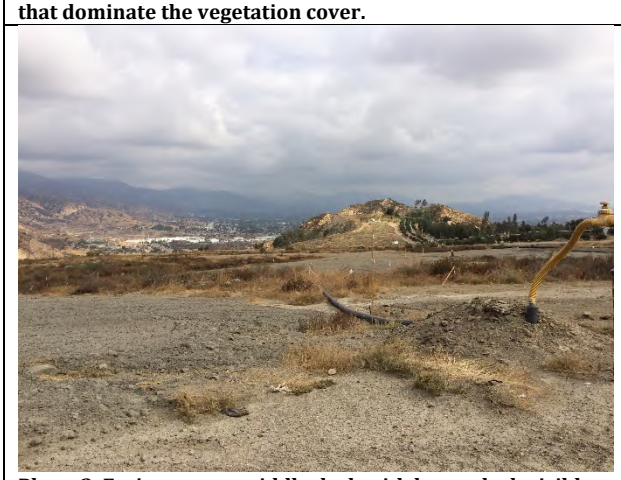

Photo 3. Facing east at middle deck with lower deck visible in background. View of non-native and native plant composition. Recently graded areas within the middle deck are evident.

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. Buckwheat is present in patches as depicted in the foreground of this photograph.

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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 emerging brome grasses and Russian thistle; however, some natives such as California buckwheat are present.

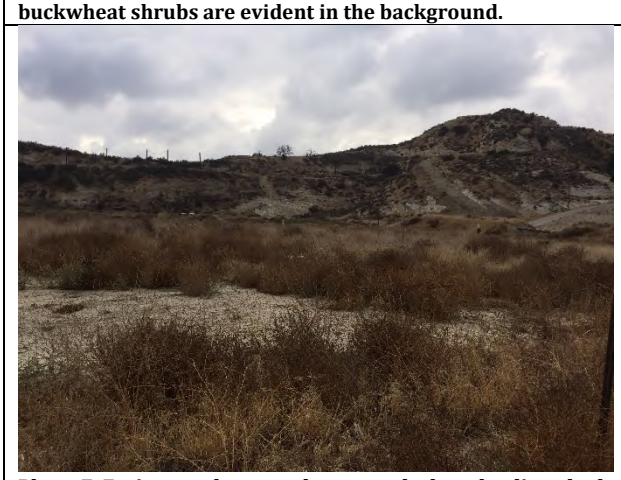

Photo 7. Facing southeast at the upper deck at the disturbed area that is currently dominated with Russian thistle and brome grasses.

ATTACHMENT 2

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SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

County-Side Sage Mitigation Area

Submittal Date: November 7, 2017	**Inspection Date:** October 31, 2017
To: Patti Costa	**From:** Greg Ainsworth, Monitoring Biologist

STATUS OF HYDROSEEDING

Conditions:

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

Comments:

There was no noticeable change in the vegetation cover and density on the county-side sage mitigation area compared to the previous monitoring event. Native species such as California sunflower (*Encelia californica*) and California buckwheat (*Eriogonum fasciculatum*) are most prominent within the vegetated areas; however, the California sunflower eas dormant during the assessment. A decent amount of desiccant wild oats continues to dominate the herbaceous cover. The northern-half of the county-side mitigation area continues to be problematic for establishment of vegetation, primarily because of highly eroded soils and steep slopes (and boron-toxic soils).

Overall, the diversity of native plants is similar to the previous quarterly monitoring reports. The southern-half of the mitigation area contains the highest concentration of native species, which is dominated by California buckwheat. 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 has established, as well as based on the various size classes of the 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. However, an increase in annual grasses, such as wild oats, was observed in this area during this monitoring period.

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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, such as California buckwheat.

Germination and plant growth from hydroseeding or seed mix is not discernible. Similar to 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. Desiccant wild oats, brome grasses, and shortpod mustard (*Hirschfeldia incana*) comprise approximately 25 percent of the total cover (of vegetated areas only, does not include areas of barre ground). California buckwheat dominates the native vegetation coverage with California sagebrush (*Artemisia californica*) as a co-dominant, which combined comprises approximately 70 percent of the total native vegetation cover. 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:

[ ] Dense
[X] Moderate
[ ] Minimal

Plant Health Issues:

[ ] Disease/pests
[ ] Plant stress
[ ] Excessive herbivory

Height:

[ ] 0" – 12"
[X] 12" – 24"
[ ] 24" and above

Species Richness:

[ ] 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, with minimal coverage along the upper slopes where rocky conditions are present. The majority of the northern and upper portions of the county-side mitigation area continue to have minimal coverage, but better than observed during previous monitoring periods due to the above average rainfall during the winter of 2016/2017. Bare areas and non-native annual grasses are intermixed; however, the northern and upper areas continue to be rather bare where erosion and rocks are apparent. Native vegetation cover is good in areas where plants are growing and the amount of non-native grasses that are present is typical California buckwheat scrub in the region.

As indicated previously, California buckwheat dominants the native cover with California

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sunflower 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

[X] Weeds germinating
[ ] Weeds flowering
[ ] Weeds setting seed
[ ] Weed desiccant/dormant

Comments:

Annual, non-native weed species consist primarily of wild oat, brome grasses, and shortpod mustard, all of which are currently desiccant. Other established weeds that were observed include red-stemmed filaree (*Erodium cicutarium*) and telegraph weed (*Heterotheca grandiflora*), which is a native species. Russian thistle is prominent and a few (less than 10) tree tobacco (*Nicotiana glauca*) plants are scattered within the vegetated areas.

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.

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Photo Locations

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Progress Report

County-Side Sage Mitigation Area

Photo 1. Facing west at the couty sage slope. Blooming California sunflower can be seen in this photos and a denser cover of native species overall than previously observed.

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:	10/17/17
PROJECT:	**Sunshine Canyon Mitigation Sites**
PROJECT NUMBER:	1214
PROJECT MANAGER:	Gregg Denson
SITE INSPECTION #:	
PURPOSE OF VISIT:	Review site conditions/Photo Catalog/Staking
TIME OF SITE VISIT:	11:30am
WEATHER/TEMPERATURE:	Clear, Hot 95°
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):

- In the 2nd Quarter Report we noted that many areas where overrun with Russian Thistle (*Salsola* ssp.). Since that time there has been an effort to remove and spray established plants to reduce their numbers. The maintenance personnel have done a good job removing the majority of those heavily infested areas, however some smaller plants still exist. These can easily be identified and sprayed with a chemical herbicide if needed.
- Some areas that were previously cleared of vegetation for gas valve testing have begun to reestablish. After wells were removed volunteer Saltbush seedlings have taken root in what was once compacted gravel path.
- Overall, the Trial Site looks healthy and plant species have hardened off during the dormancy period. Cooler fall temperatures and seasonal rains should once again awaken those in dormancy and by the next quarter, we should see active growing in many of the plant types.
- Standing water that was noted in the 2nd Quarter report was not visible and it appears that the source of the leaking water has been corrected.
- The large drainage swale along the north edge of the Trial Site previously was dominated by Saltbush. Due to the period of drought and elimination of irrigation, many of those areas have opened up and now provide cover for new CSS species. During this time of the year, it is difficult to visually see those species, however *Encelia californica* will be one of the first to flush out new winter growth in this area with it's bright green foliage.
- As part of the data collection and reporting of the established plant species, we staked out several quadrats within the trail site. Over time some staking was removed or damaged and many of the species have growth to cover the locations. While on the site we restaked the quadrats with new taller stakes and marker paint. The letter designations remained the same as in previous reports. These quadrats are used by Greg Ainsworth and are noted in his reports.

Example of well established vegetation on trial site

Abandoned gas valve head with volunteer Saltbush species establishing within gravel clear zone

White Sage foliage penetrates through dormant Leymus and Encelia

Dormant Leymus grass along north swale area

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Phone (909) 484-2800, Fax (909) 484-2802

City-Side Sage Mitigation (Deck B Update):

- Grading efforts have begun on Deck B and the incorporation of the sediment basin import soil has been spread out over the project area. Some minor grading is still needed to complete the grading efforts along an area adjacent to the large concrete drainage channel. In addition, the newly graded area will be amended and ripped into the existing deck and incorporated with the existing soil. Boulder placement, straw wattle placement and irrigation will soon follow after and the timing of construction should help to take advantage of the seasonal rainfall and cooler temperatures. By the next quarter report, most of the revegetation installation should be complete. Deck B will be irrigated utilizing a temporary irrigation system, much like the Trial Site.

Deck B initial grading with existing preserved stands of CSS habitat

Existing gas valve at Deck B

View looking north over Deck B with heli-pads in background

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Phone (909) 484-2800, Fax (909) 484-2802

Signed: Gregg Denson Date: 10/31/17

DISTRIBUTION

Republic Services ☑ Contractor ☑

File ☑ 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 - October 2016 (East)

Photo Station #1 - October 2017 (East)

Photo Station #1 - October 2016 (North)

Photo Station #1 - October 2017 (North)

Photo Station #1 - October 2016 (West)

Photo Station #1 - October 2017 (West)

Photo Station #2 - October 2016 - (East)

Photo Station #2 - October 2017 (East)

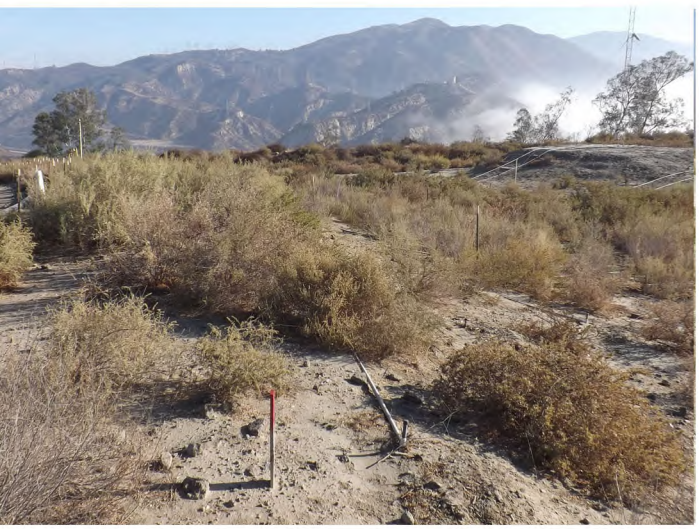


Photo Station #2 - October 2016 (North)

Photo Station #2 - October 2017 (North)

Photo Station #2 - October 2016 (South)

Photo Station #2 - October 2017 (South)

Photo Station #3 - October 2016 (East)

Photo Station #3 - October 2017 (East)

Photo Station #3 - October 2016 (North)

Photo Station #3 - October 2017 (North)

Photo Station #3 - October 2016 (West)

Photo Station #3 - October 2017 (West)

Photo Station #4 - October 2016 (South)

Photo Station #4 - October 2017 (South)

Photo Station #4 - October 2016 (East)

Photo Station #4 - October 2017 (East)

Photo Station #4 - October 2016 (West)

Photo Station #4 - October 2017 (West)

Photo Station #5 - October 2016 (East)

Photo Station #5 - October 2017 (East)

Photo Station #5 - October 2016 (North)

Photo Station #5 - October 2017 (North)

Photo Station #5 - October 2016 (West)

Photo Station #5 - October 2017 - (West)

Photo Station #6 - October 2016 (East)

Photo Station #6 - October 2017 (East)

Photo Station #6 - October 2016 (North)

Photo Station #6 - October 2017 (North)

Photo Station #6 - October 2016 (West)

Photo Station #6 - October 2016 (West)

Photo Station #7 - October 2016 (South)

Photo Station #7 - October 2017 (South)

Photo Station #7 - October 2016 (West)

Photo Station #7 - October 2017 (West)

Photo Station #7 - October 2016 (North)

Photo Station #7 - October 2017 (North)

Photo Station #8 - October 2016 (East)

Photo Station #8 - October 2017 (East)

Photo Station #8 - October 2016 (North)

Photo Station #8 - October 2017 (North)

Photo Station #8 - October 2016 (West)

Photo Station #8 - Ocotober 2017 (West)

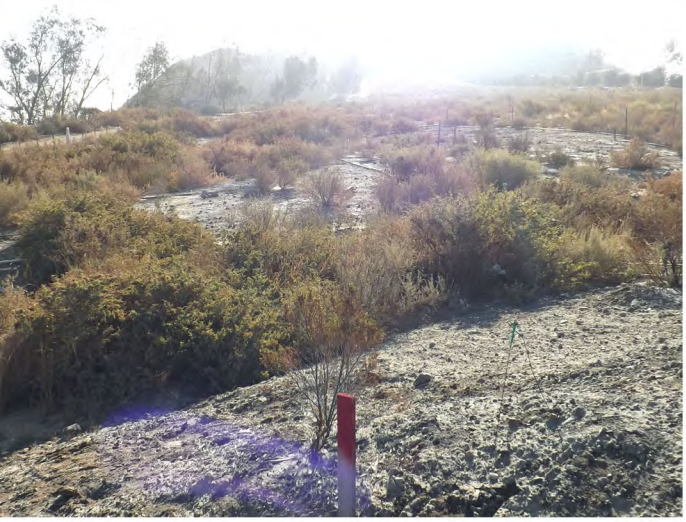


Photo Station #9 - October 2016 (East)

Photo Station #9 - October 2017 (East)

Photo Station #9 - October 2016 (South)

Photo Station #9 - October 2017 (South)

Photo Station #9 - October 2016 (West)

Photo Station #9 - October 2017 (West)

ATTACHMENT 4

memorandum

date November 7, 2017

to Patty Costa, Sunshine Canyon Landfill

from Greg Ainsworth, Consulting Biologist

subject Coastal Sage Scrub City South C Trial Plot Monitoring Report, Sunshine Canyon Landfill – 3rd Quarter, 2017

INTRODUCTION

On October 31, 2017, biologist Greg Ainsworth monitored the coastal sage scrub revegetation area at the Landfill's City South 'C' Trial Plot, which constitutes the thrid quarter monitoring of the trial plot for 2017. 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). Quadrat sampling is conducted that consists of 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. Each quadrat is delineated in the field with wood stakes and flagging. 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) – 13% (13%)

Percent basil cover (herbs) – 3% (1%)

Percent bare ground – 48% (43%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 45% (63%)

Percent canopy (herb) – 4% (1%)

Average Imprint – Quadrats E, F, G H

Percent basil cover (shrubs) – 25% (20%)

Percent basil cover (herbs) – 4% (2%)

Percent bare ground – 38% (39%)

Percent rock or other – 6% (7%)

Percent canopy (shrub) – 50% (51%)

Percent canopy (herb) – 14% (3%)

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

Percent basil cover (shrubs) – 35% (38%)

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

Percent bare ground – 19% (15%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 59% (78%)

Percent canopy (herb) – 19% (23%)

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		
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica	<1%	
Atriplex lentiformis	16%	
Atriplex polycarpa	22%	
Atriplex spinosa	<1%	
Baccharis pilularis	<1%	
Encelia californica	3%	
Eschscholzia californica		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		
Salvia mellifera		
Sisyrinchium bellum		
Vulpia microstachys		
Echinochloa crus-galli		
Salsola kali		2%
Hordeum vulgare		
Bromus sp.		1%
Hirshfeldia incana		<1%

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

Species	% Cover Shrub	% Cover Herb
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica	<1%	
Atriplex lentiformis	26%	
Atriplex polycarpa	28%	
Atriplex spinosa		
Baccharis pilularis	<1%	
Encelia californica	<1%	
Eschscholzia californica		
Eriogonum fasciculatum	1%	
Leymus triticoides		1%
Mimulus aurantiacus longiflorus		
Nasella pulchra		

Sisyrinchium bellum		
Salvia apiana		
Salvia leucophylla	1%	
Salvia mellifera	<1%	
Echinochloa crus-galli		
Salsola kali		8%
Bromus sp.		4%
Hirshfeldia incana		1
Centaurea melitensis		
Leymus triticoides		

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

Species	**% Cover Shrub**	**% Cover Herb**
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica	5%	
Atriplex lentiformis	24%	
Atriplex polycarpa	18%	
Atriplex spinosa	<1%	
Baccharis pilularis	2%	
Encelia californica	9%	
Eriogonum fasciculatum	<1%	
Eschscholzia californica		
Leymus triticoides		9%
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		
Salvia apiana	<1%	
Salvia leucophylla	1%	
Salvia mellifera	2%	
Sisyrinchium bellum		
Hirshfeldia incana		1%
Vulpia microstachys		
Salsola kali		1%
Bromus sp.		5%

DISCUSSION

There was not much notable new growth in the pilot study area compared to the 2nd quarter monitoring period. Few annual herbaceous species were present due to seasonal timing and previous weeding activities. Some of the *Atriplex* species that were thriving during the prior monitoring period had chlorotic foliage due to the seasonal timing of the survey and the overall dry soil conditions. *A. lentiformis* continues to dominate the overall vegetation cover, especially in plots J and K. Few seedlings of native species was observed, which is similar to previous monitoring events. Natives such as California sunflower (*Encelia californica)* and California sagebrush (*Artemisia californica*) are currently dormant, as were all of the Salvia species. With the exception of Russian thistle (*Salsola kali*), most of the herbaceous species have desiccated.

As indicated in previous monitoring reports, selective thinning of *Atriplex* in plots J and K will help recruitment and establishment of other native shrub seedlings. Quadrats H, I and L have the greatest amount of relative cover, mostly comprised of *A. lentiformis and A. polycarpa,* because these plots are down-gradient from the rest of the study area where water tends to accumulate more than the rest of the study area. The Hand Broadcast seeding method has the highest percentage of shrub canopy cover compared to hydroseed and imprint seeding methods. That said, the northwest portion of the hand broadcast plots is at a low-point compared to the rest of the pilot study area, and as indicated above, water tends to pool and is most abundant within the hand broadcast plots, especially Quadrats I and J. 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 trial 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. Lastly, the recently installed straw waddles throughout the study area have contributed to an increase of non-native seedlings immediately adjacent to the waddles due ponding. All of the test plots were re-staked prior to the 3rd quarter monitoring event, which made it easier to locate the corners of each sampling plot 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	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
A		50	8%	5%	45%	5%		
	Atriplex lentiformis						5%	
	Atriplex polycarpa						42%	
	Atriplex spinosa							
	Baccharis pilularis							
	Echinochloa crus-galli							
	Salsola ssp.							2%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
B		50	15%	3%	30%	5%		
	Atriplex lentiformis						35%	
	Atriplex polycarpa						12%	
	Encelia californica						10%	
	Sisyrinchium bellum							
	Lolium multiflorum							2%
	Salsola ssp.							5%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
C		50	5%	2%	70%	5%		
	Atriplex lentiformis						5%	
	Atriplex polycarpa						20%	
	Atriplex spinosa							
	Acmispon glaber						1%	
	Salvia millifera						2%	
	Bromus sp.							1%
	Salsola ssp.							1%
	Hirshfeldia incana							1%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
D		50	25%	2%	45%	5%		
	Atriplex lentiformis						20%	
	Atriplex polycarpa						15%	
	Atriplex spinosa						5%	
	Achillia mellifoluim							
	Encelia californica						3%	
	Artemisia californica						1%	
	Salvia mellifera						1%	
	Bromus sp.							1%
	Salsola ssp.							1%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
E		50	15%	1%	40%	5%		
	Atriplex lentiformis						18%	
	Atriplex polycarpa						30%	
	Atriplex spinosa							
	Bromus sp.							2%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
F		50	15%	10%	55%	5%		
	Atriplex lentiformis						10%	
	Atriplex polycarpa						22%	
	Atriplex spinosa							
	Artemisia californica						1%	
	Bromus sp.							12%
	Salsola ssp.							15%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
G		50	20%	3%	30%	5%		
	Atriplex lentiformis						35%	
	Atriplex polycarpa						45%	
	Atriplex spinosa							
	Salvia apiana							
	Achillia mellifoluim							
	Salsola ssp.							15%
	Echinochloa crus-galli							
	Hirshfeldia incana							1%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
H		50	45%	1%	20%	7%		
	Atriplex lentiformis						40%	
	Atriplex polycarpa						15%	
	Baccharis pilularis						1%	
	Eriogonum fasciculatum						5%	
	Mimulus aurantiacus longiflorus							
	Salvia leucophylla						5%	
	Acmispon glaber							
	Encelia californica						1%	
	Salvia mellifera						2%	
	Leymus triticoides							5%
	Hirshfeldia incana							2%

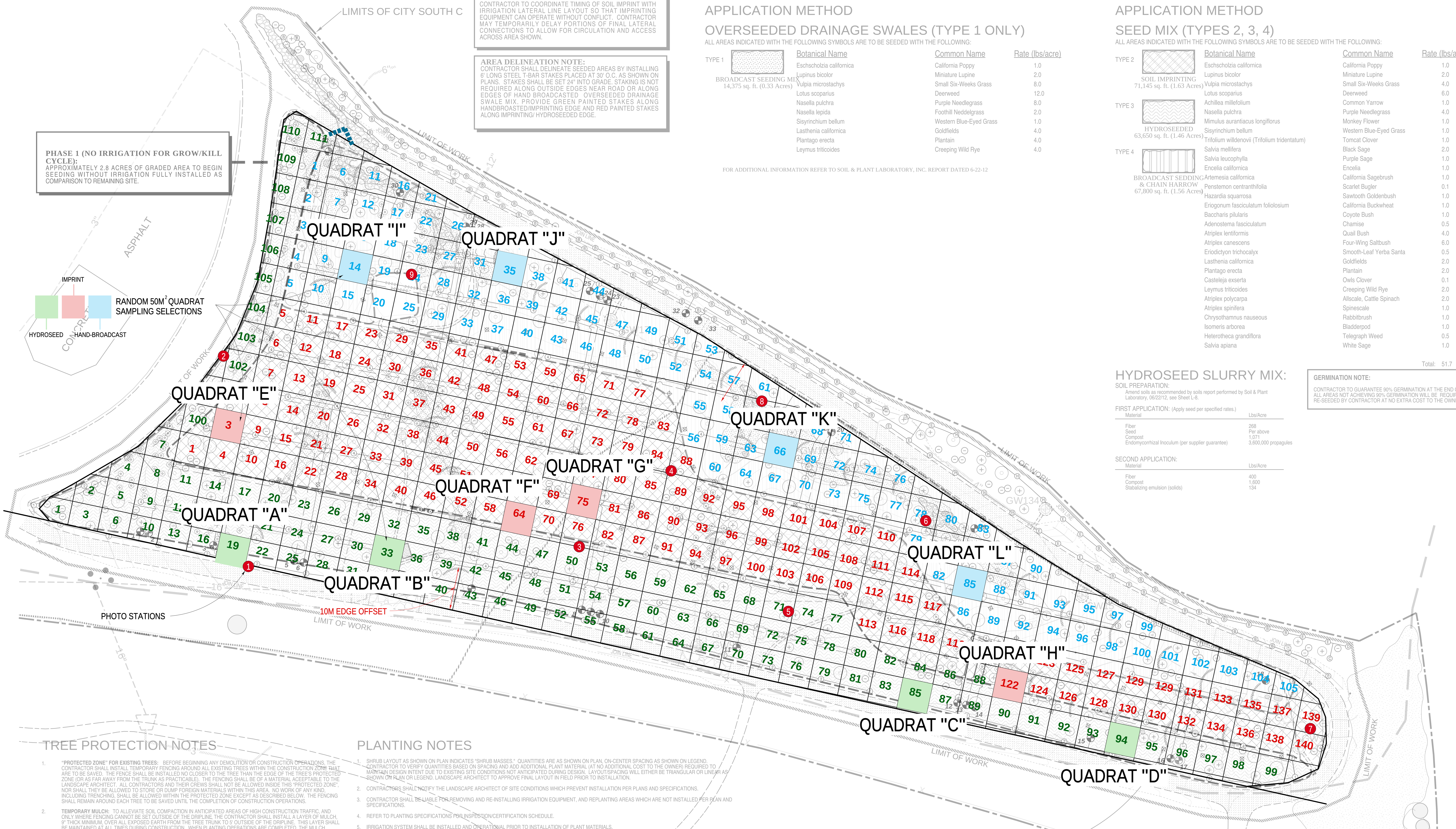
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
I		50	50%	20%	15%	3%		
	Atriplex polycarpa						30%	
	Atriplex lentiformis						40%	
	Baccharis pilularis						3%	
	Artemisia californica						1%	
	Encelia californica						10%	
	Salvia mellifera						5%	
	Atriplex spinosa						2%	
	Vulpia microstachys							
	Lolium multiflorum							15%
	Nasella pulchra							
	Bromus sp.							5%
	Hirshfeldia incana							3%
	Salsola ssp.							2%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
J		50	40%	18%	10%	3%		
	Atriplex lentiformis						30%	
	Atriplex polycarpa						5%	
	Encelia californica						20%	
	Artemisia californica						1%	
	Vulpia microstachys							
	Eriogonum fasciculatum						1%	
	Leymus triticoides							10%
	Bromus sp.							15%

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
K		50	10%	25%	20%	5%		
	Atriplex lentiformis						5%	
	Adenostema fasciculatum							
	Artemisia californica						8%	
	Baccharis pilularis							
	Atriplex polycarpa						20%	
	Encelia farinosa							
	Vulpia microstachys							
	Salsola ssp.							
	Atriplex spinosa						2%	
	Leymus triticoides							20%
	Echinochloa crus-galli							
	Other herb							

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)
L		50	15%	10%	30%	5%		
	Atriplex lentiformis						22%	
	Atriplex polycarpa						18%	
	Baccharis pilularis						3%	
	Artemisia californica						10%	
	Encelia californica						5%	
	Salvia apiana						1%	
	Salvia leucophylla						5%	
	Salvia mellifera						1%	
	Poa annua							
	Salsola ssp.							1%
	Leymus triticoides							5%

City South ‘C’ Trial Plot Planting Plan and Quadrat Layout



TYPE 2 SEED MIX NOTE:
CONTRACTOR TO COORDINATE TIMING OF SOIL IMPRINT WITH IRRIGATION LATERAL LINE LAYOUT SO THAT IMPRINTING EQUIPMENT CAN OPERATE WITHOUT CONFLICT. CONTRACTOR MAY TEMPORARILY DELAY PORTIONS OF FINAL LATERAL CONNECTIONS TO ALLOW FOR CIRCULATION AND ACCESS ACROSS AREA SHOWN.

AREA DELINEATION NOTE:
CONTRACTOR SHALL DELINEATE SEEDED AREAS BY INSTALLING 6' LONG STEEL T-BAR STAKES PLACED AT 30' O.C. AS SHOWN ON PLANS. STAKES SHALL BE SET 24" INTO GRADE. STAKING IS NOT REQUIRED ALONG OUTSIDE EDGES NEAR ROAD OR ALONG EDGES OF HAND BROADCASTED OVERSEEDED DRAINAGE SWALE MIX. PROVIDE GREEN PAINTED STAKES ALONG HANDBROASTED/IMPRINTING EDGE AND RED PAINTED STAKES ALONG IMPRINTING/ HYDROSEEDED EDGE.

APPLICATION METHOD
OVERSEEDED DRAINAGE SWALES (TYPE 1 ONLY)

ALL AREAS INDICATED WITH THE FOLLOWING SYMBOLS ARE TO BE SEEDED WITH THE FOLLOWING:

TYPE 1 — BROADCAST SEEDING MIX 14,375 sq. ft. (0.33 Acres)

Botanical Name	Common Name	Rate (lbs/acre)
Eschscholzia californica	California Poppy	1.0
Lupinus bicolor	Miniature Lupine	2.0
Vulpia microstachys	Small Six-Weeks Grass	8.0
Lotus scoparius	Deerweed	12.0
Nasella pulchra	Purple Needlegrass	8.0
Nasella lepida	Foothill Neddelgrass	2.0
Sisyrinchium bellum	Western Blue-Eyed Grass	1.0
Lasthenia californica	Goldfields	4.0
Plantago erecta	Plantain	4.0
Leymus triticoides	Creeping Wild Rye	4.0

FOR ADDITIONAL INFORMATION REFER TO SOIL & PLANT LABORATORY, INC. REPORT DATED 6-22-12

APPLICATION METHOD
SEED MIX (TYPES 2, 3, 4)

ALL AREAS INDICATED WITH THE FOLLOWING SYMBOLS ARE TO BE SEEDED WITH THE FOLLOWING:

TYPE 2 — SOIL IMPRINTING 71,145 sq. ft. (1.63 Acres)
TYPE 3 — HYDROSEEDED 63,650 sq. ft. (1.46 Acres)
TYPE 4 — BROADCAST SEDDING & CHAIN HARROW 67,800 sq. ft. (1.56 Acres)

Botanical Name	Common Name	Rate (lbs/acre)
Eschscholzia californica	California Poppy	1.0
Lupinus bicolor	Miniature Lupine	2.0
Vulpia microstachys	Small Six-Weeks Grass	4.0
Lotus scoparius	Deerweed	6.0
Achillea millefolium	Common Yarrow	1.0
Nasella pulchra	Purple Needlegrass	4.0
Mimulus aurantiacus longiflorus	Monkey Flower	1.0
Sisyrinchium bellum	Western Blue-Eyed Grass	1.0
Trifolium willdenovii (Trifolium tridentatum)	Tomcat Clover	1.0
Salvia mellifera	Black Sage	2.0
Salvia leucophylla	Purple Sage	1.0
Encelia californica	Encelia	1.0
Artemesia californica	California Sagebrush	1.0
Penstemon centranthifolia	Scarlet Bugler	0.1
Hazardia squarrosa	Sawtooth Goldenbush	1.0
Eriogonum fasciculatum foliolosium	California Buckwheat	1.0
Baccharis pilularis	Coyote Bush	1.0
Adenostema fasciculatum	Chamise	0.5
Atriplex lentiformis	Quail Bush	4.0
Atriplex canescens	Four-Wing Saltbush	6.0
Eriodictyon trichocalyx	Smooth-Leaf Yerba Santa	0.5
Lasthenia californica	Goldfields	2.0
Plantago erecta	Plantain	2.0
Casteleja exserta	Owls Clover	0.1
Leymus triticoides	Creeping Wild Rye	2.0
Atriplex polycarpa	Allscale, Cattle Spinach	2.0
Atriplex spinifera	Spinescale	1.0
Chrysothamnus nauseous	Rabbitbrush	1.0
Isomeris arborea	Bladderpod	1.0
Heterotheca grandiflora	Telegraph Weed	0.5
Salvia apiana	White Sage	1.0
	Total:	51.7

HYDROSEED SLURRY MIX:

SOIL PREPARATION:
Amend soils as recommended by soils report performed by Soil & Plant Laboratory, 06/22/12, see Sheet L-8.

FIRST APPLICATION: (Apply seed per specified rates.)

Material	Lbs/Acre
Fiber	268
Seed	Per above
Compost	1,071
Endomycorrhizal Inoculum (per supplier guarantee)	3,600,000 propagules

SECOND APPLICATION:

Material	Lbs/Acre
Fiber	400
Compost	1,600
Stabalizing emulsion (solids)	134

GERMINATION NOTE:
CONTRACTOR TO GUARANTEE 90% GERMINATION AT THE END OF 90 DAYS. ALL AREAS NOT ACHIEVING 90% GERMINATION WILL BE REQUIRED TO BE RE-SEEDED BY CONTRACTOR AT NO EXTRA COST TO THE OWNER.

TREE PROTECTION NOTES

1. **"PROTECTED ZONE" FOR EXISTING TREES:** BEFORE BEGINNING ANY DEMOLITION OR CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL INSTALL TEMPORARY FENCING AROUND ALL EXISTING TREES WITHIN THE CONSTRUCTION ZONE THAT ARE TO BE SAVED. THE FENCE SHALL BE INSTALLED NO CLOSER TO THE TREE THAN THE EDGE OF THE TREE'S PROTECTED ZONE (OR AS FAR AWAY FROM THE TRUNK AS PRACTICABLE). THE FENCING SHALL BE OF A MATERIAL ACEEPTABLE TO THE LANDSCAPE ARCHITECT. ALL CONTRACTORS AND THEIR CREWS SHALL NOT BE ALLOWED INSIDE THIS "PROTECTED ZONE", NOR SHALL THEY BE ALLOWED TO STORE OR DUMP FOREIGN MATERIALS WITHIN THIS AREA. NO WORK OF ANY KIND, INCLUDING TRENCHING, SHALL BE ALLOWED WITHIN THE PROTECTED ZONE EXCEPT AS DESCRIBED BELOW. THE FENCING SHALL REMAIN AROUND EACH TREE TO BE SAVED UNTIL THE COMPLETION OF CONSTRUCTION OPERATIONS.
2. **TEMPORARY MULCH:** TO ALLEVIATE SOIL COMPACTION IN ANTICIPATED AREAS OF HIGH CONSTRUCTION TRAFFIC, AND ONLY WHERE FENCING CANNOT BE SET OUTSIDE OF THE DRIPLINE, THE CONTRACTOR SHALL INSTALL A LAYER OF MULCH, 9" THICK MINIMUM, OVER ALL EXPOSED EARTH FROM THE TREE TRUNK TO 5' OUTSIDE OF THE DRIPLINE. THIS LAYER SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION. WHEN PLANTING OPERATIONS ARE COMPLETED, THE MULCH SHALL BE REDISTRIBUTED THROUGHOUT ALL PLANTING AREAS IN A 3" THICK "PERMANENT" MULCH LAYER.
3. **NECESSARY WORK:** WHEN IT BECOMES NECESSARY TO ENTER THE "PROTECTED ZONE", SUCH AS FOR FINE GRADING, IRRIGATION INSTALLATION, AND PLANTING OPERATIONS, THE CONTRACTOR SHALL STRICTLY ADHERE TO THE FOLLOWING RULES:
   - A. EVERY EFFORT SHALL BE MADE TO PRESERVE THE EXISTING GRADE AROUND LARGE TREES IN AS WIDE AN AREA AS POSSIBLE.
   - B. TRENCHING WITHIN THE DRIPLINE OF EXISTING TREES SHALL BE PERFORMED BY HAND, AND WITH EXTREME CARE NOT TO SEVER ROOTS 1-1/2" IN DIAMETER AND LARGER. WHERE ROOTS 1-1/2" IN DIAMETER AND LARGER ARE ENCOUNTERED, THE CONTRACTOR SHALL TUNNEL UNDER SAID ROOTS. EXPOSED ROOTS THAT HAVE BEEN TUNNELED UNDER SHALL BE WRAPPED IN WET BURLAP AND KEPT MOIST WHILE THE TRENCH IS OPEN.
   - C. WHERE ROOTS 2" IN DIAMETER OR LARGE MUST BE CUT DUE TO EXTENSIVE GRADE CHANGES, THOSE ROOTS MUST BE EXPOSED BY HAND DIGGING AND CUT CLEANLY. RAGGED CUTS GENERALLY DO NOT HEAL PROPERLY, AND MAY LEAVE THE TREE OPEN TO PESTS AND PATHOGENS.
   - D. WHERE TRENCHING NEAR TREES HAS ALREADY OCCURRED FROM PREVIOUS CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL MAKE EVERY EFFORT TO CONFINE HIS TRENCHING OPERATIONS TO THE PREVIOUSLY-CREATED TRENCHES, WHILE ADHERING TO THE CONDITIONS SET FORTH IN 3B.
4. **POTENTIAL CONFLICTS:** THE CONTRACTOR SHALL NOTIFY THE OWNER AND ARBORIST SHOULD ANY POTENTIAL CONFLICTS ARISE BETWEEN THESE SPECIFICATIONS AND/OR LARGE ROOTS ENCOUNTERED IN THE FIELD, AND CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL NOT TAKE ANY ACTION IN SUCH CONFLICTS WITHOUT THE ARBORIST'S WRITTEN APPROVAL. THE ARBORIST SHALL HAVE FINAL AUTHORITY OVER ALL METHODS NECESSARY TO HELP ENSURE THE PROTECTION AND SURVIVAL OF EXISTING TREES.
6. **LANDSCAPE AND IRRIGATION (NATIVE OAKS ONLY):** ANY FUTURE LANDSCAPE AND IRRIGATION SHOULD ADHERE TO THE FOLLOWING GUIDELINES:
   - A. NO IRRIGATION OR PLANTING SHOULD OCCUR CLOSER THAN 8'-10' FROM THE TRUNK.
   - B. WHERE IRRIGATION DOES OCCUR WITHIN THE PROTECTED ZONE, DRIP IRRIGATION SHOULD BE USED WHEREVER POSSIBLE. ADDITIONALLY, ONLY LOW-WATER USING PLANTS SHOULD BE PLANTED WITHIN THE PROTECTED ZONE, SPACED FAR APART CLOSE TO THE TREE. PLANTS MAY BE SPACED CLOSER TOGETHER NEAR THE EDGE OF THE PROTECTED ZONE.

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PLANTING NOTES

1. SHRUB LAYOUT AS SHOWN ON PLAN INDICATES "SHRUB MASSES." QUANTITIES ARE AS SHOWN ON PLAN, ON-CENTER SPACING AS SHOWN ON LEGEND. CONTRACTOR TO VERIFY QUANTITIES BASED ON SPACING AND ADD ADDITIONAL PLANT MATERIAL (AT NO ADDITIONAL COST TO THE OWNER) REQUIRED TO MAINTAIN DESIGN INTENT DUE TO EXISTING SITE CONDITIONS NOT ANTICIPATED DURING DESIGN. LAYOUT/SPACING WILL EITHER BE TRIANGULAR OR LINEAR AS SHOWN ON PLAN OR LEGEND. LANDSCAPE ARCHITECT TO APPROVE FINAL LAYOUT IN FIELD PRIOR TO INSTALLATION.
2. CONTRACTORS SHALL NOTIFY THE LANDSCAPE ARCHITECT OF SITE CONDITIONS WHICH PREVENT INSTALLATION PER PLANS AND SPECIFICATIONS.
3. CONTRACTOR SHALL BE LIABLE FOR REMOVING AND RE-INSTALLING IRRIGATION EQUIPMENT, AND REPLANTING AREAS WHICH ARE NOT INSTALLED PER PLAN AND SPECIFICATIONS.
4. REFER TO PLANTING SPECIFICATIONS FOR INSPECTION/CERTIFICATION SCHEDULE.
5. IRRIGATION SYSTEM SHALL BE INSTALLED AND OPERATIONAL PRIOR TO INSTALLATION OF PLANT MATERIALS.
6. TREES AND SHRUBS SHALL BE PLANTED AFTER GRAVEL PLACEMENT, BUT NOT BEFORE IRRIGATION COVERAGE TEST NO. 1 HAS BEEN APPROVED. (SEE SPECIFICATIONS).
7. LANDSCAPE CONTRACTOR SHALL TAKE FOUR (4) SOIL SAMPLES FROM THE SITE AT LOCATIONS APPROVED BY THE LANDSCAPE ARCHITECT. THE SAMPLES SHALL BE TAKEN AT A DEPTH OF 6" AFTER ROUGH GRADING AND SUBMITTED TO AN APPROVED SOIL AND PLANT LABORATORY FOR AGRICULTURAL SUITABILITY TESTING. THE COST OF TESTING SHALL BE INCLUDED IN THE CONTRACTOR'S BID.
8. THE RECOMMENDATIONS OF THE SOIL REPORT SHALL SUPERSEDE THE SOIL PREPARATION AND BACKFILL MIX SPECIFICATIONS (SEE SPECIFICATIONS). THE CONTRACTOR SHALL SUBMIT A COPY OF ALL SOILS REPORTS TO THE LANDSCAPE ARCHITECT PRIOR TO MODIFICATION OF THESE SPECIFICATIONS.
9. SHREDDED MULCH INSTALLATION: INSTALL SHREDDED MULCH WITHIN BASINS OF ALL TREE AND SHRUB CONTAINER PLANTS PERDETAILS AND SPECIFICATIONS UNLESS OTHERWISE INDICATED ON PLANS.
10. CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS AND/OR REPLACEMENT OF ANY DAMAGED LANDSCAPE AREAS BEYOND THE LIMIT OF WORK, INCLUDING REPAIRING ANY IRRIGATION LINES/SPRINKLER HEADS, THAT IS A DIRECT RESULT OF THE LANDSCAPE CONSTRUCTION AND/OR HIS SUB-CONTRACTOR. REPLACEMENT ITEMS SHALL BE EXACT DUPLICATION OF ORIGINAL WORK OR PLANTS, UNLESS OTHERWISE APPROVED BY THE LANDSCAPE ARCHITECT.
11. CLEAN-UP SHALL TAKE PLACE ON A DAILY BASIS UNLESS OTHERWISE APPROVED BY THE OWNER'S REPRESENTATIVE.
12. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN ALL GRADES AND FLOW LINES AS SHOWN ON THE GRADING PLAN.
13. SOIL AMENDMENTS SHALL BE PLACED AND INCORPORATED INTO SOILS AS DESIGNATED IN THE SOILS TEST COMPLETED BY SOILS AND PLANT LABORATORY, INC. DATED JUNE 22, 2012 PRIOR TO INSTALLATION OF PLANTS AND SEEDING. ANY ADDITIONAL SOIL AMENDMENTS NEEDED AS A RESULT OF THE SOIL TESTING, AS REQUIRED BY CONTRACTOR, SHALL BE PLACED PRIOR TO SEEDING AND PLANTING OF CONTAINER PLANTS.
14. PLANT MATERIAL SHALL BE FROM LOCAL SOURCES, AND WHERE POSSIBLE, FROM WITHIN SUNSHINE CANYON REGION.
15. CONTAINER PLANTS SHALL BE OBTAINED FROM A LOCAL SUPPLIER OR COMMERCIAL NURSERY EXPERIENCED IN THE PROPAGATION OF NATIVE PLANT SPECIES. PRIOR TO DELIVERY, THE ROOT SYSTEMS OF THE PLANTS WILL BE INSPECTED BY THE RESTORATION SPECIALIST TO ENSURE THAT ROOTS ARE STRAIGHT AND WELL ESTABLISHED. ROOT-BOUND PLANTS (THOSE WITH COILED ROOTS) WILL NOT BE ACCEPTED.
16. CONTAINER PLANTS SHALL BE INSTALLED ONLY BETWEEN NOVEMBER 1 AND MARCH 1 AND WHEN NATURAL RAINFALL OR IRRIGATION HAS MOISTENED THE SOIL. IN ALL PLANTING AREAS THE SOIL SURFACE WILL CONTAIN RESIDUAL MOISTURE WITHIN THE ROOT ZONE OF THE CONTAINER PLANTS TO BE INSTALLED. IF THE SOIL DOES NOT CONTAIN SUFFICIENT MOISTURE, THEN PRIOR TO INSTALLATION THE PLANTING AREA WILL BE WATERED FOR THREE CONSECUTIVE DAYS TO ADEQUATELY SATURATE THE SOIL TO A MINIMUM DEPTH OF ONE AND ONE-HALF TIMES THE DEPTH OF THE CONTAINERS TO BE PLANTED. WHEN THE SOIL HAS DRAINED TO FIELD CAPACITY (FULL MOISTURE CONTENT AFTER DRAINAGE OF SOIL PORE SPACE), AND WHEN THE SOIL IS DRY ENOUGH TO SUPPORT FOOT TRAFFIC, THE PLANTS INDICATED FOR THE SITE WILL BE PLANTED USING THE FOLLOWING PROCEDURE:
   - WITH A STANDARD EXCAVATION DEVICE (SHOVEL, AUGER, ETC.) EXCAVATE A HOLE SOMEWHAT WIDER THAN THE CONTAINER AND ONE INCH LESS THAN THE DEPTH OF THE CONTAINER TO THE CROWN OF THE ROOT BALL.
   - EACH PLANTING HOLE WILL BE FILLED WITH WATER AND ALLOWED TO DRAIN UNTIL NO FREE MOISTURE REMAINS IN THE HOLE.
   - IMMEDIATELY AFTER DRAINING, THE PLANT WILL BE REMOVED CAREFULLY FROM ITS CONTAINER AND THE ROOT VOLUME LOOSENED SOMEWHAT WITH GENTLE PRESSURE ON THE SIDES OF THE ROOT MASS.
   - THE PLANT WILL IMMEDIATELY BE PLACED IN THE PLANTING HOLE SO THAT THE TOP OF THE CONTAINER SURFACE WILL BE SLIGHTLY HIGHER THAN THE SOIL SURFACE AFTER REFILLING.
   - BACKFILL THE HOLE WITH NATIVE SOIL, MINIMIZING LARGE ORGANIC AND ROCK MATTER THAT MAY INHIBIT ROOT GROWTH.
   - FIRMLY PRESS DOWN SOIL AROUND THE ROOT-BALL TO ELIMINATE AIR SPACE WITHIN THE SOIL AND TO ENSURE GOOD ROOT TO SOIL CONTACT.
   - MAKE SURE THAT THE CROWN OF THE ROOT MASS IS AT OR SLIGHTLY ABOVE GRADE.
   - CREATE A STRUCTURAL BASIN AT THE OUTSIDE EDGE OF THE ROOT BALL TO SEQUESTER RAINWATER IN A LOCATION WHERE IT WILL INFILTRATE THE ROOT BALL.
   - DO NOT CREATE A DEPRESSION THAT WILL CAUSE WATER TO POND IN DIRECT CONTACT WITH THE STEM OF THE PLANT.

PLANTING LEGEND:

SYMBOL CALLOUT	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY
SHRUBS					
S-1	Artemisia californica	California Sagebrush	1 gal.	50/Acre	234
S-2	Baccharis pilularis	Coyote Bush	1 gal.	45/Acre	210
S-3	Mimulus auranticus longiflorus	Monkey Flower	1 gal.	30/Acre	140
S-4	Sambucus mexicana	Blue Elderberry	5 gal.	15/Acre	70
EX-1	Existing Vegetation to remain				

PHOTO SUBMITTAL NOTE:
ALL PLANT MATERIAL, INCLUDING TREES, SHRUBS, AND VINES, SHALL BE INSPECTED AND APPROVED BY THE RESTORATION SPECIALIST AND/OR LANDSCAPE ARCHITECT, VIA PHOTO SUBMITTALS, PRIOR TO DELIVERY TO SITE. PHOTO SUBMITTALS SHALL INCLUDE NURSERY SUPPLIER AND DATE OF PHOTOS. ANY MATERIAL DELIVERED TO SITE WITHOUT APPROVAL IS SUBJECT TO REJECTION. PHOTO SUBMITTALS SHALL BE SENT TO RESTORATION SPECIALIST AND/OR LANDSCAPE ARCHITECT A MINIMUM OF 48 HOURS PRIOR TO SHIPMENT OF MATERIAL. SUBMITTALS SHOULD INCLUDE SOME TYPE OF SCALE REFERENCE IN PHOTO (I.E. PERSON, MEASURING TAPE, ETC.). TREES SHALL BE NOTED WITH HEIGHT (FROM FINISH GRADE IN CONTAINER) AND CANOPY HEAD SIZE. LANDSCAPE ARCHITECT SHALL BE NOTIFIED OF SCHEDULED NURSERY DELIVERY TIMES A MINIMUM OF 24 HOURS PRIOR TO SHIPMENT. REFER TO PLANTING SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS REGARDING QUALITY OF NURSERY STOCK.

SPOTTING OF THE PLANTS:
ALL PLANTS SHALL BE SPOTTED IN GROUPS THROUGHOUT THE SEEDED SITE FOR A NATURAL APPEARANCE AS SHOWN. UNDER THE DIRECTION OF THE RESTORATION SPECIALIST AND/OR THE LANDSCAPE ARCHITECT, MODIFICATIONS MAY BE MADE TO EACH AREA TO ENSURE STRUCTURAL DIVERSITY BASED ON THE SPECIES AND PLANT SIZES. THE SPACING DISTANCES GIVEN IN THE PLANTING PALETTE CAN BE USED AS GUIDELINES FOR AVERAGE DISTANCES, BUT THE LANDSCAPE CONTRACTOR SHALL AVOID REGULAR PATTERNS TO ENSURE A NATURAL APPEARANCE.

PLAN CROSS REFERENCES

FOR NOTES AND LEGENDS, SEE THIS SHEET
FOR DETAILS, SEE SHEET L-8
FOR CORRESPONDING GRADING PLAN SEE SHEET L-2
FOR CORRESPONDING IRRIGATION PLAN SEE SHEET L-5

NORTH

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LICENSED LANDSCAPE ARCHITECT
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Signature
7-31-14
Renewal Date
9-28-12
Date
STATE OF CALIFORNIA

PROJECT / CLIENT

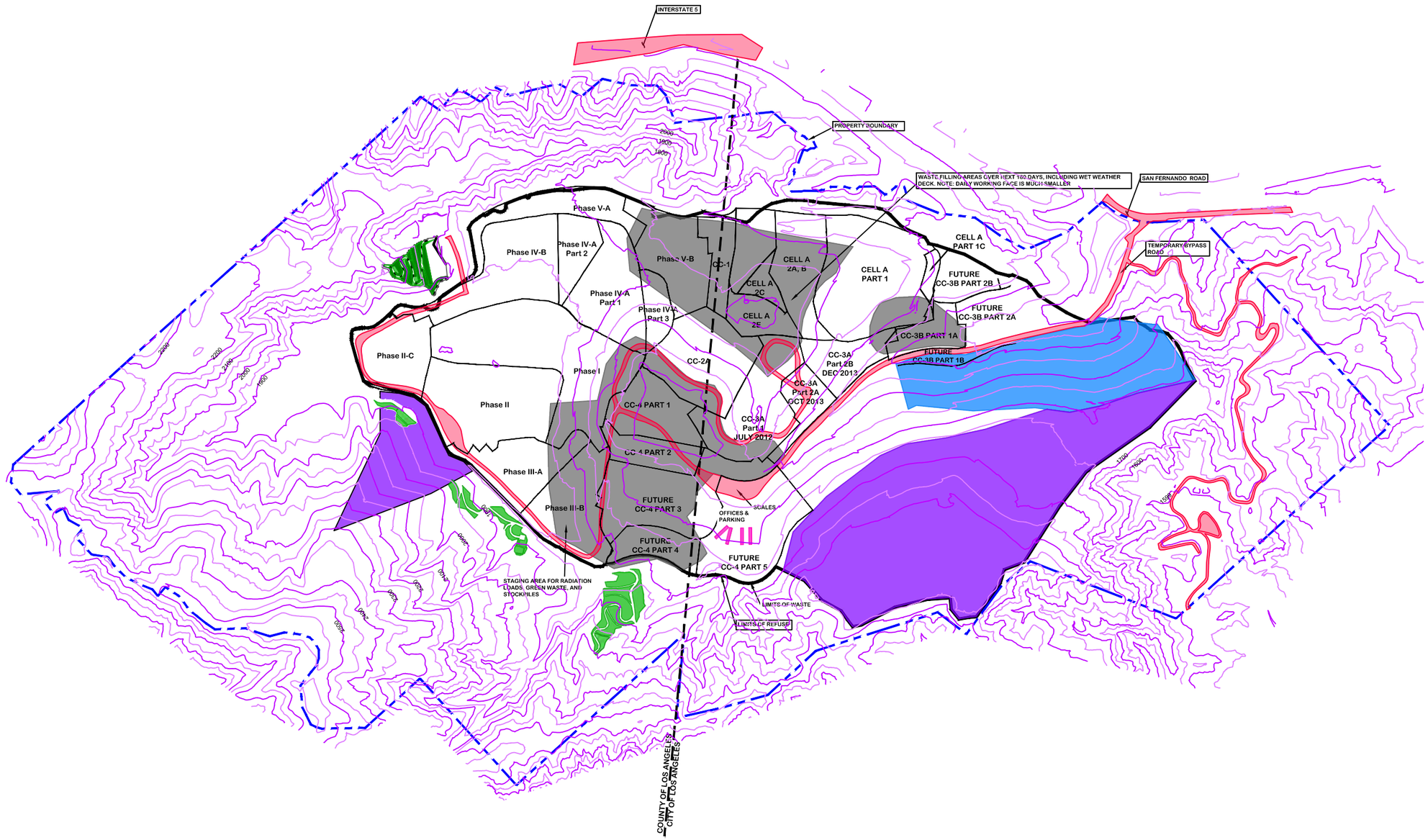
CITY SOUTH C TRIAL PLOT
SUNSHINE CANYON LANDFILL
14747 SAN FERNANDO ROAD
SYLMAR, CA 91342

SHEET TITLE

PLANTING PLAN

REVISIONS

DRAWN BY	GPD/JGG
CHECKED BY	JRC
DATE	9/28/12
SCALE	1" = 30'
JOB NUMBER	1214
SHEET NUMBER	L-7



NORTH

GRAPHIC SCALE

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

LEGEND

- 1500 EXISTING 50 FT CONTOUR
- EXISTING 10 FT CONTOUR
- PROPERTY BOUNDARY
- EXISTING APPROVED LINERS
- EXISTING ROADS
- LIMITS OF REFUSE

VEGETATION STATUS MD ACTIVITY 3nd QUARTER 2017	
	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.
	4Q2016 HYDROSEED APPLICATION
	VEGETATION PILOT PROJECT USING INTERIM SEED MIX

C:\Users\glo-user\Documents\Republic Services\Sunshine Canyon\Maps and Exhibits\2014.0002-SCL-20170301-Vegetation Status Map.dwg Nov 01, 2017 - 10:11am By: glo-user

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EXISTING TOPOGRAPHY PREPARED BY COOPER AERIAL SURVEYS DATED MARCH 01, 2017

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: OCT 2017
DESIGNED BY: J AMAYA
DRAWN BY: J AMAYA
CHECKED BY: R JOHNSON
APPROVED BY: R JOHNSON

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SUNSHINE CANYON LANDFILL
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SITE VEGETATION STATUS AND ACTIVITY
Q3 2017

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