October 23, 2025
2023-005.07

Ms. Mitzi Kim Rios
Los Angeles County Public Works
900 South Fremont Avenue, 9th Floor
Alhambra, California 91803

***Re: Devil's Gate Reservoir Restoration Project – Phase 2 Restoration Qualitative Monitoring Conducted on August 27, 2025***

## 1.0 INTRODUCTION

The purpose of this report is to document the results of qualitative (horticultural) monitoring conducted for the Devil's Gate Reservoir Restoration Project (Project), located in the City of Pasadena, Los Angeles County, California. Qualitative monitoring was conducted in the planted and seeded portions of the Phase 2 mitigation areas including DG-W-1 (Johnson Field), DG-2, DG-2 New Channels, DG-2 WOUS, DG-W-2 (Mining Pit), DG-W-2 Outlet, DG-4 Sheet Flow (northern), and DG-SF-1. Other areas initially included in Phase 2 include DG-4 Sheet Flow (southern), DG-4 WOUS, DG-4 Drainage, and DG-SF-2; however, due to the dynamic nature of these areas and/or uncertainty of hydrologic conditions prior to the completion of sediment removal for the Project, these areas were not planted or seeded during Phase 2. DG-4 WOUS was planted and seeded as part of the Phase 3 implementation effort and it is anticipated that DG-4 Sheet Flow (southern), DG-4 Drainage, and DG-SF-2 will be planted with willow (*Salix* sp.) and mulefat (*Baccharis salicifolia*) stakes during future phases, if warranted. 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 first round of the annual maintenance removal phase was completed in October of 2022. Sediment removal is occurring on an annual basis within the sediment removal areas for the Project and habitat restoration is being conducted onsite 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


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Qualitative monitoring was conducted by Carley Adams on August 27, 2025. Field data collected during the monitoring event is provided in Attachment A. This report documents the second bi-annual qualitative monitoring visit for the Phase 2 mitigation areas.

# 2.0 QUALITATIVE MONITORING IN PHASE 2 MITIGATION AREAS

## 2.1 Brief Summary of Plant Installation

During the Phase 2 Installation effort, which was completed on May 5, 2021, a total of 11,440 one-gallon container plants were installed in the DG-W-1 (Johnson Field), DG-W-2 (Mining Pit), DG-W-2 Outlet, DG-2, DG-2 New Channels, DG-2 WOUS, DG-4 Sheet Flow (northern), and DG-SF-1 mitigation areas. Container plants were not installed in the DG-4 Sheet Flow (southern), DG-4 WOUS, DG-4 Drainage, or DG-SF-2 mitigation areas during Phase 2 of implementation; however, these areas were included in the weed removal effort and DG-4 WOUS was planted and seeded during Phase 3 of implementation. Table 1 lists container plant species and the numbers installed in each of the Phase 2 mitigation areas.

**Table 1. Summary of Container Planting**

| Scientific Name | Common Name | DG-W-1 (Johnson Field) | DG-2/ DG-2 New Channels/ DG-2 WOUS | DG-W-2 (Mining Pit) | DG-W-2 Outlet | DG-4 Sheet Flow (Northern)/ DG-SF-1 | Total |
|---|---|---|---|---|---|---|---|
| Artemisia douglasiana | Mugwort | 349 | 448 | 187 | 50 | 31 | 1,065 |
| Baccharis pilularis | Coyote brush | 349 | 375 | 187 | 50 | 31 | 992 |
| Baccharis salicifolia | mulefat | 673 | 827 | 228 | 61 | 37 | 1,826 |
| Populus fremontii | Fremont's cottonwood | 349 | 375 | 187 | 50 | 31 | 992 |
| Rosa californica | California rose | 349 | 375 | 187 | 50 | 31 | 992 |
| Rubus ursinus | California blackberry | 349 | 375 | 141 | 38 | 23 | 926 |
| Salix gooddingii | Black willow | 698 | 896 | 373 | 101 | 61 | 2,129 |
| Salix laevigata | Red willow | 349 | 375 | 187 | 50 | 31 | 992 |
| Salix lasiolepis | Arroyo willow | 349 | 375 | 187 | 50 | 31 | 992 |
| Sambucus mexicana | Mexican elderberry | 175 | 225 | 94 | 25 | 15 | 534 |
| | **Total** | **3,989** | **4,646** | **1,958** | **525** | **322** | **11,440** |

All plants were installed according to the methods described in Section 4.11 of the HRP. Planting holes for all container plants 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. 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 approximately two feet in width were backfilled

with native soil and irrigation basins 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 occurs 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 August 27, 2025 visit, all Phase 2 mitigation areas were walked, the health and vigor of container plants were documented and germination from seeding and natural recruitment was noted. In addition, the level of nonnative and invasive weed cover was estimated for each of the Phase 2 mitigation areas.

## 2.3 Qualitative Monitoring Results

Overall, the Phase 2 mitigation areas appear to be performing well. Evidence of dieback from *Phytophthora cactorum*, including wilting, stunted growth, leaf spotting, and/or browning along leaf margins and tips, was not observed in any of the mitigation areas during the monitoring visit. Formal mortality counts were taken for the Phase 2 mitigation areas during the 2021, 2022, 2023, 2024, and 2025 quantitative monitoring events. Drought stress from recent high temperatures and lower than average precipitation during the 2025 rainy season was observed throughout the Phase 2 mitigation areas. The irrigation for the Phase 2 mitigation areas was terminated in May of 2024 according to Section 4.6 of the HRP, which states that supplemental irrigation will continue to be applied for a period of no more than three years. The lack of supplemental irrigation and recent high temperatures appears to be the primary contributing factor to plant stress. The installation of plants in the Phase 2 mitigation area appears to have been completed successfully and the current issues identified during the monitoring visit are not expected to influence the continued growth of the plants in the mitigation areas.

### 2.3.1 DG-W-1 (Johnson Field)

The overall health of the container plants in DG-W-1 was noted as being good. Approximately less than 5 percent of the container plants in DG-W-1 were noted as showing varied levels of stress and a negligible number were noted as dead or missing. This is approximately the same percentage of plants that were showing stress during the last monitoring event. Stress appeared to primarily be the result of drought conditions and recent high temperatures but may also be occurring because of competition from nonnative and invasive weeds or recreational traffic through the mitigation areas. Photos 1 through 3 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-W-1 mitigation area, likely from both natural recruitment and from seeding. Native plants such as California sagebrush (*Artemisia californica*), mugwort (*Artemisia douglasiana*), coyote brush (*Baccharis pilularis*), mulefat (*Baccharis salicifolia*), tall flatsedge (*Cyperus eragrostis*), Canada horseweed (*Erigeron canadensis*), telegraph weed (*Heterotheca grandiflora*),

and Hooker's evening primrose (*Oenothera elata*) were observed sprouting in the DG-W-1 mitigation area. Native cover was estimated to be approximately 85 percent.

Nonnative weed cover was estimated at approximately less than 1 percent, which is approximately the same level of weed cover that was observed during the previous monitoring visit. Black mustard (*Brassica nigra*) was the only nonnative species observed in DG-W-1. Most of the nonnative weeds observed in this mitigation area were still vegetative and just beginning to germinate.

### 2.3.2 DG-2/DG-2 New Channels/DG-2 WOUS

The overall health of the container plants in DG-2, DG-2 New Channels, and DG-2 WOUS was noted as being fair to good. Approximately 10 to 15 percent of the container plants were noted as showing varied levels of stress and a negligible number were noted as dead or missing. This is approximately 5 to 10 percent higher than the percentage of plants that were showing stress during the last monitoring event. Stress may be occurring due to similar reasons described for DG-W-1. During the monitoring visit, the grade control structure that was installed at the northern end of DG-2 New Channels where the channels connect to DG-W-1 was inspected for erosion. Minor erosion was observed, mostly towards the western end of the structure; however, no major erosion issues were observed, and the structure appears to be functioning properly. Photos 4 through 7 in Attachment B document the mitigation areas during the monitoring visit.

Native plant growth was noted throughout the DG-2, DG-2 New Channels, and DG-2 WOUS mitigation areas, likely from both natural recruitment and from seeding. Native plants such as mugwort, mulefat, tall flatsedge, common phacelia (*Phacelia distans*), and stinging nettle (*Urtica dioica*) were observed sprouting in the mitigation areas. Native cover was estimated to be approximately 80 percent.

Nonnative weed cover was estimated at approximately less than 1 percent, which is approximately the same percentage of nonnative cover that was observed during the last monitoring visit. Black mustard and poison hemlock (*Conium maculatum*) were the only nonnative species observed in this mitigation area. Most of the nonnative weeds observed in this mitigation area were vegetative and just starting to germinate.

### 2.3.3 DG-W-2 (Mining Pit)

The overall health of the container plants in mitigation area DG-W-2 was noted as being fair. Approximately 25 percent of the container plants were noted as showing varied levels of stress and a negligible number were noted as dead or missing. This is approximately 20 percent higher than the percentage of plants that were showing stress during the last monitoring event. Stress may be occurring due to similar reasons described for DG-W-1. Photos 8 and 9 in Attachment B document the mitigation area during the monitoring visit.

During the monitoring visit, it was noted that many of the remaining mature black willows (*Salix gooddingii*) in this mitigation area were continuing to show signs of recovery from the invasive shot-hole borer (ISHB) infestation that was confirmed by the Los Angeles County Department of Agricultural Commissioner/Weights & Measures in December of 2021. The evidence of recovery on the willows that

were left in place includes sprouting from the base of the trees. Most of the dead and hazardous black willows in this mitigation area were removed in October of 2022. Black willows that were determined to have the potential to recover were left in place and will continue to be monitored during the qualitative monitoring visits.

Native plant growth was noted throughout the DG-W-2 mitigation area natural recruitment and seeding efforts. Native plants such as mugwort, mulefat, Canada horseweed, ladies' tobacco (*Pseudognaphalium californicum*), California rose (*Rosa californica*), stinging nettle, and rough cocklebur (*Xanthium strumarium*) were observed sprouting in the DG-W-2 mitigation area. Native cover was estimated to be approximately 70 percent.

Nonnative weed cover was estimated at approximately less than 1 percent, which is approximately 4 percent lower than the level of nonnative cover that was observed during the last monitoring event. Black mustard and poison hemlock were the only nonnative species observed in this mitigation area. Most of the nonnative weeds observed in this mitigation area were vegetative and just starting to germinate.

### 2.3.4 DG-W-2 Outlet

The overall health of the container plants in mitigation area DG-W-2 Outlet was noted as being fair to good. Approximately 25 percent of the container plants were noted as showing varied levels of stress and a negligible number were noted as being dead or missing. This is approximately 20 percent higher than the percentage of plants that were showing stress during the last monitoring event. Stress may be occurring due to similar reasons described for DG-W-1. Photos 10 and 11 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-W-2 Outlet mitigation area and is likely associated with natural recruitment and seeding efforts. Native plants such as mugwort, coyote brush, and Hooker's evening primrose were observed sprouting in the DG-W-2 Outlet mitigation area. California dodder (*Cuscuta californica*) was also observed growing on some of the container plants. Native cover was estimated to be approximately 70 percent.

Nonnative weed cover was estimated to be approximately 2 percent, which is approximately 3 percent lower than the percentage of weed cover that was observed during the previous monitoring visit. Poison hemlock and perennial pepperweed (*Lepidium latifolium*) were the only nonnative species observed during the monitoring visit. Most of the nonnative weeds observed in this mitigation area were vegetative and just starting to germinate.

### 2.3.5 DG-4 Sheet Flow/DG-SF-1

The overall health of the container plants in mitigation areas DG-4 Sheet Flow (northern) and DG-SF-1 were noted as being good. Approximately 10 percent of container plants were showing varied levels of stress, which is approximately 5 percent higher than the percentage of container plants that were showing stress during the previous monitoring event. Stress may be occurring due to similar reasons described for DG-W-1. Photo 12 in Attachment B documents the mitigation area during the monitoring visit.

Minimal native plant germination was noted throughout the DG-4 Sheet Flow and DG-SF-1 mitigation areas and what is growing is likely associated with natural recruitment and seeding efforts. Native plants such as mugwort, tall flatsedge (*Cyperus eragrostis*), and Douglas' nightshade (*Solanum douglasii*) were observed sprouting in the DG-4 Sheet Flow and DG-SF-1 mitigation areas. Native cover was estimated to be approximately 65 percent.

Nonnative weed cover in DG-4 Sheet Flow and DG-SF-1 was estimated at approximately 5 percent, which is approximately 3 percent higher than the level of weed cover that was observed during the previous monitoring visit. Nonnative species observed included black mustard and perennial pepperweed. Most of the nonnative weeds observed in this mitigation area were vegetative and just starting to germinate.

# 3.0 RECOMMENDATIONS

## 3.1 Nonnative Plant Control

Nonnative weed cover was found to be approximately less than 1 percent to 5 percent for the Phase 2 mitigation areas. Evidence of recent weed abatement activities was present in some of the Phase 2 mitigation areas and the weeds in these areas were just beginning to germinate. Regular maintenance and removal of nonnative weeds is the highest priority for all mitigation areas to reduce competition between native and nonnative plants. The 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. 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.

## 3.2 Herbivory

Rabbit herbivory of container plants was generally not observed in the Phase 2 mitigation areas. Minor herbivory generally will not kill the plants, but continued monitoring should be conducted during future visits to ensure the level of the herbivory isn't causing plants to die. As the plants are becoming more established, they have become less susceptible to the effects of herbivory. The cages installed by Nature's Image around container plants following container plant installation have been removed for container plants that have outgrown the cages and no longer require protection; however, if browsing by rabbits or other animals begins to worsen, additional caging around affected and/or favored container plants may be warranted.

## 3.3 Erosion

New erosional issues were not observed within the Phase 2 mitigation areas during the monitoring visit. Significant erosion that was observed along the western section of DG-2 and portions of the Side Slopes during previous monitoring visits was repaired following the recontouring of the side slope on the east side of the reservoir. Until more native perennial plants become established in these areas, there is the potential that intense rainfall may continue to create erosion problems. During future monitoring events, 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 erosion rills from becoming larger.

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

Sincerely,

Carley Adams
Senior Biologist

## LIST OF ATTACHMENTS

Attachment A – Field Notes

Attachment B – Photo Documentation

# ATTACHMENT A

Field Notes

DG Phase 2 Qual
8/27/25
C. Adams

## Minning Pit

- ~25% of the cont. plants appear drought stressed
- Native germ: ARTDOU, ERICAN, BACSAL, ROSCAL → very little annual germ XANSTR, URTDIO PSECAL
- Nonnatives: CONMAC, BRANIG < 1% cover
- Most willows continuing to recover from ISAB
- Some broken willow & mulefat branches obs along drainage path
- **Minning Pit Outlet**
  - ~25% of plants appear drought stressed
  - Native germ: ERICAN, ARTDOU, BACPIL, CUSCAL
  - Nonnative germ: LEPLAT, CONMAC < 2% cover
  - Drought stress likely from recent high temps / below avg rainfall

## Johnson Field

- Cont. plants mostly healthy & well est. ~5% stressed
- Native germ: ARTDOU, ARTCAL, BACSAL, BACPIL, HETGRA, ERICAN, CYPERA, OENELA ~85% cover
- Nonnative germ: BRANIG <1%.
- Site less drought stressed than others.

## DG-2/NC/WOUS

- Cont. plants mostly healthy ~10-15% stressed from drought & high temps
- Native germ. BACSAL, ARTDOU, URTGRA, CYPERA, PHADIS ~80% cov.
- Nonnative germ: BRANIG, CONMAC <1% cover

## DG-SE

- Cont. plants mostly healthy ~10% stressed from drought & high temps
- Native germ: CYPERA, ARTDOU, SOLDOU ~65% cover
- Nonnative germ: BRANIG, LEPLAT ~5% cover

# ATTACHMENT B

Photo Documentation

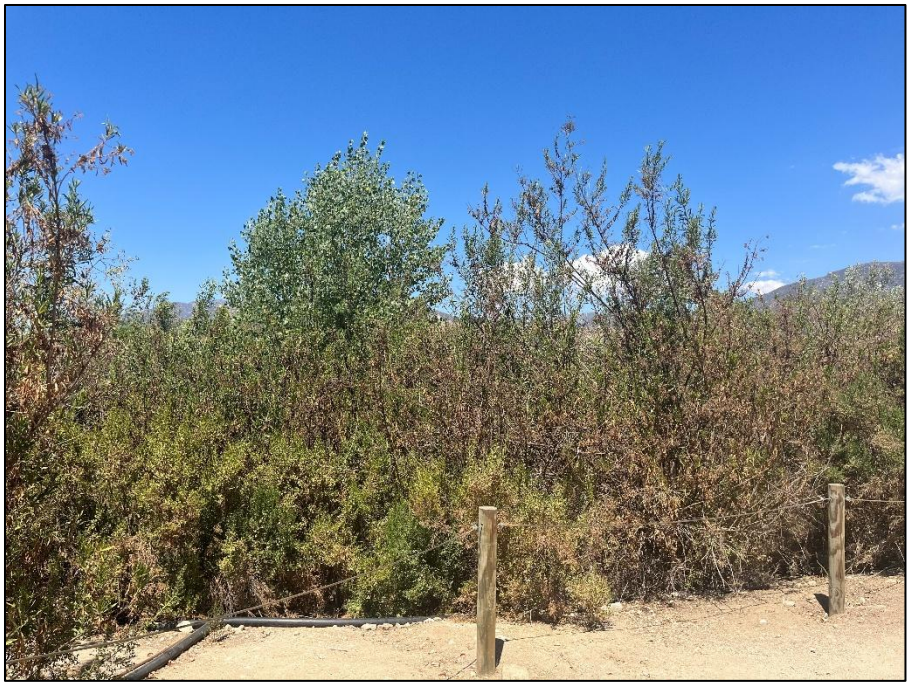

Photo 1: Overview Mitigation Area DG-W-1 (Johnson Field)

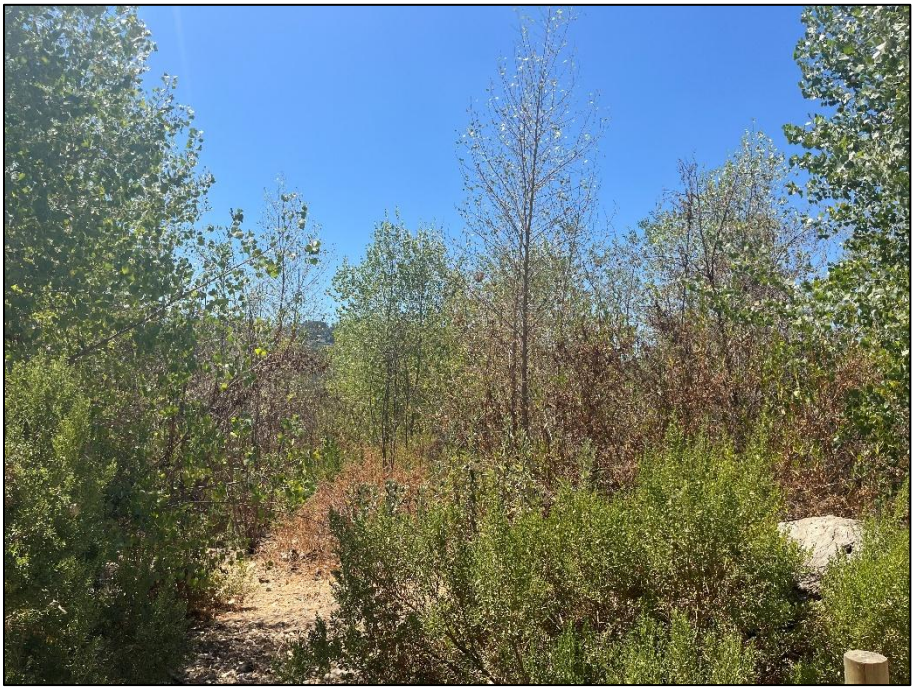

Photo 2: Overview Mitigation Area DG-W-1 (Johnson Field)

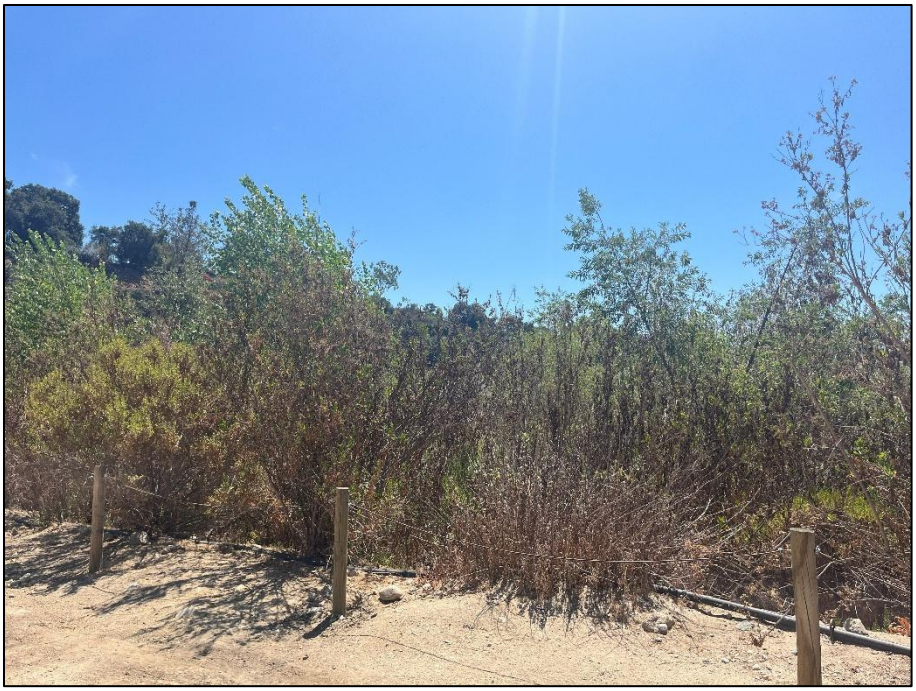

Photo 3: Overview Mitigation Area DG-W-1 (Johnson Field)

Photo 4: Overview Mitigation Area DG-2 & DG-2 New Channels

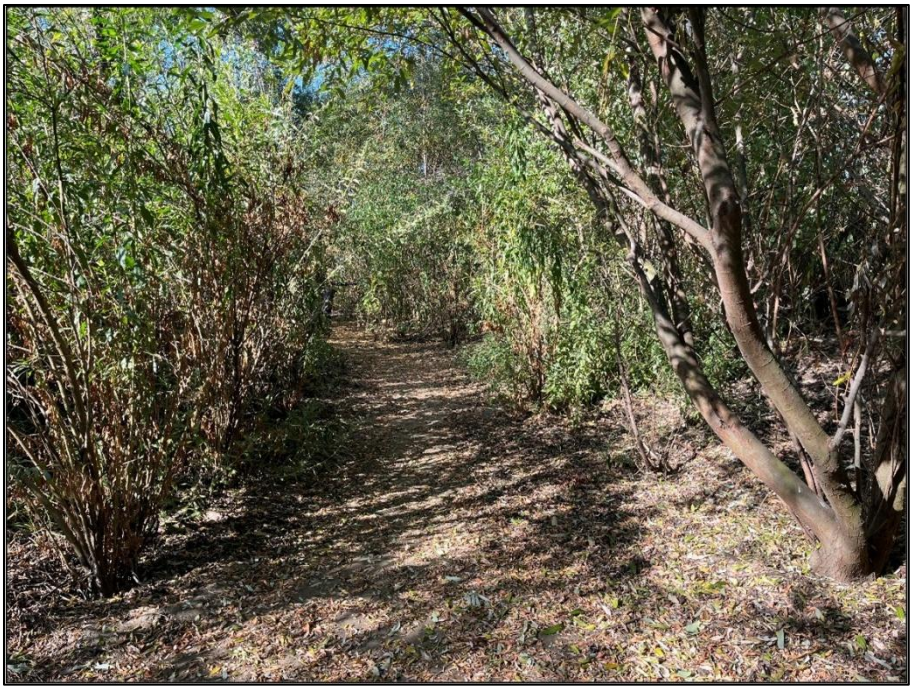

Photo 5: Overview Mitigation Area DG-2 & DG-2 New Channels

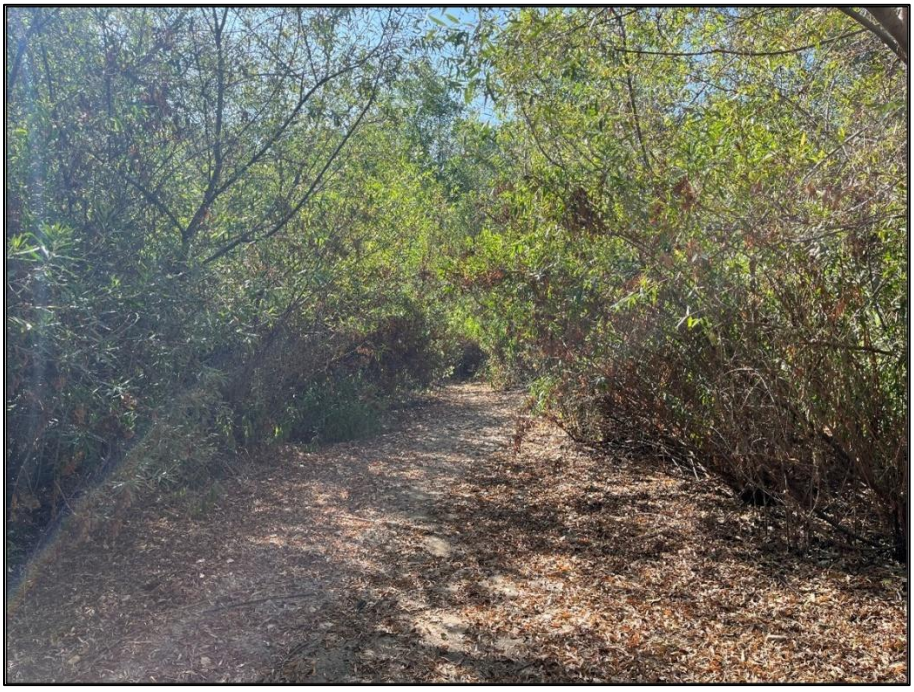

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Photo 6: Overview Mitigation Area DG-2 & DG-2 WOUS

Photo 7: Overview Mitigation Area DG-2 & DG-2 WOUS

Photo 8: Overview Mitigation Area DG-W-2 (Mining Pit)

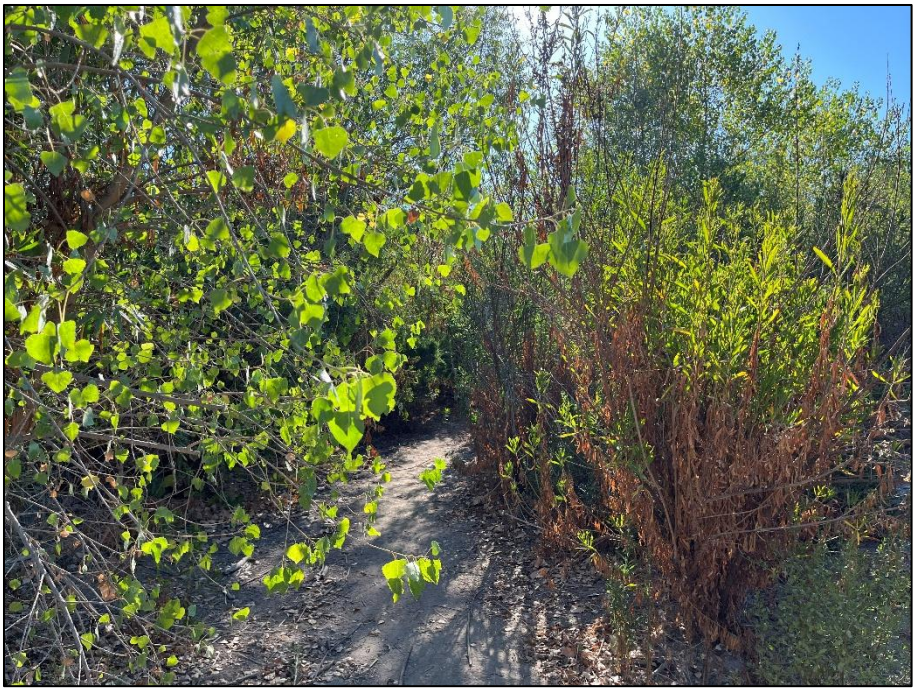

Photo 9: Overview Mitigation Area DG-W-2 (Mining Pit)

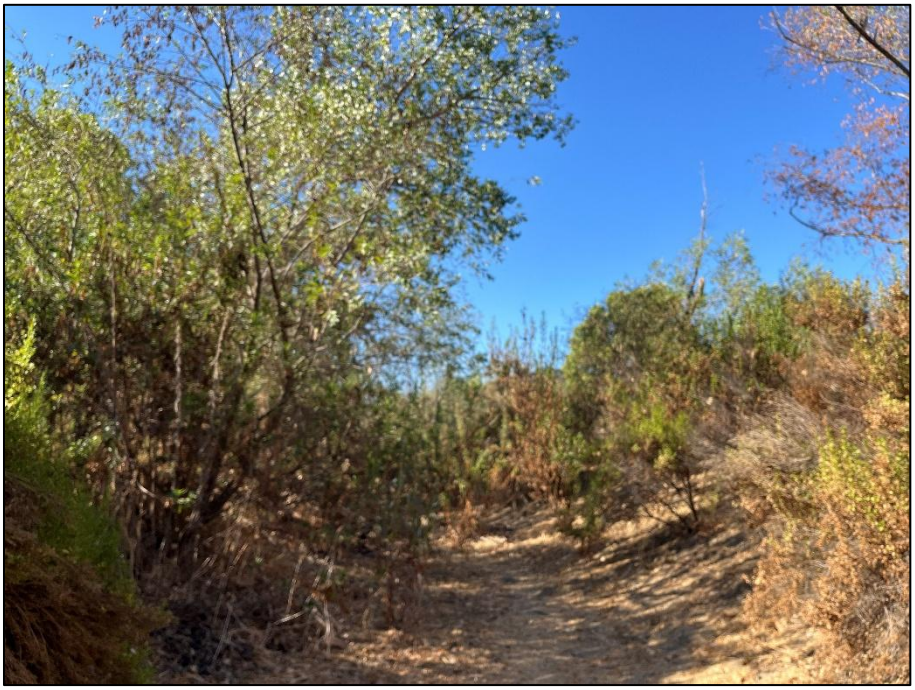

Photo 10: Overview Mitigation Area DG-W-2 Outlet

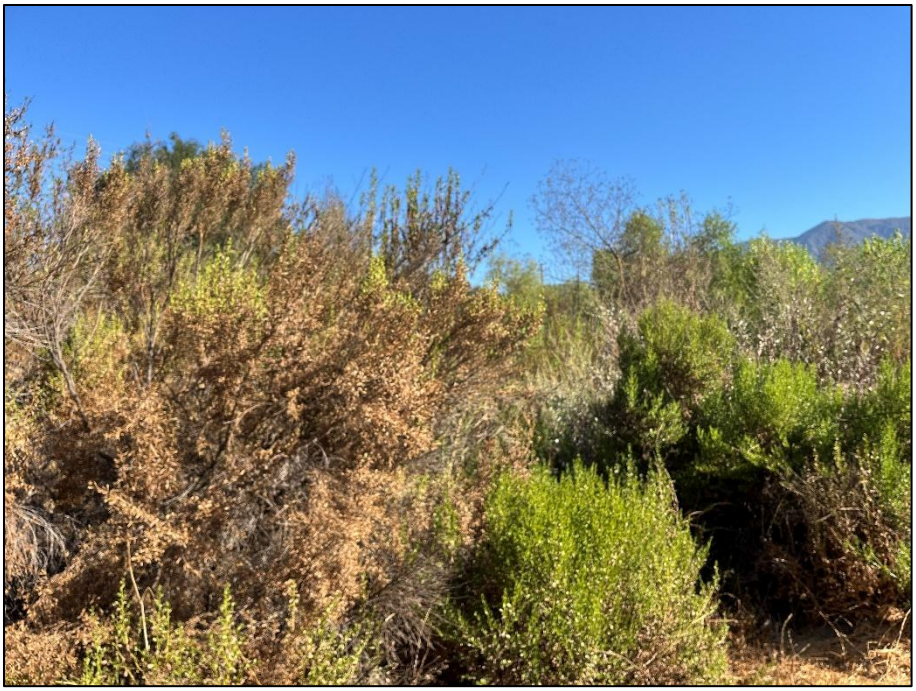

Photo 11: Overview Mitigation Area DG-W-2 Outlet

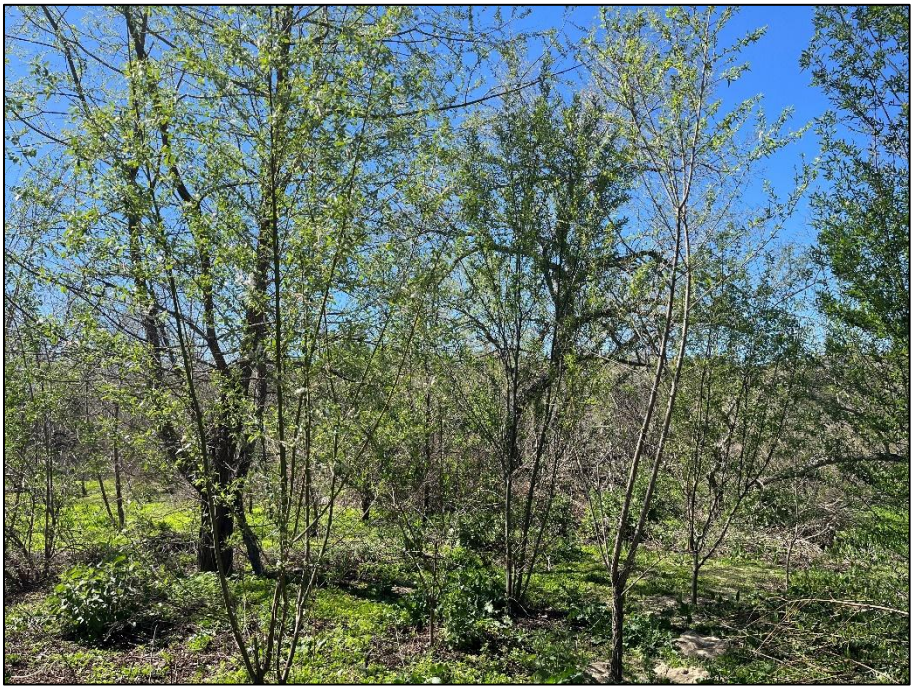

Photo 12: Overview Mitigation Area DG-SF-1