Pasadena Water and Power (PWP) desires to divert water from Hahamongna and Arroyo Seco for city purposes.

- **Area 2:** Dam and Diversion Replacement
- **Area 3:** Expansion of Spreading Basins City can take 60-80% of this water for city use
Area 2: Existing Conditions
(Diversion Weir)
Proposed Area 2 Project
Area 3: Existing Conditions
(Spreading Basins)
Proposed Area 3 Project
Cubic feet per second or (cfs)

- 1 cubic foot per second = 7.5 gallons flowing by a particular point in 1 second.
- 1 cfs is equivalent to 448.8 gallons of water flowing per minute.

Source: coloradoriverdistrict.org
Living Stream vs. Spreading Basin

- PWP wants 25 cfs (+11,220 gallons/min) when average is 7 cfs. Drier seasons avg. is 2 cfs.
- PWP has not indicated any plan for volume or timing in DEIR.
Coastal Sage Scrub Habitat

► 100 listed sensitive animal animals occur in CCS

► 10-15% of historical CSS habitat remains intact

Source: Cleland, Funk, and Allen in Ecosystems of California (2016)
Coastal Sage Scrub Habitat

- CSS shrub seedlings **compete** with exotic grasses
  - Exotics **germinate early**
  - Occupy same soil region
  - Lessen available water

- **Climate Change**
  - Increased fire frequency
  - Favoring exotic grasses
  - CSS Landscape → Grassland
Native Fish in Arroyo Seco

- Considering extirpation of many native fish we would have liked CDFW to have stressed:
  - Their Reintroduction
  - Habitat Restoration
  - Habitat Preservation
What has been Lost?

1. *Lampetra spp.* (Pacific brook lamprey)
2. *Entosphenus tridentata* (Pacific lamprey)
3. Rainbow Trout/Steelhead
4. *Gila orcutti* (Arroyo Chub)
   - ASF has restored some below Devils Gate Dam and below Rose Bowl

Source: ASCP EIR 2020
Historic Fish Populations

5. *Rhinichthys osculus* (Ana speckled dace)

6. *Catostomus santaanae* (Santa ana sucker)

7. *Gastero.asculeatus williamsoni* (Unarmored threespine stickleback)

Above (except trout) were last recorded 50 years ago in Arroyo Seco.
Steelhead Trout (*Oncorhynchus mykiss*)

- **Diversions and Land Conversion** reduced numbers
  - Dams landlock
  - Groundwater pumping
  - Urban runoff
  - Hatchery stock do NOT breed with native fish

- Historical pop: ~tens of thousands
- **Current >1000 individuals**

Source: Power et. al. (2016) *Ecosystems of California*
Steelhead Migration

Once thriving area for Steelhead Trout who migrated:

San Gabriel Mountains ➔ Arroyo Seco ➔ LA River ➔ Ocean

Source: KCET.org
Possible Extinction of Trout

- 13 species (42%) of endemic salmonid in CA

- Some predicted to reach extinction in 50-100 years

Source: Katz et al. (2013) Environmental Biology of Fishes
Environmental Flows

- **Code #5937** requires dams and water facilities provide **enough water** for fish to survive during critical period.

- **Code #5901** requires fish to be able to **go up and downstream**.

The current Draft EIR **does not** provide mitigation for this and future **climate change**
On Climate Change (CC)

CDFW stressing the ASCP lack of taking into account CC.

Cites 2019 study on CC Impacts in So. California

Photo: savehahamongna.org
Two Scenarios for CA Water Runoff Years 2070-2099

+127% Warm/Wet
- Greater biomass
- Greater carbon sinks
- Saturated soils - Massive Landslides
- Poor water quality from sediment

60% Drier (most models)
- Less water quantity
- More Wildfires
- Possible desertification of S. CA

Source: Underwood et al. (2019) Ecosystem Services
Groundwater Recharge Predictions

Fig. 4. Percent change in three ecosystem services and one disservice (sediment export) across the southern California study area. Data show change from current conditions using 30 year averages under five general circulation models (GCMs).
Least Bell’s vireo (*Vireo belli pusillus*)

- 1986 subpopulation listed as Endangered
  - 300 pairs existed
  - Due to loss of **Riparian Habitat** and **parasitism** from Cowbird

- Known to occur downstream of **Devil’s Gate Dam**

- ASCP surveyed May 3\(^{rd}\) - July 29\(^{th}\) 2019

Least bell’s vireo

- Common trees/shrubs associated with vireo
  - Mulefat
  - Cottonwoods
  - Willows
  - Riparian and upland scrub

- These species threatened by diversion of water

Idaho Cottonwood Case Study

- Big Lost River in Idaho
dewatered channels
- Mortality of cottonwoods
  within 5 years of summer
diversion
- Cottonwoods along more
  thriving channels thrived

Source: Rood, Braatne, and Hughes, (2003) Tree Physiology
Threatened Species of Arroyo Seco

Amphibians

- *Taricha torosa* (California newt) species of special concern (SSC). Observed in 2013, was NOT observed in survey for EIR in 2019

- Suitable Habitat in Area 2 according to EIR

"File:Taricha torosa, Napa County, CA.jpg" by Connor Long is licensed under CC BY-SA 3.0
Threatened Species of Arroyo Seco

- **Anaxyrus (Bufo) californicus** (arroyo toad) FE and SSC, considered *extirpated*, negative survey 2013 + 2019.
- 3 inch

- **Rana draytonii** (California red-legged frog) FT and SSC. Species considered *extirpated*
Threatened Species of Arroyo Seco

Reptiles

1. *Aspidoscelis tigris stejnegeri* (California whiptail)
2. *Thamnophis hammondii* (Two-striped gartersnake) SSC, both
   - observed in 2013, assumed to be present now but not recorded in 2019
Threatened Species

3. *Anniella stebbinsi*  
(Southern CA legless lizard) SSC, recorded in 2018. Suitable habitat in Area 2 + 3

- 7 inch.
- Can burrow down to 2 feet
Threatened Species: **Birds**

1. *Accipiter cooperii* (Coopers hawk)
2. *Baelophus inornatus* (Oak titmouse)
3. *Spinus lawrencei* (Lawrence goldfinch)
Environmentally Superior Alternative
Let the River Flow!

- a minimum environmental flow for fish and aquatic species of 3 cfs in the Spring;
- No "engineered" stream material
- A living river and natural stream to allow water to percolate into the ground basin rather than spreading...
What can we do?

- Learn about **Arroyo Seco**, **Arroyo Seco Foundation** website, **Hahamongna Nursery**, or receive updates [fish@arroyoseco.org](mailto:fish@arroyoseco.org)
Let the River Flow