June 8, 2017

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

FROM: Russell Bukoff, Staff

STAFF REPORT
FIRST QUARTER 2017 VEGETATION PROJECT STATUS REPORT
AT SUNSHINE CANYON CITY/COUNTY LANDFILL

Republic Services, Inc. (Republic) submitted the First Quarter 2017 Vegetation Project Status Report for the Sunshine Canyon City/County Landfill, dated May 10, 2017, (attached). The Status Report is a requirement of Condition No. 18 of the Finding of Conformance granted to the Landfill by the Task Force on December 18, 2008.

The Status Report provides the progress of revegetation projects undertaken during the first quarter of 2017.

City Side Sage Mitigation Pilot Project Area (Pilot Project Area) - Deck C

- Saltbush is dominant and thriving, as well as the following native species: Encelia californica, Artemisia californica, and Salvia sp. Some native seedlings were observed; however, overall regeneration appeared to be low.
- Non-native grasses are present and work crews are weeding the Pilot Project Area to reduce the amount of weeds

City Side Sage Mitigation Area - Deck B

- Restoration improvement plans are currently under development and should be completed in May 2017. Planting may not begin until Fall 2017/Winter 2018.

Hydroseeding Trial Project

- A trial hydroseeding project was initiated in April 2017 utilizing a new hydroseed mix approved by the County and City of Los Angeles in February 2017. The purpose of the trial project is to determine the appropriate application of soil amendments needed to improve the soil conditions for the germination of the hydroseed mix in the interim areas of the Landfill.
- Test Areas 1, 2, and 3 consist of approximately 4,000 square foot sections with varying levels of potassium sulfate, triple superphosphate, can calcium carbonate/limestone added.
- Test Area 4 consists of an approximately 4,000 square feet area dividing into 3 subsections using varying levels of imported top soil.
- An irrigation system has been installed to provide potable water on a set schedule.

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

RWB
Attach.

SUNSHINE CANYON LANDFILL

May 10, 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
First 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 first 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

On February 21, 2017, a seed mix for hydroseeding interim slopes at the landfill was approved by Mr. Joe Decruyenaere, of the Los Angeles County Department of Regional Planning, and Mr. Nick Hendricks, of the City of Los Angeles Department of City Planning (Attachment 1). With this approval, a trial project using the approved seed mix was initiated in April 2017. The purpose of the trial project is to determine the appropriate application of soil amendments needed to improve the soil conditions for the germination of the hydroseed mix. The primary components of the trial project are the following:

- Collection of soil samples to determine appropriate amendments:
  - the results and recommendations are included in Attachment 2
- Three (3), approximately 4,000 square foot sections with amendments added as follows:
  - Test Area #1 Amendments:
    - Potassium sulfate: 10 lbs/1000 ft2
    - Triple superphosphate: 4 lbs/1000 ft2
    - Calcium carbonate/limestone: 200 lbs/1000 ft2
  - Test Area #2 Amendments:
    - Potassium sulfate: 10 lbs/1000 ft2
    - Triple superphosphate: 4 lbs/1000 ft2
    - Calcium carbonate/limestone: 400 lbs/1000 ft2
  - Test Area #3 Amendments:
    - Potassium sulfate: 10 lbs/1000 ft2
    - Triple superphosphate: 4 lbs/1000 ft2
    - Calcium carbonate/limestone: 600 lbs/1000 ft2
- One (1) approximately 4,000 square foot area (Test Area #4):
  - No amendments added. Topsoil imported in accordance with the recommendations provided for the topsoil included in Attachment 3 (Photo Exhibit – photos 8 & 9).
  - Test Area #4 divided into three subsections as follows:
    - Subsection #1:
      - No amendments, imported topsoil disked into top 2” of dirt then 10” of topsoil added before hydroseeding;
    - Subsection #2:
      - No amendments, imported topsoil disked into to top 2” of dirt then 6” of topsoil added before hydroseeding;

- Subsection #3:
  - No amendments, imported topsoil disked into to 2" of dirt then 2" of topsoil added before hydroseeding.

An irrigation system has been installed for this trial project to provide potable water on a set schedule due to the upcoming warmer weather months.

The placement and incorporation of the soil amendments was completed on Monday, April 24, 2017 (Photo Exhibit – photo 6).

The topsoil was disked in the soil and placed on Friday, May 5, 2017.

Irrigation installation was completed on Monday, May 1, 2017.

Hydroseeding was completed Wednesday, May 10, 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 2017.

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 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 – 1Q2017

During the first 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.
- Straw wattle installation to address erosion and provide moisture for seedlings to germinate.

4.2 City South Deck B

As previously reported, a proposal to continue sage mitigation was submitted to the TAC on August 15, 2016. Based on the proposal a decision to move forward on the City South B Deck was made. During the November 8, 2016, vegetation meeting, the sage mitigation proposal for Deck B and Deck A was discussed. The construction plans are currently being developed.

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 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 first quarter of 2017 are provided in Attachment 4. 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 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, First 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 – First Quarter 2017

Architerra personnel inspected the pilot project area during the first quarter of 2017. The inspection report is included in Attachment 6 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 2017 based on this methodology is included in Attachment 7.

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	Approved Sunshine Canyon Landfill Interim Slope Seed Mix
Attachment 2	Trial Project Area Soil Sample Results and Recommendations
Attachment 3	Topsoil Specifications for Trial Project Area
Attachment 4	JMA Progress Report, City-Side Sage Mitigation Area
Attachment 5	JMA Progress Report, County-Side Sage Mitigation Area
Attachment 6	Architerra Design Group, Field Observation Report, South City Sage Mitigation Pilot Project – 1Q2017
Attachment 7	JMA Quarterly Monitoring Report - Coastal Sage Scrub Pilot Study, 1Q2017

Drawings

Drawing 1	1Q2017 Site Vegetation Areas

Photo Exhibit

Photo Exhibit	Interim Slope Seed Mix Trial Project

ATTACHMENT 1

SUNSHINE CANYON APPROVED INTERIM SEED MIX

APPROVED INTERIM SEED MIX (Non-native Species Removed) (February 2017)

	Common Name	Scientific Name	Native	CAL-IPC Rating	Life Cycle	Bloom Period	Germination timing	Germination notes / Explanation for why this species is recommended or is not recommended	pH Range	Original List	Lbs/Acre	Cost/lb.	Available from S&S seeds?
1	common yarrow	*Achillea millefolium*	Y	-	perennial	Apr.-Aug.	moderate to quick	herb with a spreading growth habit. pH too high for interim slopes, County slopes, City slopes (GD 5.5-8.0) (BL 5-8)	5-8	AL, BL	1	36	Yes
2	California brome, Cucamonga brome	*Bromus carinatus*	Y	-	perennial	Feb.-Mar.	quick, Fall planting	Quick growing short term perennial, very adaptable (GD 5.5-8.0) (BL 5.5-8.0) SAME	5.5-8	AL, BL, GA	6	8	Yes
3	bottlebrush squirreltail	*Elymus elymoides*	Y	-	perennial	Apr.-May	moderate, Fall planting	Widespread across all habitat types (GD 6.0-8.4) (BL other Elymus species range from 5 - 9 or 6 – 8 pH, so we used 5-9pH)	5-9	AL	2	27	Yes
4	slender wheatgrass	*Elymus trachycaulus*	Y	-	perennial	May.-June	quick, Fall planting	Good species for cover, palatable for animals (GD 5.6-9.0) (BL other Elymus species range from 5 - 9 or 6 – 8 pH, so we use	5-9	AL	3	18	Yes
5	annual ryegrass	*Festuca microstachys*	Y	-	annual	Apr.-June	quick, Fall planting	Festuca microstachys is a quick growing annual grass. Prefers open sandy soils	6-8	BL	4	22	Yes
6	annual sunflower	*Helianthus annuus*	Y	-	annual	June-Aug.	quick but late germination	Is boron tolerant	5-8	AL, BL	1	48	Yes
7	California barley	*Hordeum brachyantherum ssp. brachyantherum* (or *Hordeum rachyantherum ssp. californicum)*	Y	-	perennial	May-Jul.	quick	Shorter lived perennial that provides good cover and performance. H. brachyantherum is typically found in dry meadows while H. californicum is frequently in wetlands	5-7.2	GA	2	H. brach - $30 H. cal - $40	Yes
8	yellowray goldfields	*Lasthenia glabrata* ssp. *glabrata*	Y	-	annual	Feb.-June	quick, Fall/Winter planting	Quick to grow, frequently found in washes and riparian fringes	6.5 - 9	BL	1	48	Yes
9	sky lupine	*Lupinus nanus*	Y	-	annual	Mar.-May	quick, Fall/Winter planting	Widespread across all habitat types, prefers slopes. Some propagators prefer to use innoculant coated legume seed.	6 - 8.5	BL	2	48	Yes
10	arroyo lupine	*Lupinus succulentus*	Y	-	annual	Feb.-May	quick, Fall/Winter planting	Well adapted across all soil and habitats. Some propagators prefer to use innoculant coated legume seed.	6 - 8.5	BL	3	18	Yes
11	baby blue eyes	*Nemophila menziesii*	Y	-	annual	Mar.-June	quick, Fall/Winter planting	Well adapted across all soil and habitats	6 - 8	BL	2	32	Yes
12	California plantain	*Plantago erecta*	Y	-	annual	Mar.-Apr.	quick	Prefers sandy or gravelly areas	4 - 8	BL	1	32	Yes
13	desert plantain	*Plantago ovata (* ssp. *fastigiata)*	Y	-	annual	Jan.-Apr.	quick	Prefers sandy or gravelly areas. This is a very good cover species that is inexpensive and does not linger typically beyond the first year so we put a high rate the first year in order to have a few plants come back in following years.	5.1-8.1	AL	20	3	Yes
14	lacy phacelia	*Phacelia tanacetifolia*	Y	-	annual	Mar.-May	moderate	Seeds/reseeds well	6 - 8	BL	2	16	Yes
									Total	**lbs/acre**	**50**		

Note: *Seed germination and performance is subject to many variables including (but not limited to) water availability, soil condition, water quality, seed quality and many other factors.*

Inoculant: S&S Seeds recommends using AM 120 Mycorrhizal Inoculant in order to promote maximum root growth potential and minimize the water needs going forward. The application rate is 60 lbs/acre.

Mulch: S & S Seeds recommends using Conwed 1000 Wood Fiber Mulch, or equivalent wood fiber or alternate fiber product, at a rate of 2,000 pounds per acres plus Ecology Control M-Binder at 150 lbs./acre. Wood fiber must be a long strand, whole wood fiber, thermomechanically processed from clean whole wood chips. Application rates may vary depending on the "mulch" product used.

ATTACHMENT 2

WALLACE LABORATORIES, LLC
365 Coral Circle
El Segundo, CA 90245
phone (310) 615-0116 fax (310) 640-6863

April 6, 2017

Mike Roberts, mroberts@oakridgelandscape.net
Ken Aldrich, ken@oakridgelandscape.net
Oakridge Landscape, Inc.
21310 Nordhoff Street, # 3
Chatsworth, CA 91311

RE: Vegetative Cover for slopes at Sunshine Canyon
Site visit on April 4, 2017

Dear Mike and Ken,

The soils on the slope are fluffy and friable in the top several inches. This generally is an indicator that the salinity is high.

I took composite samples from the mid slope area and from the lower portion of the slope. Both the top several inches from the fluffy soil and also between about 4 and 6 inches where the soil was not fluffy were sampled.

The pH of top 2 inches in the lower portion is highly acidic at 3.78. Salinity is high at 7.87 millimho/cm.

The pH of between 4 and 6 inches in the lower portion is highly acidic at 3.32. Salinity is high at 9.23 millimho/cm.

The pH of top 2 inches in the mid portion is highly acidic at 3.27. Salinity is high at 10.21 millimho/cm.

The pH of between 4 and 6 inches in the mid portion is highly acidic at 3.21. Salinity is high at 9.34 millimho/cm.

Normally for good growth, the desirable pH range is between about 6.5 and 7.5. Since the pH scale is logarithmic, pH 3.5 is 1,000 times more acidic that pH 6.5.
a
Salinity is due to excessively high soluble sulfur. Soils are defined as being saline if the salinity is over 4 millimho/cm.

These soils are highly acidic due to the oxidization of naturally occurring iron pyrite, a sulfur containing mineral. The oxidation results in the formation of sulfuric acid.

We also measured the total sulfur content, both unoxidized and oxidized. The agricultural soil test measured combined sulfur. The results indicate that only a portion of the sulfur has been oxidized - between 39% and 48%. The amount of acidity may double when the unreacted sulfur fully oxidizes.

The required amount of limestone per 1,000 square feet incorporated 6 inches deep was calculated to neutralize the current acidity.

Pounds of limestone per 1,000 square feet incorporated 6 inches deep
Lower section, top 2 inches - 200
Lower section, 4 to 6 inches - 250

Mid section, top 2 inches - 460
Mid section, 4 to 6 inches - 415

The soils have low potassium, modest phosphorus, high iron, high manganese, modestly high zinc and copper. Boron is modest. Magnesium and available sodium are high.

High magnesium is undesirable. Magnesium limits the uptake of potassium and calcium. It acts like sodium and disperses soil crumbs. Periodic additions of calcium can be made to reduce the effects of high magnesium.

SAR (sodium adsorption ratio) ranges from 3.7 to 5.0. Ideally SAR should be less than about 3.

We measured the average soil organic matter and soil texture of the four samples. The soil is a loam. Soil organic matter is good at 3.89% on a dry weight basis.

Recommendations

Incorporate the following, rates are per 1,000 square feet incorporated 6 inches deep:

Potassium sulfate (0-0-50) – 10 pounds
Triple superphosphate (0-45-0) – 4 pounds
ground calcium carbonate/limestone - try three different rates

A - 200 pounds
B - 400 pounds
C - 600 pounds

Leach the amended soils and lower the salinity before hydroseeding. A target value can be 4 millimho/cm. Apply a small amount of the specified seed mix over the amended soil by hand and evaluate when it germinates during the leaching process. Place test areas at the top, mid and lower portions of the slope. The upper slopes will have lower salinity than the lower slopes since salinity will be leached downward. There are methods to reduce leachate water but that requires altering the soil on the slopes.

For site maintenance, apply calcium nitrate (15.5-0-0) at 5 pounds per 1,000 square feet about as needed. The addition of calcium will give a more favorable level of calcium. Nitrate ions helps to increase the soil pH.

Monitor the soil chemistry monthly. Test areas of better growth and poorer growth in order to determine the limits of the specified species. Evaluate soils by depth.

Some species are expected to be more tolerant than other species.

Monitor plant mineral content with leaf tissue testing.

Adjust the maintenance program as needed.

Sincerely,

Garn A. Wallace, Ph. D.
GAW:n

WALLACE LABS
365 Coral Circle
El Segundo, CA 90245
(310) 615-0116

SOILS REPORT Print Date Apr. 5, 2017 Receive Date 4/4/17

Location Sunshine Cyn

Requester Mike Roberts, Oakridge Landscape, Inc.

graphic interpretation: * very low, ** low, *** moderate

ammonium bicarbonate/DTPA * * * * high, * * * * * very high

extractable - mg/kg soil

Interpretation of data

low medium high

Sample ID Number	17-95-25		17-95-26		17-95-27		17-95-28	
Sample Description	Lower, 0-2"		Lower, 4-6"		Mid-Slope, 0-2"		Mid-Slope, 4-6"	
elements		graphic		graphic		graphic		graphic
phosphorus (0 - 7 8-15 over 15)	9.71	***	12.60	****	10.93	***	14.89	****
potassium (0-60 60 -120 121-180)	23.69	*	7.31	*	24.08	*	5.22	*
iron (0 - 4 4 - 10 over 10)	149.09	*****	254.17	*****	173.91	*****	270.55	*****
manganese (0- 0.5 0.6- 1 over 1)	64.60	*****	51.04	*****	77.10	*****	52.96	*****
zinc (0 - 1 1 - 1.5 over 1.5)	3.55	****	2.93	****	6.05	****	2.93	****
copper (0- 0.2 0.3- 0.5 over 0.5)	2.86	****	2.42	****	3.99	*****	2.57	****
boron (0- 0.2 0.2- 0.5 over 1)	0.20	***	0.21	***	0.20	**	0.23	***
calcium	285.34	***	289.58	***	660.89	*****	287.90	***
magnesium	731.66	*****	740.56	*****	1,339.26	*****	846.43	*****
sodium	506.64	*****	691.07	*****	747.00	*****	791.50	*****
sulfur	2,681.19	*****	4,242.07	*****	3,751.82	*****	4,659.65	*****
molybdenum	0.24	****	0.19	****	0.33	****	0.12	****
nickel	5.75	***	5.64	***	10.39	****	6.95	***
The following trace elements may be toxic. The degree of toxicity depends upon the pH of the soil, soil texture, organic matter, and the concentrations of the individual elements as well as to their interactions — **aluminum**	n d	*	n d	*	n d	*	n d	*
arsenic	0.06	*	0.04	*	0.11	*	0.03	*
barium	n d	*	n d	*	n d	*	n d	*
cadmium	0.31	*	0.34	*	0.66	*	0.50	*
chromium	0.08	*	0.06	*	0.12	*	0.07	*
cobalt	0.94	**	0.91	**	1.55	***	1.00	***
lead	0.32	*	0.50	*	0.45	*	0.42	*
lithium	1.40	**	1.74	**	3.03	***	2.10	***
mercury	n d	*	n d	*	n d	*	n d	*
selenium	0.54	**	0.57	**	0.39	*	0.32	*
The pH optimum depends upon soil organic matter and clay content- for clay and loam soils: under 5.2 is too acidic 6.5 to 7 is ideal over 8.0 is too alkaline — **silver**	n d	*	n d	*	n d	*	n d	*
strontium	0.16	*	0.57	*	0.25	*	0.64	*
tin	n d	*	n d	*	n d	*	n d	*
vanadium	0.24	*	0.25	*	0.42	*	0.25	*
Saturation Extract								
pH value	3.78	*	3.32	*	3.27	*	3.21	*
ECe (milli-mho/cm)	7.87	*****	9.23	*****	10.21	*****	9.34	*****
		millieq/l		millieq/l		millieq/l		millieq/l
The ECe is a measure of the soil salinity: 1-2 affects a few plants 2-4 affects some plants, > 4 affects many plants. — **calcium**	426.0	21.3	364.4	18.2	329.0	16.5	348.9	17.4
magnesium	959.5	79.3	1,040.7	86.0	1,316.4	108.8	965.0	79.8
sodium	596.8	25.9	748.3	32.5	765.4	33.3	807.3	35.1
potassium	2.5	0.1	1.0	0.0	2.3	0.1	0.5	0.0
cation sum		126.6		136.8		158.6		132.3
problems over 150 ppm — **chloride**	10	0.3	7	0.2	7	0.2	6	0.2
good 20 - 30 ppm — **nitrate as N**	5	0.4	1	0.1	3	0.2	1	0.1
phosphorus as P	0.1	0.0	0.3	0.0	0.6	0.0	0.3	0.0
toxic over 800 — **sulfate as S**	2,265.9	141.6	2,607.5	163.0	3,114.2	194.6	2,656.1	166.0
anion sum		142.3		163.3		195.1		166.3
toxic over 1 for many plants — **boron as B**	0.71	***	0.65	***	0.76	***	0.70	***
increasing problems start at 3 — **SAR**	3.7	***	4.5	***	4.2	***	5.0	***
est. gypsum requirement-lbs./1000 sq. ft.	245		279		486		331	
relative infiltration rate	fair/slow		fair/slow		fair/slow		fair/slow	
estimated soil texture	sandy loam		sandy loam		sandy loam		sandy loam	
lime (calcium carbonate)	no		no		no		no	
organic matter	low/fair	hydrophobic	low/fair	hydrophobic	low/fair		low/fair	hydrophobic
moisture content of soil	4.3%		11.9%		7.2%		13.6%	
half saturation percentage	23.8%		23.6%		23.7%		24.8%	

ideal percentages of cations				% saturation		% saturation		% saturation		% saturation
abt 5 %	potassium	millieq K	0.08	0%	0.02	0%	0.08	0%	0.02	0%
< 3%	sodium	millieq Na	1.70	8%	2.32	8%	2.58	9%	2.82	9%
abt 70%	calcium	millieq Ca	8.51	40%	12.92	47%	8.64	29%	13.23	44%
10 - 15%	magnesium	millieq Mg	4.50	21%	4.68	17%	6.20	21%	5.83	19%
5-10%	hydrogen	millieq H	6.40	30%	7.52	27%	12.64	42%	8.40	28%
		total millieq/100 grams	21.19		27.46		30.13		30.29	

Elements are expressed as mg/kg dry soil or mg/l for saturation extract.
pH and ECe are measured in a saturation paste extract. nd means not detected.
Analytical data determined on soil fraction passing a 2 mm sieve.

ATTACHMENT 3

WALLACE LABORATORIES, LLC
365 Coral Circle
El Segundo, CA 90245
phone (310) 615-0116 fax (310) 640-6863

Suitable Import Soil

General - Topsoil shall be free of roots, clods, stones larger than 1-inch in the greatest dimension, pockets of coarse sand, noxious weeds, sticks, lumber, brush and other litter. It shall not be infested with nematodes or other undesirable disease-causing organisms such as insects and plant pathogens.

Topsoil shall be friable and have sufficient structure in order to give good tilth and aeration to the soil.

Gradation limits - soil shall be a sandy loam or loam. The definition of soil texture shall be the USDA classification scheme cited below. Gravel over 2 millimeters in diameter shall be less than 20% by weight.

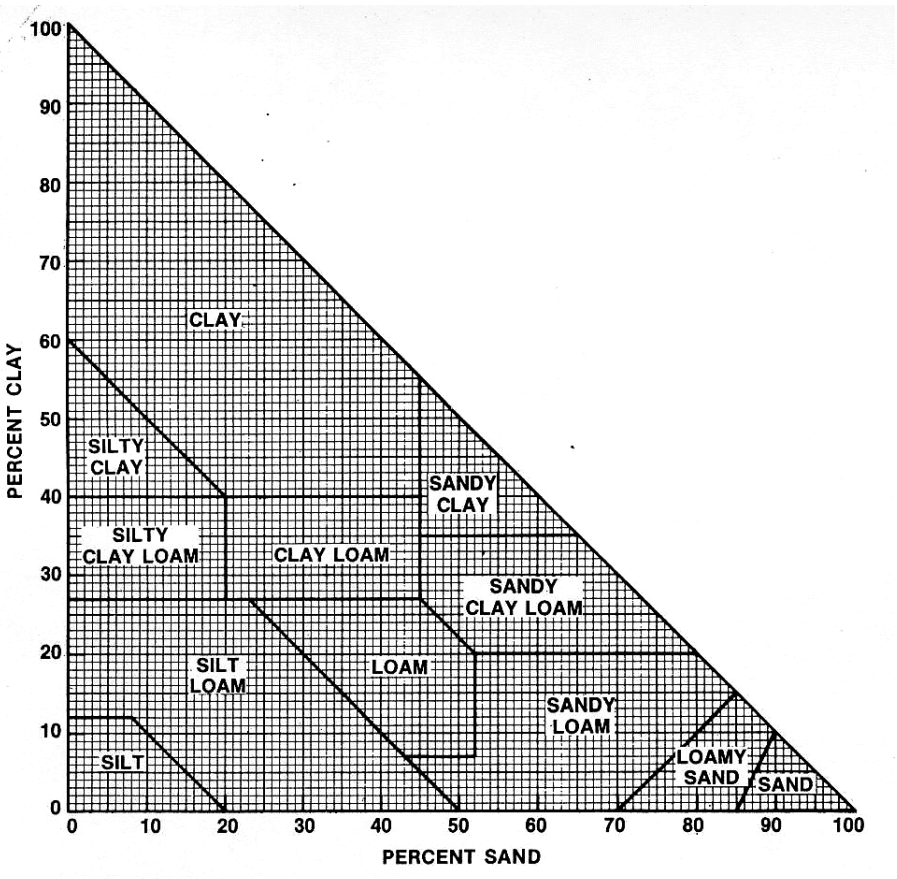

Fig. 15–3. Textural triangle for soil textural analysis using the USDA classification scheme.

Permeability Rate - Hydraulic conductivity rate shall be not less than one inch per hour nor more than 10 inches per hour when tested in accordance with the USDA Handbook Number 60, method 34b or other approved methods.

Fertility - The range of the essential elemental concentration in soil shall be as follows for approval of source soil:

	Ammonium Bicarbonate/DTPA Extraction parts per million (mg/kilogram dry weight basis
phosphorus	10 - 40
potassium	100 - 220
iron	5- 35
manganese	0.6 - 6
zinc	1 - 8
copper	0.3 - 5
boron	0.2 - 1
magnesium	50 - 150
sodium	0 - 100
sulfur	25 - 500
molybdenum	0.1 - 2

Acidity - The soil pH range measured in the saturation extract (Method 21a, USDA Handbook Number 60) shall be 6.0 - 7.9.

Salinity - The salinity range measured in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 0.5 - 2.5 dS/m.

Chloride - The maximum concentration of soluble chloride in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 150 mg/l (parts per million).

Boron - The maximum concentration of soluble boron in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 1 mg/l (parts per million).

Sodium Adsorption Ratio (SAR) - The maximum SAR shall be 3 measured per Method 20b, USDA Handbook Number 60.

Aluminum – Available aluminum measured with the Ammonium Bicarbonate/DTPA Extraction shall be less than 3 parts per million.

Soil Organic Matter Content - Sufficient soil organic matter shall be present to impart good physical soil properties but not be excessive to cause toxicity or cause excessive reduction in the volume of soil due to decomposition of organic matter. The desirable range is 3% to 6%. The carbon:nitrogen ratio should be about 10.

Calcium Carbonate Content - Free calcium carbonate (limestone) shall not be present for acid-loving plants.

Heavy Metals - The maximum permissible elemental concentration in the soil shall not exceed the following concentrations:

	Ammonium Bicarbonate/DTPA Extraction parts per million (mg/kilogram) dry weight basis
arsenic	1
cadmium	1
chromium	10
cobalt	2
lead	30
mercury	1
nickel	5
selenium	3
silver	0.5
vanadium	3

If the soil pH is between 6 and 7, the maximum permissible elemental concentration shall be reduced 50%. If the soil pH is less than 6.0, the maximum permissible elemental concentration shall be reduced 75%. No more than three metals shall be present at 50% or more of the above values.

Phytotoxic constituent, herbicides, hydrocarbons etc. - Germination and growth of monocots and dicots shall not be restricted more than 10% compared to the reference soil. Growth inhibiting constituents must not be present.

November 2015

ATTACHMENT 4

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949-367-1000
www.jma-ca.com

SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

City-Side Sage Mitigation Area

Submittal Date: May 4, 2017	**Inspection Date:** April 19, 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, the saltbush (*Atriplex polycarpa and A. lentiformis*) cover is dominant and thriving from the winter rainfall. Other native species such as *Encelia Californica*, *Artemisia californica, and Salvia sp.* appear to be thriving as well. Some native seedlings were observed; however, overall regeneration appeared to be low. A decent amount of non-native grasses were present such as brome grasses (*Bromus* sp.), wild oats (*Avena* sp.), mustard, and Russian thistle (*Salsola tragus*). However, crews were weeding the area during the inspection and the non-native cover is likely now less than was observed.

Due to high wind conditions, no animals 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	[X] Weeds germinating /vegetative growth
[ ] Moderate weed coverage (seeding in high density)	[ ] Weeds flowering
[X] Minimal weed coverage	[ ] Weeds setting seed
	[ ] Weed desiccant/dormant

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

Middle Deck

General Comments:

There is minimal change to report on the Middle Deck from previous monitoring reports. Evidence of seed mix coverage is no longer discernible.

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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 (*Avena* sp.), mustard, and Russian thistle (*Salsola tragus*). 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 brome grasses and mostly desiccant wild oats (*Avena fatua*) dominate the vegetation cover within 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.

Brome grasses and Russian thistle generally dominate the non-native cover throughout the upper deck. Buckwheat is the most dominant native plant that is present, however, in low densities. Natural recruitment is low, due to poor soil conditions. Common barley and other non-native grasses currently dominate the vegetation cover.

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 [ ] 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.

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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.

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

• **Plant natives in areas dominated with non-natives.** The vegetated areas on the middle deck that are currently dominated with annual, non-native species have decent soil-texture conditions. These areas are not near as compacted as adjacent areas that are gravelly and mostly void of vegetation. In general, the soil texture within the vegetated areas with non-native vegetation is friable down to approximately 8-12 inches in depth. Various planting methods (i.e., planting container plants and hydroseeding) may be used to re-establish native plants on the middle and upper decks where non-natives currently dominate.

• **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

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controlled on a quarterly basis.

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

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

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Progress Report

City-Side Sage Mitigation Area

Photo Locations

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Progress Report

City-Side Sage Mitigation Area

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

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 with areas of bare ground in the foreground.

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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Progress Report

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.

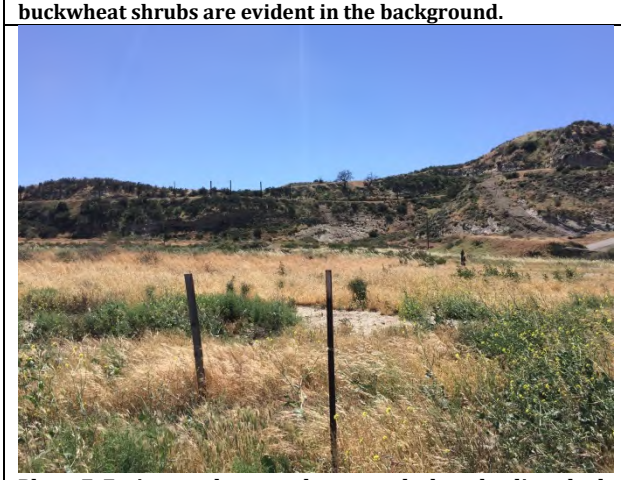

Photo 7. Facing southeast at the upper deck at the disturbed area that is currently dominated with Russian thistle and brome grasses.

ATTACHMENT 5

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SUNSHINE CANYON LANDFILL MITIGATION SITES

Progress Report

County-Side Sage Mitigation Area

Submittal Date: May 5, 2017	**Inspection Date:** April 19, 2017
To: Patti Costa	**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 have improved slightly from the past rainy season. Areas that were previously reported to have a moderate cover of vegetation (native and non-native) have a denser amount of vegetation now, including native species such as California sunflower (*Encelia californica*) and California buckwheat (*Eriogonum fasciculatum*). A 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, however, even these areas have more vegetation currently present than previously observed.

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, with mostly 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 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. However, annual grasses were observed in this area than in previous monitoring periods.

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

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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 previous monitoring periods, a moderate cover of native plants exists within vegetated areas. Annual non-native grasses and forbs currently dominate the understory and serve as ground cover in most of the vegetated areas. Brome grasses and shortpod mustard (*Hirschfeldia incana*) comprise approximately 25 percent of the total cover. California buckwheat dominates the native vegetation coverage with California sagebrush (*Artemisia californica*) as a co-dominant; comprising of approximately 75 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:	**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, but better than observed during previous monitoring periods due to the high amount of rainfall this year. 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 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 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

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Comments:
Annual, non-native weed species consist primarily of brome grasses (*Bromus* sp.), shortpod mustard, and wild oats (*Avena fatua*), all of which are flowering, setting seed, and/or dessicant. 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

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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 6

ARCHITERRA design group
landscape architecture and planning

ARCHITERRA DESIGN GROUP **FIELD OBSERVATION REPORT**

DATE OF VISIT:	04/18/17
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
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):

- As mentioned in the last quarterly report, vegetation rejuvenation has improved dramatically. 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*). There are also some native wildflowers blooming.
- Along the western edge of the deck, several invasive weeds have started to emerge and flower. These include: Russian Thistle (*Salsola* ssp.), Shortpod Mustard (*Hirshfeldia incana*), Red Brome Grass (*Bromus madritensis*), False Barley *(Hordeum murinum)* and Tree Tobacco (*Nicotiana glauca*). Architerra Design Group, Inc. has met with the maintenance contractor and discussed the removal of these invasive species and weed abatement work has begun.
- Many new seedlings of Black Sage, California Sagebrush, Coyote Brush, Saltbush, Coast Sunflower, and Creeping Wild Rye, were observed throughout the Trial Site. Coast Sunflower seems to be thriving in the understory of older Saltbush that has defoliated or died.
- During the last few months installation of new straw wattles has helped to minimize erosion in areas of the deck that were more exposed and lacking in vegetation. Some evidence of newly germinated species has been noticed around the wattles; this was one of the benefits observed during the early stages of the Trial Site revegetation.

City-Side Sage Mitigation (Deck B):

- The restoration improvement plans are currently under development and should be completed by May. At that time, Republic Services will review the plans and determine the scope of services for bidding for 2017. Planting may be delayed until Fall 2017/Winter 2018. A temporary irrigation system will be installed and utilized to establish the newly planted areas. We anticipate using the system for approximately 2-3 years.

- Soil from upper sediment basin is currently being tested for suitability and use within the new Deck B project site. It will be mixed with the existing deck soils to create the berming and microtopography, similar to how the Trial Site was constructed and graded. We have found through our observations at the Trial Site that by undulating the topography a greater diversity of CSS plants establish.
- Site boulders and maintenance paths are also designed into these improvements.
- Due to the success on the Trial Site, containerized plants and a combination of imprinting and hand broadcast seeding will be utilized moving forward as part of the revegetation. Hydroseeding will still prove to be an effective way to revegetate the deck slopes, along with containerized plantings.

New Mustard seedlings beginning to flower

Red Brome Grass choking out native Leymus grass

New Tree Tobacco seedlings

Coast Sunflower seedlings emerging from dead Saltbush understory

Coast Sunflower thriving at locations where Saltbush was thinned previously

Foothill Needle Grass amongst Saltbush and Coast Sunflower

Achnatherum species

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

California Poppy and Purple Sage in bloom

Goldfields wildflower (*Lasthenia californica*)

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

Newly installed straw wattles within the areas that are more exposed

New Saltbush seedling near new straw wattle

New Black Sage and California Sagebrush seedlings emerging in front of blooming Coast Sunflower

California Sagebrush and Big Saltbush seedlings

Good diverse mix of established Venturan CSS vegetation

Side-blotched Lizard bathing in the sun

Signed: Gregg Denson Date: 4/18/17

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 - April 2016 (East)

Photo Station #1 - April 2017 (East)

Photo Station #1 - April 2016 (North)

Photo Station #1 - April 2017 (North)

Photo Station #1 - April 2016 (West)

Photo Station #1 - April 2017 (West)

Photo Station #2 - April 2016 (East)

Photo Station #2 - April 2017 (East)

Photo Station #2 - April 2016 (North)

Photo Station #2 - April 2017 (North)

Photo Station #2 - April 2016 (South)

Photo Station #2 - April 2017 (South)

Photo Station #3 - April 2016 (East)

Photo Station #3 - April 2017 (East)

Photo Station #3 - April 2016 (North)

Photo Station #3 - April 2017 (North)

Photo Station #3 - April 2016 (West)

Photo Station #3 - April 2017 (West)

Photo Station #5 - April 2016 (East)

Photo Station #5 - April 2017 (East)

Photo Station #5 - April 2016 (North)

Photo Station #5 - April 2017 (North)

Photo Station #5 - April 2016 (West)

Photo Station #5 - April 2017 (West)

Photo Station #6 - April 2016 (East)

Photo Station #6 - April 2017 (East)

Photo Station #6 - April 2016 (North)

Photo Station #6 - April 2017 (North)

Photo Station #6 - April 2016 (West)

Photo Station #6 - April 2017 (West)

Photo Station #7 - April 2016 (East)

Photo Station #7 - April 2017 (East)

Photo Station #7 - April 2016 (West)

Photo Station #7 - April 2017 (West)

Photo Station #7 - April 2016 (North)

Photo Station #7 - April 2017 (North)

Photo Station #8 - April 2016 (East)

Photo Station #8 - April 2017 (East)

Photo Station #8 - April 2016 (North)

Photo Station #8 - April 2017 (North)

Photo Station #8 - April (West)

Photo Station #8 - April (West)

Photo Station #9 - April 2016 (East)

Photo Station #9 - April 2017 (East)

Photo Station #9 - April 2016 (North)

Photo Station 39 - April 2017 (North)

Photo Station #9 - April 2016 (West)

Photo Station #9 - April 2017 (West)

ATTACHMENT 7

memorandum

date May 4, 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 – 1st Quarter, 2017

INTRODUCTION

On April 19, 2017, biologist Greg Ainsworth monitored the coastal sage scrub revegetation area at the Landfill's City South 'C' Trial Plot, which constitutes the fourth quarter monitoring of the trial plot for 2016. 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) – 5% (3%)

Percent bare ground – 42% (44%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 45% (33%)

Percent canopy (herb) – 10% (7%)

Average Imprint – Quadrats E, F, G H

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

Percent basil cover (herbs) – 4% (3%)

Percent bare ground – 39% (41%)

Percent rock or other – 7% (7%)

Percent canopy (shrub) – 41% (36%)

Percent canopy (herb) – 4% (3%)

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

Percent basil cover (shrubs) – 35% (31%)

Percent basil cover (herbs) –14% (12%)

Percent bare ground – 15% (16%)

Percent rock or other – 5% (5%)

Percent canopy (shrub) – 47% (46%)

Percent canopy (herb) – 10% (8%)

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	1%	
Achillia mellifoluim		
Artemisia californica	1%	
Atriplex lentiformis	18%	
Atriplex polycarpa	14%	
Atriplex spinosa	4%	
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		6%
Salsola kali		1%
Hordeum vulgare		1%
Brome sp.		1%

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

Species	**% Cover Shrub**	**% Cover Herb**
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica	1%	
Atriplex lentiformis	23%	
Atriplex polycarpa	11%	
Atriplex spinosa	8%	
Baccharis pilularis	1%	
Encelia californica	1%	
Eschscholzia californica		
Eriogonum fasciculatum		
Leymus triticoides		
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Sisyrinchium bellum		

Salvia apiana	1%	
Salvia leucophylla	1%	
Salvia mellifera	1%	
Echinochloa crus-galli		2%
Salsola kali		1%
Bromus sp.		1%
Hirshfeldia incana		1%
Centaurea melitensis		1%

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

Species	**% Cover Shrub**	**% Cover Herb**
Adenostema fasciculatum		
Achillia mellifoluim		
Artemisia californica	4%	
Atriplex lentiformis	16%	
Atriplex polycarpa	26%	
Atriplex spinosa	1%	
Baccharis pilularis	1%	
Encelia californica	5%	
Eschscholzia californica		
Leymus triticoides		1%
Mimulus aurantiacus longiflorus		
Nasella pulchra		
Other herb		
Salvia apiana		
Salvia leucophylla	1%	
Salvia mellifera		
Sisyrinchium bellum		
Hirshfeldia incana		1%
Vulpia microstachys		
Salsola kali		1%
Bromus sp.		1%

DISCUSSION

In general, the vegetation within the pilot study area is currently thriving as a direct result of the past rainy season. Many of the *Atriplex* species that were noted as declining previously have defoliated, where's as many have resprouted. Few seedlings of native species was observed; however, several native coastal sage scrub species, most notably California sunflower (*Encelia californica)* and Clifornia sagebrush (*Artemisia californica*) are emerging with healthy new growth. Other native species such as black sage (*Salvia mellifera)* and purple sage (*S. leucophylla*) are in bloom and flourishing; regeneration is generally low. Non-native common barley (*Hordeum vulgare*) is the dominant herbaceous plant throughout the study area during the time of the survey.

Selective thinning of *Atriplex* will help establishment of native shrub seedlings, primarily in the plot on the northwest portion of the pilot study are where these plants are very dense. Quadrats H, I and L have the greatest amount of relative cover, mostly comprised of *Atriplex lentiformis and A. polycarpa*. 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 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 *Atriplex lentiformis* has the greatest amount of relative cover throughout the trial site, with *Atriplex polycarpa* as a co-dominant overall. The abundant cover of these two *Atriplex* species is also evident by a general visual observation of the plant cover throughout the trial site. 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.)	Photo #
A		50	7%	10%	50%	10%			1
	Atriplex lentiformis						30%		
	Atriplex polycarpa						15%		
	Atriplex spinosa						1%		
	Baccharis pilularis						1%		
	Echinochloa crus-galli								
	Acmispon glaber						1%		
	Other herb								
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
B		50	20%	1%	15%	1%			2
	Atriplex lentiformis						15%		
	Atriplex polycarpa						15%		
	Encelia californica						3%		
	Sisyrinchium bellum								
	Echinochloa crus-galli								
	Salsola kali							1%	
	Hordeum vulgare							1%	
	Bromus sp.							1%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
C		50	3%	0%	65%	3%			3
	Atriplex lentiformis						10%		
	Atriplex polycarpa						5%		
	Atriplex spinosa						10%		
	Salvia millifera						3%		
	Bromus sp.							1%	
	Mimulus aurantiacus longiflorus Hirshfeldia incana							1%	

Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
D		50	20%	1%	45%	3%			4
	Atriplex lentiformis						35%		

	Atriplex polycarpa						5%		
	Achillia mellifoluim								
	Artemisia californica						1%		
	Acmispon glaber						1%		
	Nassella pulchra						1%		
	Salsola ssp.							1%	
	Hirshfeldia incana							5%	
	Other annual grasses/herbs							10%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
E		50	20%	3%	38%	5%			5
	Atriplex lentiformis						15%		
	Atriplex polycarpa						7%		
	Atriplex spinosa						7%		
	Echinochloa crus-galli								
	Brome sp.							7%	
	Salsola ssp.							2%	
	Hirshfeldia incana							5%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
F		50	10%	7%	55%	5%			6
	Atriplex lentiformis						10%		
	Atriplex polycarpa						5%		
	Atriplex spinosa						5%		
	Artemisia californica						1%		
	Echinochloa crus-galli								
	Hordeum vulgare							3%	
	Salsola ssp.							3%	
.	Bromus sp							2	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
G		50	15%	0%	35%	5%			7
	Atriplex lentiformis						40%		
	Atriplex polycarpa						5%		
	Atriplex spinosa						1%		
	Salvia apiana						1%		
	Achillia mellifoluim								
	Salsola kali							1%	
	Echinochloa crus-galli								
	Hrishfeldia incana							3%	

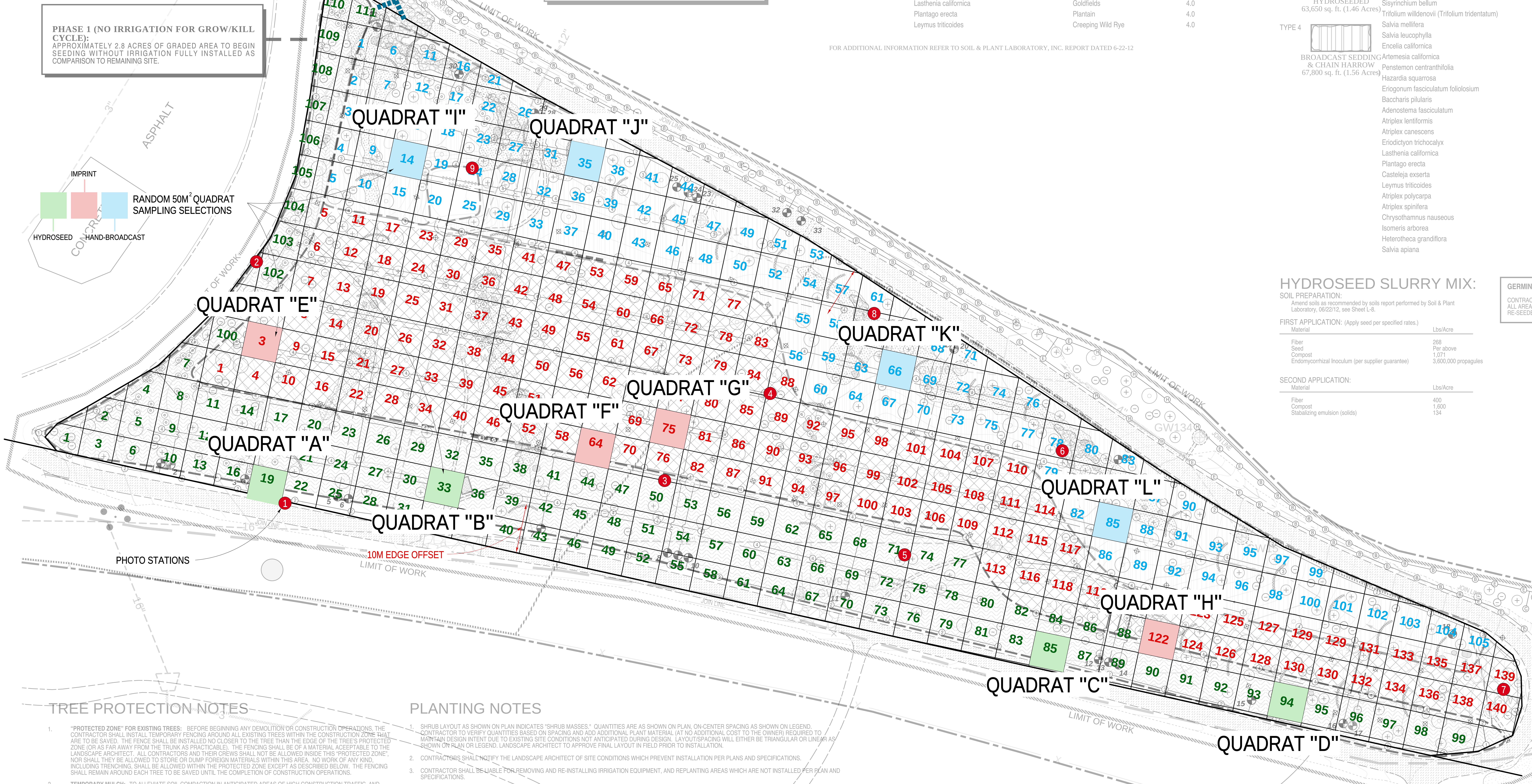
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
H		50	35%	3%	35%	15%			8
	Atriplex lentiformis						25%		
	Atriplex polycarpa						45%		
	Baccharis pilularis						3%		
	Eriogonum fasciculatum						3%		
	Mimulus aurantiacus longiflorus								
	Salvia leucophylla						1%		
	Acmispon glaber								
	Encelia californica						15%		
	Salvia mellifera						1%		
	Leymus triticoides							5%	
	Bromus sp.							7%	
	Hirshfeldia incana							10%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
I		50	40%	15%	15%	5%			9
	Atriplex polycarpa						15%		
	Atriplex lentiformis						30%		
	Baccharis pilularis						1%		
	Artemisia californica						1%		
	Encelia californica						5%		
	Salvia mellifera						3%		
	Salvia leucophylla						2%		
	Vulpia microstachys								
	Sisyrinchium bellum								
	Nasella pulchra								
	Leymus triticoides								
	Encelia californica						1%		
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
J		50	35%	17%	10%	5%			10
	Atriplex lentiformis						3%		
	Atriplex polycarpa						15%		
	Atriplex spinosa						1%		
	Encelia californica						15%		
	Artemisia californica						5%		
	Vulpia microstachys								
	Eriogonum fasciculatum						1%		

	Echinochloa crus-galli							14%	
	Leymus triticoides							3%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
K		50	25%	15%	15%	5%			11
	Atriplex lentiformis						30%		
	Adenostema fasciculatum								
	Artemisia californica						2%		
	Baccharis pilularis						1%		
	Atriplex polycarpa						3%		
	Encelia farinosa								
	Vulpia microstachys								
	Salsola kali								
	Leymus triticoides							15%	
	Echinochloa crus-galli								
	Other herb							2%	
Quadrat	Species	Size (sq. meters)	% basal (shrub)	% basal (herb.)	% Bare	% Rock/ unusable	% canopy (shrub)	% canopy (herb.)	Photo #
L		50	25%	0%	25%	5%			12
	Atriplex lentiformis						20%		
	Atriplex polycarpa						30%		
	Baccharis pilularis						1%		
	Artemisia californica						2%		
	Encelia californica						1%		
	Salvia apiana						1%		
	Salvia leucophylla						1%		
	Salvia mellifera						1%		
	Poa annua								
	Salsola kali								
	Leymus triticoides Bromus sp.							1% 1	

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.



HYDROSEEDED AREA AND SOIL IMPRINT AREA DELINEATION. RED MARKER POSTS SHALL BE PLACED AT 30' O.C. SEE AREA DELINEATION NOTE ABOVE.

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.

Underground Service Alert
CALL BEFORE YOU DIG
Call: TOLL FREE
1-800 422-4133
TWO WORKING DAYS BEFORE YOU DIG

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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L.A. SEAL

LICENSED LANDSCAPE ARCHITECT — Richard W. Krumwiede 2834 — Signature — 7-31-14 Renewal Date — 9-28-12 Date — STATE OF CALIFORNIA

PROJECT / CLIENT

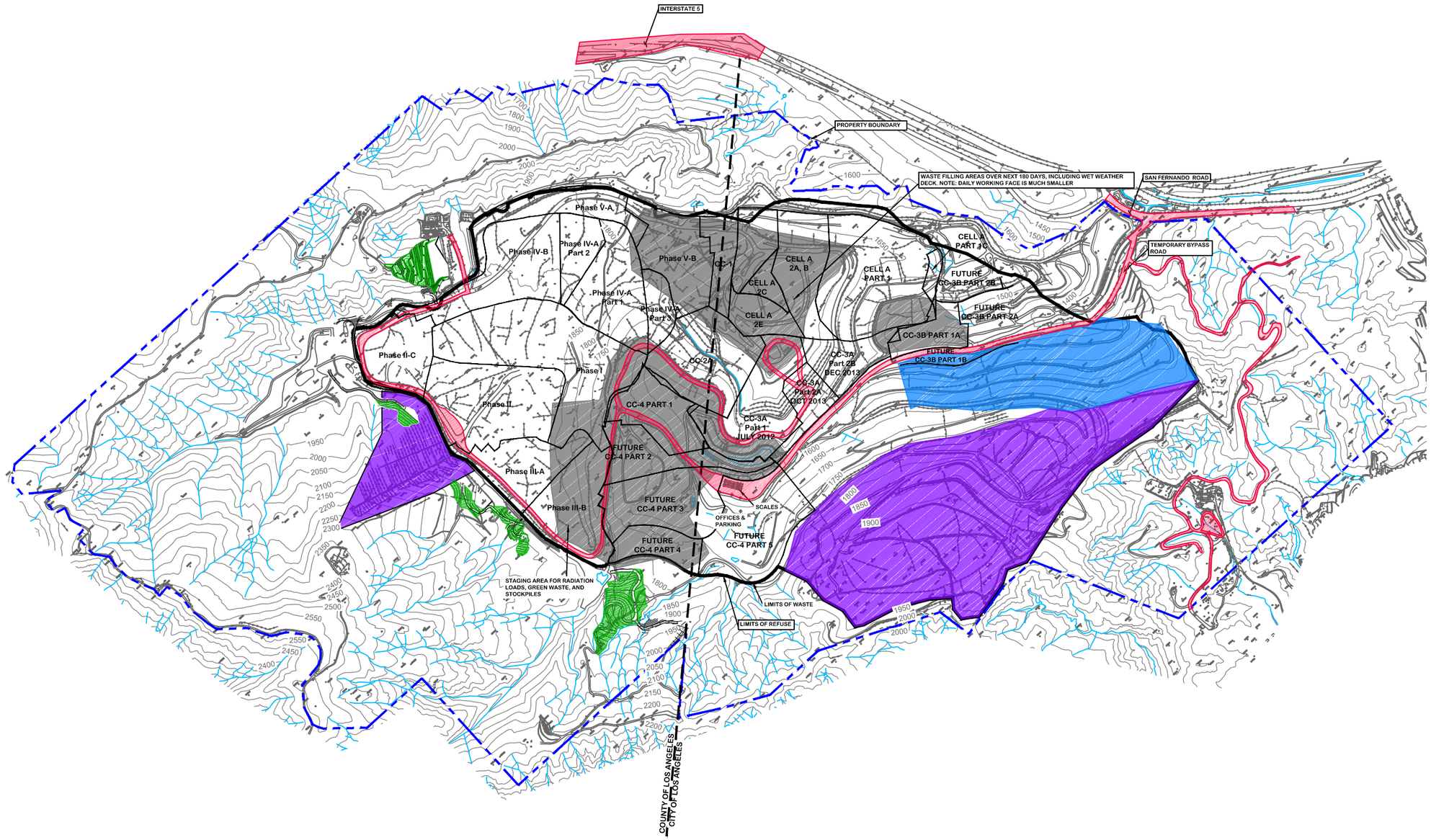
CITY SOUTH C TRIAL PLOT
SUNSHINE CANYON LANDFILL
14747 SAN FERNANDO ROAD
SYLMAR, CA 91342

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 1st 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

FOR_REVIEW_ONLY

EXISTING TOPOGRAPHY PREPARED BY COOPER AERIAL SURVEYS DATED FEBRUARY 24, 2016

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: JAN_2017
DESIGNED BY: C_BARRETT
DRAWN BY: C_BARRETT
CHECKED BY: C_BARRETT
APPROVED BY: C_BARRETT

DIGALERT 811

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REPUBLIC SERVICES

SUNSHINE CANYON LANDFILL
SYLMAR, CALIFORNIA
SITE VEGETATION STATUS AND ACTIVITY

Q1 2017

DWG NO. 1

PROJECT NO. 2014.0023

C:\Users\glo-user\Documents\Allied-Republic\Sunshine Canyon LF\Exhibits\2014.0023 - VEGETATION STATUS AND ACTIVITY\01_CAD\B_GLA-DWGS\2014.0023-SCL_201701-Vegitation Status Map.dwg Apr 12, 2017 - 8:4am By: glo-user

PHOTO EXHIBIT

Sunshine Canyon Landfill – Interim Slope Seed Mix Trial Project

Photo 1 – Slopes behind offices

Photo 2 – Soil samples being collected

Photo 3 – Irrigation installation

Photo 4 – Irrigation installation

Photo 5 – Soil amendments ready to be placed on slopes

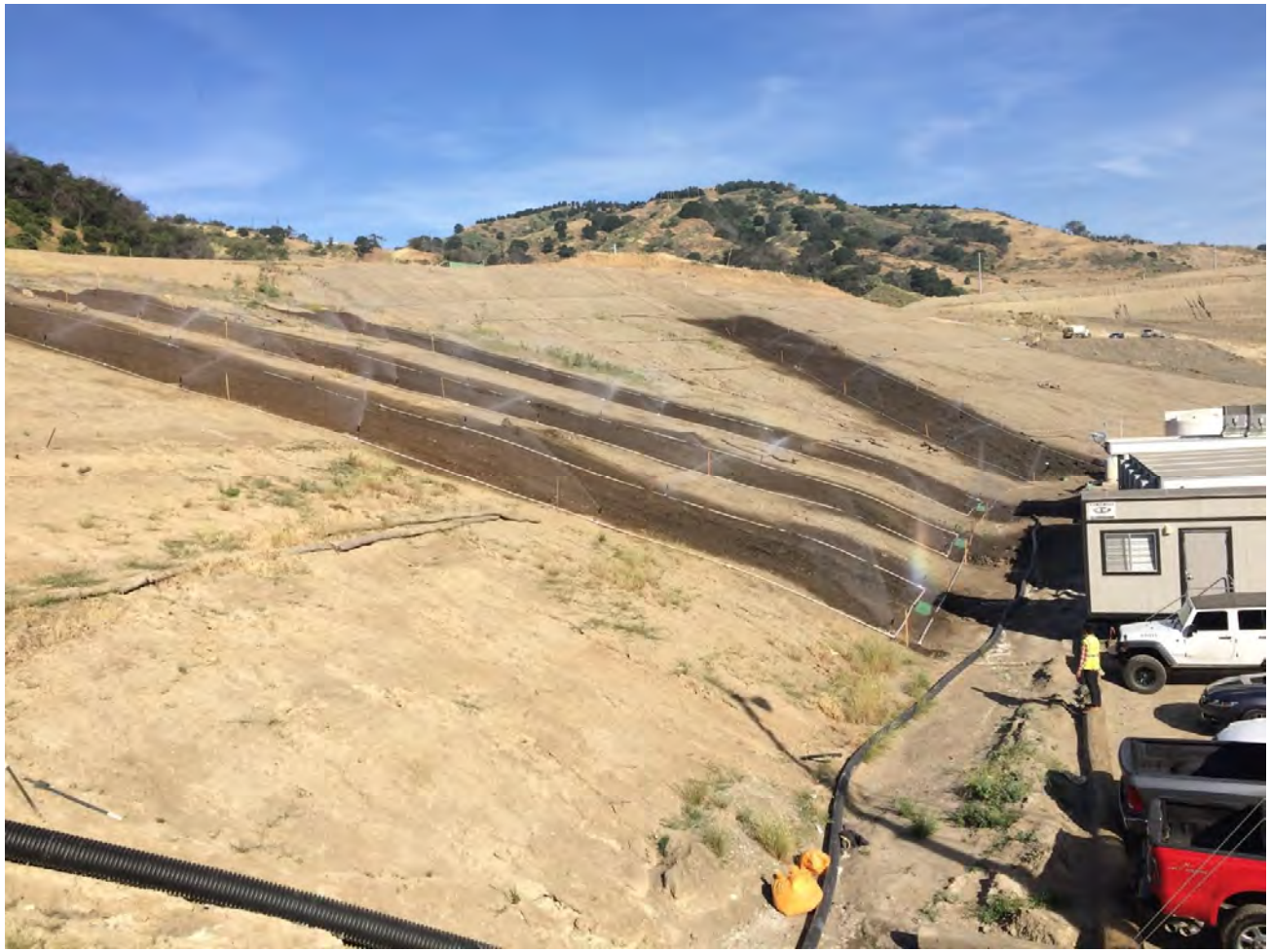
Sunshine Canyon Landfill – Interim Slope Seed Mix Trial Project

Photo 6 –Soil amendments placed and incorporated in the first 3 test areas

***Please note: test areas 1 to 4 are shown above from left to right**

Sunshine Canyon Landfill – Interim Slope Seed Mix Trial Project

Photo 7 –Irrigation system being tested



*** Please note: test areas 1 to 4 are shown above from left to right**

Sunshine Canyon Landfill – Interim Slope Seed Mix Trial Project

Photo 8 – Topsoil placement on section 4

Photo 9 – Topsoil placement on section 4 complete

Photo 10 – Hydroseed being applied to slopes

Photo 11 – Hydroseed placement complete