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Re: *Devil's Gate Reservoir Restoration Project – Phase 1 Restoration Qualitative Monitoring Conducted on May 22, 2023*

1.0 INTRODUCTION

The purpose of this letter report is to document the results of qualitative monitoring conducted for the Devil's Gate Reservoir Restoration Project (Project), located in the City of Pasadena, Los Angeles County, California. The qualitative monitoring was conducted in the planted and or seeded portions of the Phase 1 mitigation areas including DG-1, DG-1 WOUS, DG-2A, DG-2B, DG-3A, DG-3B, DG-4, DG-4B, DG-4C, and DG-5. The monitoring is being conducted in accordance with the Final Habitat Restoration Plan for the Project (HRP). The initial sediment removal in the reservoir was completed in 2021 and the annual maintenance removal phase was initiated in September of 2022. The only Project activity currently being conducted is the habitat restoration around the perimeter of the sediment removal areas.

ECORP is responsible for conducting qualitative monitoring and compliance review of restoration efforts in each of the mitigation areas. ECORP is also responsible for preparing monitoring reports, which typically include the following information:

- Overall health of container plants
- Observations and recommendations related to container plant establishment
- Germination of native plant species from seed application and natural recruitment
- Level of germination of nonnative plant species
- Soil condition
- Other observations and recommendations as appropriate

Qualitative monitoring was conducted by Carley Adams on May 22, 2023. Field data collected during the monitoring event is provided as Attachment A. This report documents the ninth quarterly qualitative monitoring visit for the Phase 1 mitigation areas.

2.0 QUALITATIVE MONITORING IN THE PHASE 1 MITIGATION AREAS

2.1 Brief Summary of Plant Installation

During the Phase I Installation effort, which was completed on February 13, 2020, a total of 10,276 one-gallon container plants, 52 five-gallon container plants, 18 fifteen-gallon container plants, 300 acorns, and 3,000 cuttings were installed in the DG-2A, DG-2B, DG-3A, DG-3B, DG-4, DG-4B, DG-4C, and DG-5 mitigation areas. Container plants were not installed in the DG-1 or DG-1 WOUS mitigation areas, but these areas were seeded with native plant species. Table 1 lists container plant species and the numbers installed in each of the Phase 1 mitigation areas.

Table 1. Phase 1 Container Plant Species and Numbers (DG-)										
Species Name	2A	2B	3A (Oak Wood- land)	3A (Mule-fat Thickets)	4 (CSS*)	4 (Mulefat- Willow**)	4B	4C	5	TOTAL
Mulefat (<i>Baccharis salicifolia</i>)	25	95	—	—	—	1113	135	114	64	1546
Mulefat [cuttings] (<i>Baccharis salicifolia</i>)	—	—	—	84	—	916	—	—	—	1000
Fremont's cottonwood (<i>Populus fremontii</i>)	10	38	—	33	—	479	54	45	27	686
California blackberry (<i>Rubus ursinus</i>)	10	38	—	33	—	619	54	45	26	825
California rose (<i>Rosa californica</i>)	10	38	44	33	—	725	54	45	26	975
Black willow (<i>Salix gooddingii</i>)	20	76	—	—	—	876	108	90	52	1222
Black willow [cuttings] (<i>Salix gooddingii</i>)	—	—	—	67	—	933	—	—	—	1000
Red willow (<i>Salix laevigata</i>)	10	38	—	33	—	439	54	45	26	645
Arroyo willow (<i>Salix lasiolepis</i>)	10	38	—	—	—	438	54	45	26	611
Arroyo willow [cuttings] (<i>Salix lasiolepis</i>)	—	—	—	33	—	967	—	—	—	1000
Black elderberry (<i>Sambucus nigra</i> ssp. <i>caerulea</i>)	5	19	—	17	—	594	27	23	13	698
California melic (<i>Melica imperfecta</i>)	—	—	20	—	—	—	—	—	—	20
Coast live oak (<i>Quercus agrifolia</i>)	—	—	174	—	—	—	—	—	—	174

Table 1. Phase 1 Container Plant Species and Numbers (DG-)										
Species Name	2A	2B	3A (Oak Wood- land)	3A (Mule-fat Thickets)	4 (CSS*)	4 (Mulefat- Willow**)	4B	4C	5	TOTAL
Coast live oak [acorns] (<i>Quercus agrifolia</i>)	25	—	275	—	—	—	—	—	—	300
California gooseberry (<i>Ribes californicum</i>)	—	—	50	—	—	—	—	—	—	50
Mugwort (<i>Artemisia douglasiana</i>)	—	—	—	33	—	617	54	45	26	775
Wrinkled rush (<i>Juncus rugulosus</i>)	—	—	—	—	—	200	—	—	—	200
Basket rush (<i>Juncus textilis</i>)	—	—	—	—	—	100	—	—	—	100
California Sagebrush (<i>Artemisia californica</i>)	10	38	—	—	306	—	—	—	—	354
Coyote brush (<i>Baccharis pilularis</i>)	10	38	—	33	—	504	54	45	26	710
California brittlebush (<i>Encelia californica</i>)	—	—	—	—	102	—	—	—	—	102
California buckwheat (<i>Eriogonum fasciculatum</i>)	—	—	—	—	306	—	—	—	—	306
Menzies goldenbush (<i>Isocoma menziesii</i>)	—	—	—	—	41	—	—	—	—	41
Deerweed (<i>Acmispon glaber</i>)	—	—	—	—	102	—	—	—	—	102
Laurel sumac (<i>Malosma laurina</i>)	—	—	—	—	61	—	—	—	—	61
Coastal prickly pear (<i>Opuntia littoralis</i>)	—	—	—	—	41	—	—	—	—	41
Black sage (<i>Salvia mellifera</i>)	—	—	—	—	102	—	—	—	—	102
TOTAL	145	456	563	399	1061	9520	648	542	312	13646

*CSS = California Sagebrush – California Buckwheat Scrub

**Mulefat-Willow = Mulefat Thickets and Black Willow Thickets

All plants were installed according to the methods described in Section 4.11 of the HRP. Planting holes for all container plants, except oak trees, were dug to a width twice the size of the root ball and to a depth slightly deeper than the depth of the root ball so that the root crown was one inch below grade following installation. Oak trees were planted with the root crown 0.5 to one inch above grade following installation. Prior to installation, all plants were thoroughly watered in their containers and the soil in planting holes was wetted with at least one gallon of water. Planting holes were backfilled with native soil and irrigation

basins, approximately two feet in width, were formed around the base of each plant. Rocks greater than two inches in diameter were removed to the extent possible from the backfill soil. All container plants were irrigated with at least one gallon of water immediately following installation and basin creation.

2.2 Qualitative Monitoring Methods

Qualitative monitoring occurs monthly following the 120-day Plant Establishment Period (PEP) for the remainder of Year 1 (8 months). Following Year 1, qualitative monitoring will occur quarterly during Years 2 and 3 and twice per year during Years 4 through 10. The purpose of the qualitative monitoring is to assess container plant health and vigor and monitor the success of the mitigation areas.

During the May 22, 2023, visit, all Phase 1 mitigation areas were walked, the health and vigor of container plants were documented, germination from seeding and natural recruitment was noted, and the irrigation lines were inspected for functionality. In addition, the level of nonnative and invasive weed cover was estimated for each of the Phase 1 mitigation areas.

2.3 Qualitative Monitoring Results

2.3.1 DG-1 & DG-1 WOUS

Container plants were not installed in the DG-1 or DG-1 WOUS mitigation areas, but these areas were seeded with native plant species. Native plant growth, including perennials and annuals, was noted throughout the DG-1 and DG-1 WOUS mitigation areas, likely both from natural recruitment and from seeding; however, germination was observed to be minimal in most of these mitigation areas. Portions of DG-1 WOUS were noted as being scoured during the 2020, 2021, 2022, and 2023 wet seasons and had minimal plant growth. Native plants such as California sagebrush (*Artemisia californica*), spencer primrose (*Camissoniopsis micrantha*), California dodder (*Cuscuta californica*), California buckwheat (*Eriogonum fasciculatum*), telegraph weed (*Heterotheca grandiflora*), common phacelia (*Phacelia distans*), and chia (*Salvia columbariae*) were observed sprouting in the DG-1 and DG-1 WOUS mitigation areas. Native cover for the DG-1 and DG-1 WOUS mitigation areas was estimated to be approximately 65 to 70 percent with some areas having relatively dense cover and other areas being scoured and/or having minimal cover. Photos 1 and 2 in Attachment B document the status of the mitigation areas during the monitoring visit.

Nonnative weed cover in DG-1 and DG-1 WOUS was estimated to be approximately 10 percent, which is approximately five percent higher than the level of weed cover that was observed during the previous qualitative monitoring event. It should be noted that weed cover in this mitigation area during the spring of 2022 was approximately five percent. The minor increase in nonnative cover during the spring of 2023 in this mitigation area is likely due to the increase in precipitation during the 2023 wet season and a higher level of weed cover is typical during the spring and summer months. Nonnative species observed in DG-1 and DG-1 WOUS included black mustard (*Brassica nigra*), red brome (*Bromus madritensis*), red-stemmed filaree (*Erodium cicutarium*), and Indian plantain (*Plantago arenaria*). Most nonnative weeds were just starting to germinate and had not gone to flower or seed.

2.3.2 DG-2A

The overall health of the container plants in DG-2A was noted as being good. Approximately less than five percent of the container plants in DG-2A were noted as showing varied levels of stress, which is approximately the same as the percentage of container plants that were showing stress during the previous qualitative monitoring event. Stress may be occurring as a result of 1) competition from nonnative and invasive weeds, 2) misplaced emitters, or 3) recreational traffic through the mitigation areas. There were no additional container plants noted as being missing or dead. Formal mortality counts were taken for DG-2A during the 2020, 2021, and 2022 quantitative monitoring events. Most of the willows (*Salix* sp.) and Fremont's cottonwoods (*Populus fremontii*) were no longer showing signs of seasonal dieback. The installation of plants in the DG-2A mitigation area appears to have been completed successfully. The current issues identified during the monitoring visit are not expected to have an effect on the continued growth of the plants in the mitigation area. Photos 3 through 5 in Attachment B document the status of the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-2A mitigation area, likely both from natural recruitment and from seeding. Native plants such as western bursage (*Ambrosia psilostachya*), annual bursage (*Ambrosia acanthicarpa*), spencer primrose, Canada horseweed (*Erigeron canadensis*), telegraph weed, common phacelia, ladies' tobacco (*Pseudognaphalium californica*), and stinging nettle (*Urtica dioica*) were observed sprouting in the DG-2A mitigation area. Native cover for the DG-2A mitigation area was estimated to be 80 percent.

Nonnative weed cover in DG-2A was estimated at approximately one percent, which is approximately four percent lower than the level of weed cover that was observed during the previous qualitative monitoring event. It should be noted that weed cover in this mitigation area during the spring of 2022 was approximately less than two percent which shows that weed cover in this mitigation area has been consistently low. Nonnative species observed in DG-2A during the monitoring visit included black mustard and perennial pepperweed (*Lepidium latifolium*). Most nonnative weeds were just starting to germinate and had not gone to flower or seed.

2.3.3 DG-2B

The overall health of the container plants in DG-2B was noted as being good. Approximately less than five percent of the container plants in DG-2B were noted as showing varied levels of stress, which is approximately the same percentage of container plants that were showing stress during the previous qualitative monitoring event. Stress was likely due to the same reasons as those described for DG-2A. In addition, insect galls were observed on several of the willow species. Formal mortality counts were taken for DG-2B during the 2020, 2021, and 2022 quantitative monitoring events. Similar to DG-2A, most of the willows and Fremont's cottonwoods were no longer showing signs of seasonal dieback. The installation of the plants in the DG-2B mitigation area appears to have been successfully completed. The current issues identified during the monitoring visit are not expected to have an effect on the continued growth of plants in the mitigation area. Photos 6 through 9 in Attachment B document the status of the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-2B mitigation area, likely both from natural recruitment and from seeding. Native plants such as annual bursage, western ragweed, spencer primrose, cobweb thistle (*Cirsium occidentale*), Canada horseweed, common bedstraw (*Galium aparine*), telegraph weed, common phacelia, ladies' tobacco, Douglas' nightshade (*Solanum douglasii*), and stinging nettle were observed sprouting in the DG-2B mitigation area. Native cover for the DG-2B mitigation area was estimated to be 85 percent.

Nonnative weed cover in DG-2B was estimated at approximately one percent, which is approximately four percent lower than the level of nonnative cover that was observed during the previous qualitative monitoring event. It should be noted that weed cover in this mitigation area during the spring of 2022 was approximately less than five percent which shows that weed cover in this mitigation area has been consistently low. Nonnative species observed in DG-2B during the monitoring visit included black mustard, scarlet pimpernel (*Lysimachia arvensis*), and yellow sweetclover (*Melilotus indicus*). Most nonnative weeds were just starting to germinate and had not gone to flower or seed.

2.3.4 DG-3A

The overall health of the container plants in DG-3A was noted as being good. Approximately 10 percent of the container plants in the Coast Live Oak Woodland portions of DG-3A were noted as showing varied levels of stress, which is approximately the same percentage of container plants that were showing stress during the previous qualitative monitoring event. During the monitoring visit, the planted coast live oak acorns were inspected for survivorship and health. Approximately 20 germinated coast live oak acorns appear to still be present in DG-3A. The majority of the germinated acorns appear to be in good health. During the monitoring, it was noted that an existing coast live oak tree (Tree Tag #39) is continuing to experience branch failure for multiple branches. The cause of the branch failure was unclear.

Approximately five percent of the container plants in the Mulefat Thickets portions of DG-3A were noted as showing varied levels of stress, which is approximately 10 percent less than the percentage of container plants that were showing stress during the previous qualitative monitoring event. It should also be noted that many of the container plants and stakes installed near Altadena Drain were observed to be thriving. Formal mortality counts were taken for DG-3A during the 2020, 2021, and 2022 quantitative monitoring events. The types of stress the plants were exhibiting are the same as those described for the plants in DG-2A. However, erosion is also a problem in some areas of DG-3A. In addition, the Mulefat Thickets portions of DG-3A and the lower extent of the Coast Live Oak Woodland portions of DG-3A experienced approximately 16-days of inundation following heavy storm events in January 2023. Following the inundation, many portions of DG-3A had a high level of woody debris within the mitigation area. Most of the container plants and stakes appear to be recovering from the inundation. Some of the planting basins were observed to have varied levels of erosion and should be repaired. The willow and mulefat stakes were observed to be thriving in this mitigation area. The installation of the plants in the DG-3A mitigation area appears to have been completed successfully. The current issues noted during the monitoring are not expected to have an effect on the continued growth of the plants in the mitigation area. Photos 10 through 15 in Attachment B document the status of the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-3A mitigation area, likely both from natural recruitment and from seeding. Native plants such as annual bursage, spencer primrose, cobweb thistle Jimson weed (*Datura wrightii*), Canada horseweed, California poppy (*Eschscholzia californica*), telegraph weed, common phacelia, Parry's phacelia (*Phacelia parryi*), and stinging nettle were observed sprouting in the DG-3A mitigation area. Native cover for the DG-3A mitigation area was estimated to be approximately 65 percent in the coast live oak woodland portion of the mitigation area and 80 percent in the mulefat thickets portion of the mitigation area.

Nonnative weed cover in DG-3A was estimated at approximately 15 percent, which is approximately 10 percent higher than the level of nonnative cover that was observed during the previous qualitative monitoring event. It should be noted that weed cover in this mitigation area during the spring of 2022 was approximately 10 to 15 percent and a higher level of weed cover is typical during the spring and summer months. Nonnative species observed in DG-3A included black mustard, Italian thistle (*Carduus pycnocephalus*), poison hemlock (*Conium maculatum*), perennial pepperweed, wild raddish (*Raphanus sativus*), and curly dock (*Rumex crispus*). Most nonnative weeds were just starting to germinate and had not gone to flower or seed.

2.3.5 DG-4

The overall health of the container plants in mitigation area DG-4 was noted as being good. Approximately five percent of container plants in the coastal sage scrub portions of DG-4 were showing varied levels of stress which is approximately the same percentage of plants showing stress during the previous qualitative monitoring event. Approximately 10 to 15 percent of container plants in most of the riparian portions of DG-4 were showing varied levels of stress, depending on the section of DG-4, which is approximately the same percentage of plants showing stress during the previous qualitative monitoring event. The causes of stress appear to be mostly due to the same reasons described in DG-2A. In addition, the southern portions of DG-4 experienced approximately 16-days of inundation following heavy storm events in January 2023 and some of the container plants in this area appear dead or in a condition unlikely to recover. For most portions of DG-4 that did not experience inundation, only a negligible number of container plants were noted as being missing or dead. Formal mortality counts were taken for DG-4 during the 2020, 2021, and 2022 quantitative monitoring events. Similar to DG-2A, the willows and Fremont's cottonwoods were no longer showing signs of seasonal dieback. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-4 mitigation area appears to have been completed successfully and the issues noted during the monitoring are not expected to have an impact on the continued growth of the plants. Photos 16 through 18 in Attachment B document the status of the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-4 mitigation area, likely both from natural recruitment and from seeding. Native plants such as annual bursage, California sagebrush, mugwort (*Artemisia douglasiana*), mulefat (*Baccharis salicifolia*), Canada horseweed, California poppy, telegraph weed, wild cucumber (*Marah macrocarpa*), common phacelia, and stinging nettle were observed sprouting in the DG-4 mitigation area. Native cover for the DG-4 mitigation area was estimated to be approximately 70 to 80 percent in the riparian portion of the mitigation area and 70 percent in the coastal sage scrub portion.

Nonnative weed cover in DG-4 was estimated at approximately 25 percent, which is approximately 20 percent higher than the percentage of nonnative cover that was observed during the previous qualitative monitoring event. It should be noted that weed cover in this mitigation area during the spring of 2022 was approximately 20 to 50 percent, depending on the area, and a higher level of weed cover is typical during the spring and summer months. In addition, bird nests in DG-4 during the spring of 2022 and 2023 prevented crews from being able to conduct weed abatement activities in these areas. Nonnative species observed in DG-4 included tree of heaven (*Ailanthus altissima*), scarlet pimpernel, black mustard, poison hemlock, foxtail barley (*Hordeum murinum*), perennial pepperweed, and nonnative brome grasses (*Bromus* spp.). Nonnative weed cover, especially perennial pepperweed, is a significant problem in portions of the DG-4 mitigation area. Because perennial pepperweed can produce dense colonies through seed germination and underground rhizomes (rhizomatous roots), removal of this species without the use of systemic herbicide is very difficult. Some of the nonnative weeds in this mitigation area were starting to produce flowers and or seed and should be removed as soon as the bird nests in this area fledge or are determined to be inactive.

2.3.6 DG-4B

The overall health of the container plants in mitigation area DG-4B was noted as being good and this mitigation area is becoming well established. Approximately less than five percent of container plants were showing signs of drought stress which is approximately the same percentage of plants that were stressed during the previous qualitative monitoring event. The types of stress the plants were exhibiting are the same as those described for the plants in DG-2A. A negligible number of container plants were noted as being missing or dead. Formal mortality counts were taken for DG-4B during the 2020, 2021, and 2022 quantitative monitoring events. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-4B mitigation area appears to have been completed successfully and the issues noted during the monitoring are not expected to have an impact on the continued growth of the plants. Photos 19 and 20 in Attachment B document the current status of the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-4B mitigation area, likely both from natural recruitment and from seeding. Native plants such as mugwort, spencer primrose, cobweb thistle, Canada horseweed, telegraph weed, and common phacelia were observed sprouting in the DG-4B mitigation area. Native cover for the DG-4B mitigation area was estimated to be approximately 85 percent.

Nonnative weed cover in DG-4B was estimated to be approximately 10 percent, which is approximately five percent higher than the percentage of nonnative cover that was observed during the previous qualitative monitoring event. It should be noted that weed cover in this mitigation area during the spring of 2022 was approximately 10 to 15 percent and a higher level of weed cover is typical during the spring and summer months. Nonnative species observed in DG-4B included black mustard, Italian thistle, poison hemlock, perennial pepperweed, and wild radish. Most nonnative weeds were just starting to germinate and had not gone to flower or seed.

2.3.7 DG-4C

The overall health of the container plants in mitigation area DG-4C was noted as being good. Approximately five percent of all container plants were noted as showing minor levels of stress, which is approximately five percent less than the percentage of plants that were showing stress during the previous qualitative monitoring event. The types of stress the plants were exhibiting are the same as those described for the plants in DG-2A. A negligible number of container plants were noted as being missing or dead. Formal mortality counts were taken for DG-4C during the 2020, 2021, and 2022 quantitative monitoring events. Similar to DG-2A, most of the willows and Fremont's cottonwoods were no longer showing signs of seasonal dieback. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-4C mitigation area appears to have been completed successfully and the issues noted during the monitoring are not expected to have an impact on the continued growth of the plants. Photos 21 and 22 in Attachment B document the status of the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-4C mitigation area, likely both from natural recruitment and from seeding. Native plants such as annual bursage, mugwort, spencer primrose, Canada horseweed, telegraph weed, and common phacelia were observed sprouting in the DG-4C mitigation area. Native cover for the DG-4C mitigation area was estimated to be approximately 70 percent.

Nonnative weed cover in DG-4C was estimated at approximately 30 percent, which is approximately 25 percent higher than the percentage of nonnative cover that was observed during the previous qualitative monitoring event. It should be noted that weed cover in this mitigation area during the spring of 2022 was approximately 15 to 20 percent. The increase in nonnative cover during the spring of 2023 in this mitigation area is likely due to the increase in precipitation during the 2023 wet season and a higher level of weed cover is typical during the spring and summer months. In addition, bird nests in DG-4C during the spring of 2023 have prevented crews from being able to conduct weed abatement activities in these areas. Nonnative species observed in DG-4C during the monitoring visit included black mustard, tocalote (*Centaurea melitensis*), poison hemlock, perennial pepperweed, and nonnative brome grasses. Some of the nonnative weeds in this mitigation area were starting to produce flowers and or seed and should be removed as soon as the bird nests in this area fledge or are determined to be inactive.

2.3.8 DG-5

The overall health of the container plants in the DG-5 mitigation area was noted as being good. Approximately less than five percent of all container plants were noted as showing varied levels of stress, which is approximately the same as the percentage of plants that were showing stress during the previous qualitative monitoring event. Formal mortality counts were taken for DG-5 during the 2020, 2021, and 2022 quantitative monitoring events. Similar to DG-2A, most of the willows and Fremont's cottonwoods were no longer showing signs of seasonal dieback. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-5 mitigation area appears to have been completed successfully and the issues noted during the monitoring are not expected to have a negative impact on the continued growth of the plants. Photos 25 and 26 in Attachment B document the status of the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-5 mitigation area, likely both from natural recruitment and from seeding. Native plants such as Canada horseweed, common phacelia, and stinging nettle were observed sprouting in the DG-5 mitigation area. Native cover for the DG-5 mitigation area was estimated to be approximately 85 percent and the site is thriving.

Nonnative weed cover in DG-5 was estimated at approximately 20 percent, which is approximately fifteen percent more than the percentage of nonnative weed cover that was observed during the previous qualitative monitoring event. It should be noted that weed cover in this mitigation area during the spring of 2022 was approximately 25 to 30 percent and a higher level of weed cover is typical during the spring and summer months. In addition, bird nests in DG-5 during the spring of 2022 and 2023 prevented crews from being able to conduct weed abatement activities in these areas. Nonnative species observed in DG-5 included black mustard, soft brome (*Bromus hordeaceus*), poison hemlock, and perennial pepperweed. Some of the nonnative weeds in this mitigation area were starting to produce flowers and or seed and should be removed as soon as the bird nests in this area fledge or are determined to be inactive.

3.0 RECOMMENDATIONS

3.1 Container Plant Replacement

Container Plants that were noted as being dead during both the qualitative and quantitative monitoring events were replaced during the Phase 3 implementation during the winter of 2023. Replacement of dead container plants will help to increase native cover and help the restoration sites move toward achieving their success criteria.

Container plant loss was most problematic in areas prone to erosion, areas with higher levels of herbivory, and areas within the least Bell's vireo nest buffer where nonnative weed proliferation occurred during the active nesting period in the spring of 2020. It should be noted that natural recruitment and installation of replacement container plants has offset container plant loss due to the reasons listed above. Container plant mortality should continue to be assessed during the annual quantitative monitoring and supplemental planting should occur if the level of mortality exceeds the performance standards requirements.

3.2 Nonnative Plant Control

Nonnative weed cover was found to be approximately one percent to 30 percent in the various Phase 1 mitigation areas. In addition, evidence of recent weed abatement activities was present in some of the Phase 1 mitigation areas and the weeds in these areas were just beginning to germinate; however, some of the mitigation areas could not be accessed for weed abatement due to the presence of bird nests and these areas had weeds that were beginning to go to flower and/or seed. It should be noted that many of the nonnative weeds observed during the monitoring were just starting to germinate and had not gone to flower or seed and many of the annual nonnative weeds were observed to be dead for the season.

Regular maintenance and removal of nonnative weeds is of the highest priority for all of the mitigation areas to reduce competition between native and nonnative plants. In addition, eucalyptus stumps that are starting to re-sprout should be trimmed back frequently. A focus should be placed on removing the

weeds and nonnatives from the basins of each of the container plants and cuttings; however, nonnative weeds just outside of the planting areas can migrate into the planting areas via seed dispersal. Outside of the nesting bird season, a focus should also be made to remove nonnative weeds in areas where least Bell's vireos are likely to nest during the breeding season (i.e., in the vicinity of the least Bell's vireo nest that was active in 2020). Nonnative plants and weeds that have gone to seed should be bagged and removed from the mitigation area. Without the use of herbicides, control of the nonnatives will be extremely difficult so the frequency and level of effort will need to be increased to provide control until the native plants and seedlings have a chance to grow and outcompete the nonnatives. In particular, it is important to maintain long-term perennial pepperweed management to reduce competition and allow native plants to germinate. In addition, dodder should be removed from container plants in the mitigation areas. Although many species of dodder are native, this parasitic plant can be harmful to younger shrubs and trees that are not yet established and can even cause mortality.

3.3 Herbivory

Minor rabbit herbivory of container plants was observed in the Phase 1 mitigation areas. California rose, California buckwheat, and basket rush (*Juncus textilis*) appeared to be the most affected by herbivory. Minor herbivory generally will not kill the plants, but continued monitoring should be conducted during future visits to determine the level of the herbivory isn't such that plants are dying. As the plants become more established, they will be less susceptible to the effects of herbivory. If browsing by rabbits or other animals begins to worsen, caging around affected and/or favored container plants may be warranted.

3.4 Erosion

Minor erosion to planting basins was observed throughout the Phase 1 mitigation areas. The severe erosion noted in DG-3A near Altadena Drain during previous monitoring visits was noted as showing signs of worsening from the recent heavy rainfall in the area. Due to the steepness of the slope in the Coast Live Oak Woodland portion of the DG-3A mitigation area, erosion will likely continue to be somewhat of an issue in this area; however, jute nettings are currently in place on the slope and will help to lessen the severity of erosion issues. As native cover increases in this area, erosion issues should lessen. The severity of the erosion should continue to be monitored in all planted areas and if warranted, erosion Best Management Practices (BMPs) should be installed in appropriate areas. This may only require the installation of straw wattles at select sites to prevent existing rills from becoming larger. However, until more native perennial plants become established in these areas, there is the potential that intense rainfall may create additional erosion problems.

If you have any questions about the information presented in this letter, please contact me at Cadams@ecorpconsulting.com or (714) 648-0630.

Sincerely,

A handwritten signature in blue ink that reads "Carley Adams". The signature is fluid and cursive, with the first name "Carley" and the last name "Adams" clearly distinguishable.

Carley Adams
Senior Biologist

ATTACHMENT A

Field Notes

Devil's Gate Quail

C. Adams

5/22/23

Phase 1DG-1

- Native germ: ARTCAL, CAMMIC, CUSCAL, ERIFAS, HETKRA, PHADIS, SALCOL → 65-70% cover
- Nonnative germ: BRANIG, BREMATY, EROCK, PLAPRE ~10% cover
- Wows scoured w/ min veg
- Overall site looks good

DG-2A

- L57. cont. plants stressed → site is thriving
- Native germ: AMBPSI, AMBAEA, CAMMIC, ERICAN, HETKRA, PHADIS, PSEAC, WRTDIO ~80% cover
- Nonnative germ: BRANIG, LEPLAT ~1% cover
- Willows no longer w/ seasonal dieback

DG-2B

- L57. cont. plants stressed → site is thriving

06-23 Cont.

• Native germ: AMBACA, MBRSI, CAMMIC, CIROCC, ERICAN, GALAPA, HETGRA, PHADIS, PSECAL, SODOU, UKTDIO
~85% cover

• Nonnative germ: BRANIG, YSARU, MELIND ~1% cover

07-3A

~10% cont. plants in oak woodland stressed
~5% cont. plants stressed in riparian

Native germ: AMBACA, CAMMIC, CIROCC, DATURI, HETGRA, PHADIS, PHAPAR, ARTDIO ~65% cover in oak woodland ~80% in rip.

Nonnative germ: BRANIG, CARPYC, CONMAC, LEPLAT, HASAT, RUMORI, ~15% cover

~5% cont. plants stressed in SS ~10-15% in riparian

Native germ: AMBACA, ARTCAN, ARTDOU, BALSAC, ERICAN, ESCCAL, HETGRA, MARMAC, PHADIS, WATDIO

Scale: 1 square = _____

06-4 Cont.

• ~70% cover CSS & 70-80% in riparian

• Nonnative germ: AILALT, YSARU, BRANIG, CONMAC, HORNWUR, LEPLAT, Brome
~25% cover

06-4B

• <5% cont. plants stressed

• Native germ: ARTDOU, CAMMIC, CIROCC, ERICAN, HETGRA, PHADIS ~85% cover

• Nonnative germ: BRANIG, CARPYC, CONMAC, LEPLAT, RAPSAT ~10% cover

06-4C

• ~5% cont. plants stressed

• Native germ: ARTDOU, AMBACA, CAMMIC, ERICAN, HETGRA, PHADIS ~70% cover

• Nonnative germ: BRANIG, CENMEL, CONMAC, LEPLAT ~30% cover

06-5

• <5% cont. plants stressed ~85% cover

• Native germ: ERKAN, PHADIS, WATDIO

• Nonnative germ: BRANIG, BRB HOR, CONMAC, LEPLAT ~20% cover

Scale: 1 square = _____

Rite in the Rain

ATTACHMENT B

Photo Documentation



Photo 1: Overview Mitigation Area DG-1



Photo 2: Overview Mitigation Area DG-1



Photo 3: Overview Mitigation Area DG-2A



Photo 4: Overview Mitigation Area DG-2A



Photo 5: Overview Mitigation Area DG-2A



Photo 6: Overview Mitigation Area DG-2B



Photo 7: Overview Mitigation Area DG-2B



Photo 8: Overview Mitigation Area DG-2B



Photo 9: Overview Mitigation Area DG-2B



Photo 10: Overview Mitigation Area DG-3A Altadena Drain



Photo 11: Overview Mitigation Area DG-3A Altadena Drain



Photo 12: Overview Mitigation Area DG-3A Oak Woodland



Photo 13: Overview Mitigation Area DG-3A Oak Woodland



Photo 14: Overview Mitigation Area DG-3A Oak Woodland



Photo 15: Overview Mitigation Area DG-3A Oak Woodland



Photo 16: Overview Mitigation Area DG-4



Photo 17: Overview Mitigation Area DG-4



Photo 18: Overview Mitigation Area DG-4



Photo 19: Overview Mitigation Area DG-4B



Photo 20: Overview Mitigation Area DG-4B



Photo 21: Overview Mitigation Area DG-4C



Photo 22: Overview Mitigation Area DG-4C



Photo 23: Overview Mitigation Area DG-5



Photo 24: Overview Mitigation Area DG-5