AMERICAN RIVERS



California Active 150

A TOOL FOR INCREASING THE PACE & SCALE OF DAM REMOVAL

Summary report of *Project Phase 1* prepared for The California Fish Passage Forum

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1. Introduction

The assessment and prioritization of dams within California's boundaries is a collaborative project between American Rivers and the National Aquatic Connectivity Collaborative (a Program of the National Fish Habitat Partnership) made possible with generous funding by Resources Legacy Fund (RLF) and a private anonymous donor.

Dams provide important functions for society such as drinking water supply, flood control, hydropower generation, and recreational opportunities. However, many existing dams are no longer used for their intended purpose (i.e., obsolete) and may be aging and becoming structurally unsound. The cost of repairing and maintaining obsolete structures can be significant and often more expensive than removal itself. Furthermore, the adverse ecological impacts of these structures are now better understood. In many instances, removing these obsolete unsafe barriers promotes aquatic connectivity and ecosystem recovery benefits for communities and the environment, while frequently enhancing recreation opportunities (e.g., boating and angling).

To address the connectivity impacts of dams and dam-like structures, many of which have exceeded their lifespan, RLF supported the development of an Active 150 list for California. An Active 150 list is a queue of dam removal projects in a geography that are: (1) a priority for removal (based on collaborative discussions with partners); and (2) feasible to remove based on structure utility, condition, related infrastructure, and, in some instances, landowner outreach. The goal of Active 150 is to effectively advance ecologically beneficial and feasible projects to the fundraising and "shovel ready" state.

Developing an inventory of dams in collaboration with project partners is the first step in advancing landscape scale river restoration through an Active 150 process. Although dams are common across the country, the exact number of dams in California is not known as many of these structures were installed before any regulations were in place or fall below the size requirements for regulatory authority (e.g., fishing ponds, amenity lakes, farm ponds, and old mill dams). Official and existing inventories may include data gaps and use of these incomplete data sets thwarts a full habitat fragmentation evaluation. To address this issue, the project included compiling existing inventories and, using various techniques, supplemented that information by identifying smaller barriers, which did not appear on those inventories.

This supplemented dam inventory forms the basis for development of the Active 150 prioritization model, which identifies barrier removal projects that meet restoration priority criteria developed through partner collaboration. Discussions with local partners informed the identification of criteria used in the development of a multi-criteria decision-making analysis (MCDA) model – the application of which yields a list of priority barrier removal projects. By optimizing the prioritization model to identify dams that would provide the most ecological and social benefits if removed, the MCDA identifies opportunities to restore and expand habitat connectivity, reconnect migratory corridors for at-risk fish and other aquatic species, strengthen ecosystem resilience, and stem biodiversity declines consistent with partner priorities.

To enhance the utility of the Active 150 application, additional filters and layers may be used in the geographic information system (GIS) tool under development. These filters include identification of federal lands, Tribal ancestral territory, and community safety enhancement project opportunities. These items were included in filters, rather than in the MCDA itself due to inconsistent data availability (e.g., only National Inventory of Dams (NID) database information indicates the hazard level of a particular structure), which, if applied globally, would yield inaccurate priorities from an ecological restoration perspective.

The Active 150 project is intended to highlight restoration opportunities for dam removal practitioners, agencies, and funders. Project opportunities may be viewed by: (1) a full data set of known dams; (2) projects that are an ecological

priority for restoration; (3) application of filters to identify potential partners or community safety enhancing projects; and (4) a cultivated opportunity list – the "Active 150" that highlights projects that are most eligible for immediate fundraising and implementation (including ongoing projects that require more funding, or opportunities for new projects). Thus, the Active 150 list reflects projects that are both an ecological priority and socially feasible.

The Active 150 list is iterative, meaning that it is subject to change. As additional partners provide feedback regarding their priorities to American Rivers, staff will modify the MCDA to ensure that the project list is reflective of all California partner priorities. In addition, as projects are implemented, they will be identified as successes, and will be eliminated from the list of opportunities, allowing for the addition of new potential projects for funders and projects managers to consider. The Active 150 is intended to yield landscape level change by highlighting 150 active and potential socially feasible projects at any moment in time. Because the list is reflective of partner priorities, our partners can easily select and begin fundraising for identified opportunities confident that the selected project reflects their organization's goals.

1.1 AMERICAN RIVERS

Founded in 1973, American Rivers' is a national non-profit organization that believes every community in our country should have clean water and a healthy river. American Rivers has 100+ staff working across the country to address river threats coast-to-coast through our clean water, floodplain restoration, dam removal, hydropower, river protection, and equitable conservation programs. Our work includes helping partners protect vital habitat, working with communities to reduce river pollution, securing policies to ensure we all have clean, abundant water, driving solutions that reduce flood risk, working to remove unnecessary dams, and strengthening a river movement that adds power to all this work. While rivers continue to face many ongoing threats, three crises – climate change, biodiversity loss, and environmental injustice – is driving our work for the coming decade and beyond.

Since 1998, we have led a national movement focused on dam removal as a safe, reliable tool for restoring river function and connecting previously fragmented river systems. Our Dam Removal team has implemented and/or provided technical assistance to more than 326 successful dam removal and river restoration projects in watersheds around the nation.

In 2022, American Rivers set the strategic goal of removing 30,000 dams nationwide. Even as American Rivers and our river restoration partners celebrate progress on removing 2,240 dams nationwide, there is a need for more action. Our work focuses on participating in on-the-ground demonstration projects, creating tools to cultivate additional dam removals in a given geography, and training project managers at other organizations to facilitate meeting this ambitious goal.

1.2 SOUTHEAST AQUATIC RESOURCES PARTNERSHIP AND THE NATIONAL FISH HABITAT PARTNERSHIP

SARP is a Fish Habitat Partnership under the National Fish Habitat Partnership as well as a Committee under the Southeastern Association of Fish and Wildlife Agencies. For over a decade, SARP has been working to map and prioritize mitigation of aquatic organism passage barriers (dams, assessed road stream crossings, and waterfalls) across multiple geographies as a part of its Aquatic Connectivity Program. In 2017, SARP's inventory and prioritization process expanded from the southeastern US to the rest of the 50 United States, Puerto Rico, and the US Virgin Islands with funds from various sources. This effort has now become the National Aquatic Connectivity Collaborative (NACC), a program under the larger National Fish Habitat Partnership, which includes the National Aquatic Barrier Inventory (NABI) and Prioritization Tool, and it allows partners to extract data at multiple scales as well as identify those barriers that would reconnect high quality habitat. The inventory and tool can be tailored to reflect identified priorities, and creates the basis for the development of the California Active 150.

2. Active 150 Development Process

Identifying and implementing high priority projects to generate an Active 150 List can only occur with targeted collaboration and partnership to inform list development. When developing a tailored prioritization, as is the case for an Active 150, SARP works with existing partners in high priority areas to provide user support for inventory and NABI application in the following ways:

1. **Develop an inventory of dams.**
2. **Develop a list of state specific criteria to inform the prioritization**
3. **Run a prioritization of structures using the tool and state specific criteria indicators**
4. **Review top priority structures to create an "active" list**
5. **QA/QC data to validate attribute and location information**
6. **Regenerate prioritization and add additional structures to active list based on social feasibility.**

In partnership with American Rivers, SARP worked to implement this approach in California to create an Active 150 List of projects that are socially feasible and a high priority for removal.

2.1 CREATING AN INVENTORY OF DAMS

Currently, the NABI inventory for the State of California consists of a known 5,478 dams and 15,043 assessed road stream crossings (figure 2). This California inventory is based on information compiled from multiple sources, including the National Inventory of Dams (NID), the California Fish Passage Forum's Passage Assessment Database (PAD), the US Forest Service Passage Activities Database, and the Western States Water Council Water Data Exchange (WaDE) program[1], all input into the NABI and available at aquaticbarriers.org.

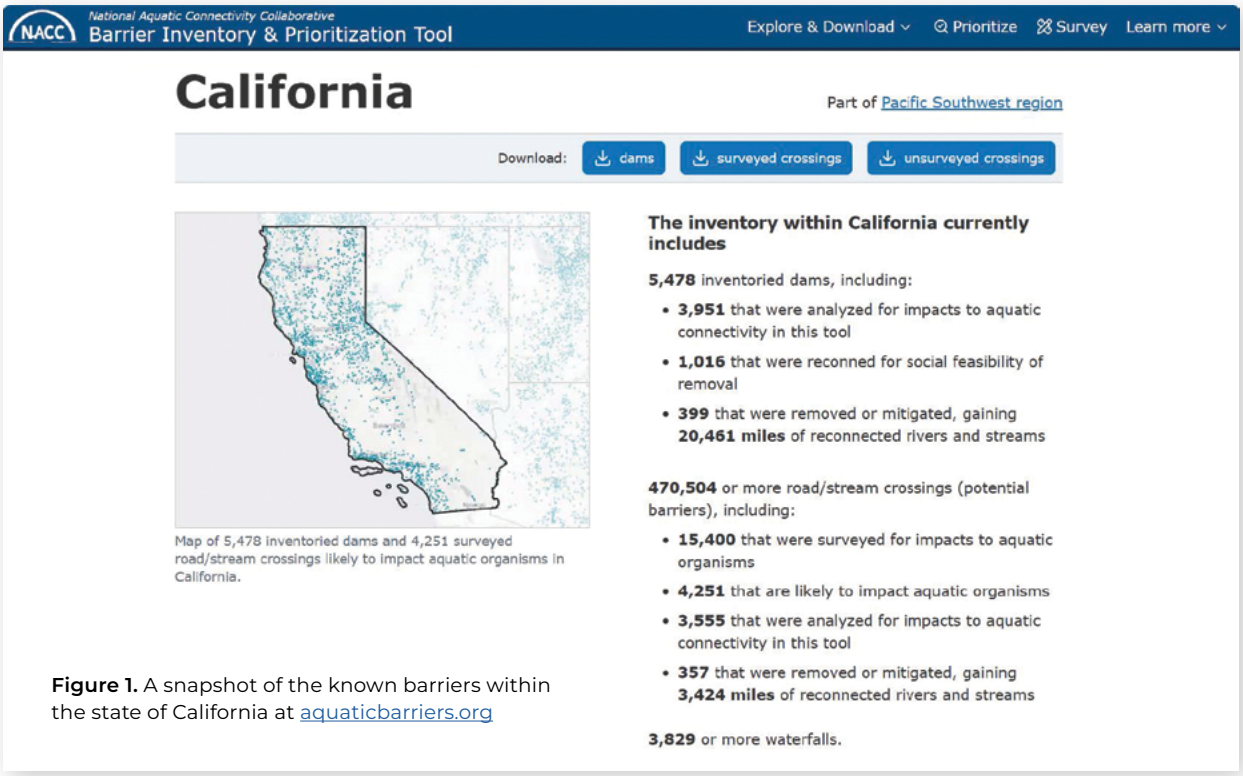


Figure 1. A snapshot of the known barriers within the state of California at aquaticbarriers.org

[1] The Western States Water Council (WSWC)'s Water Data Exchange (WaDE) program is a centralized, cloud-based platform facilitating the sharing of water rights, supply, and use data among 18 Western states, including California.

2.1.1 CALIFORNIA BASE INVENTORY

Within the NABI, three types of barriers are tracked: dams, assessed road stream crossings, and waterfalls. These three barrier types are compiled into one inventory to allow for evaluations of aquatic fragmentation. The NABI's inventory of dams is composed of a base dataset from the NID, which is supplemented by data gathered from regional sources, state regulatory agencies (such as wildlife agencies, state dam safety programs, and water resources departments), state partnerships (e.g., the California Fish Passage Forum) and finally, data from individual basin groups, academic research projects, and other locally available data.

2.2 IDENTIFYING UNKNOWN STRUCTURES IN CALIFORNIA

While California has a robust data set of statewide barrier locations, frequently unknown structures exist. To ensure the PAD and other information sources capture all statewide barriers, SARP, in collaboration with University of Tennessee Chattanooga's GIS lab (UTC), implemented two methods for identifying potentially unknown structures: 1) manual review of points of diversion from the Western States Water Council Water Data Exchange (WADE) dataset and 2) manual review of estimated dams developed from the intersection of water body data found in the National Hydrography Dataset (NHD), Open Street Maps, and the National Wetlands Inventory and the NHD hydrography lines.

2.2.1 MANUAL REVIEW OF THE WADE CALIFORNIA DATASET

The WADE dataset for California includes many water diversion points. However, identification of an associated instream structure and its passage status is not always clear (e.g., due to riparian cover). This lack of clarity is further complicated by the use of seasonal barriers (e.g., inflatable dams and flashboards), which may not be captured by publicly available imaging sources. The California Fish Passage Forum (Forum) works with partners to assess presence, and that information is incorporated into the Active 150 tool through python script.

In California, 14,405 points of diversion exist in the WADE dataset. UTC categorized these points into three categories: (1) Yes, a dam is visible, (2) No, a dam is not visible, or (3) Unsure of dam presence due to canopy (e.g., riparian coverage blocks visibility of the diversion point). Of these 14,405 points, 578 new dams were definitively identified via aerial imagery and added to the inventory, while 9,367 points were not added due to a lack of a visible dam structure, and 4,460 were marked as unsure and need to be reviewed in the field or with high resolution LiDAR elevation data.

2.2.2 MANUAL REVIEW OF THE NHD CALIFORNIA DATASET

In addition to the dams identified using WADE points of diversion, 7,466 estimated potential dam locations were generated by intersecting NHD and National Wetland Inventory lake and pond data with flowlines. SARP reviewed 592 points that fell on fourth order streams and higher, yielding the addition of 216 inventory points, confirmed as visible additional dams. The remaining 6,784 estimated dams will be reviewed and confirmed dams added to the inventory in collaboration with the Forum.

Because the inventory is constantly growing, new priority analyses can be re-run monthly and can be used into the future to identify additional feasible dam removal projects and update the existing "Active" list. In other words, the projects identified as part of this effort represent a snapshot in time. The list is not static, and partners are encouraged to provide input and collaborate on the identification of dam locations, which may be elevated to potential projects, to increase the pace and scale of landscape level restoration in California.

2.3 CREATING A CALIFORNIA PRIORITIZATION FRAMEWORK

The Multi-Criteria Decision Analysis (MCDA) prioritization framework for scoring barriers for possible removal begins with identification of objectives, which are designated by one organization or a set of partners and uses several indicators within the NABI to determine which barriers best meet the objectives. Applied indicators are scored using a nested ranking and weighting system; meaning that indicators are

ranked from 0-1 and then weighted out of 100 within certain criteria categories. These criteria then are also weighted out of 100. Once the indicators are ranked and weighted within their criterion, a final score is produced for each barrier, yielding the MCDA prioritization.

A MCDA framework uses an objectives hierarchy to prioritize structures for removal. It starts with a primary objective, followed by several criteria that, if met, would achieve the objective. Within each criterion, data indicators are weighted and scored. This is a nested weighting hierarchy, so that criteria are weighted and within each criterion, indicators are weighted (Hoenke et al. 2014).

2.3.1 IDENTIFICATION OF PRIORITY OBJECTIVES AND CRITERIA

In California, there are several ongoing efforts to develop dam inventories and prioritization schemes. Many of these efforts focus on larger dams or provide differing information regarding state priorities (e.g., California Department of Fish and Wildlife priorities versus California Department of Water Resources priorities). The Active 150 list complements currently available prioritizations by: (1) consolidating partner priorities into one list; (2) including information regarding smaller dams omitted from the Army Corps of Engineers' NID; and (3) adding further information and detail regarding the social feasibility of priority dam removal projects, allowing American Rivers and other conservation organizations to accelerate the pace and scale of dam removals of all sizes throughout California.

To identify objectives and criteria that would inform the first phase of this Active 150 process, American Rivers held meetings with multiple federal agencies, state agency staff, partner organizations, and Tribal experts, including:[2]

1. **The Federal Interagency Fish Passage Task Force**
2. **U.S. Fish and Wildlife Service**
3. **National Marine Fisheries Service**
4. **National Park Service**
5. **California Department of Fish and Wildlife**
6. **Department of Water Resources**
7. **California Trout**
8. **California Fish Passage Forum**
9. **Save California Salmon**
10. **Dr. Beth Rose Middleton Manning (UC Davis)**
11. **Watershed Solutions Network**
12. **California Tribal College**

The priority objectives and criteria gathered from these sources was then used to inform the Active 150 prioritization and process.

2.3.2 DEVELOPING A CALIFORNIA PRIORITIZATION

The criteria gathered through outreach to partners supplemented and used indicators available from SARP's NABI tool (to see all available indicators, turn to appendix I). These additional indicators allow partners to prioritize structures using a MCDA framework, creating state-specific priority scores and priority categories.

Once criteria were determined based on outreach to partners, American Rivers worked with SARP to identify representative objectives and criteria. The ranking and weighting of each objective and criterion correlates to the number of partners that shared that objective or priority criteria to inform their work.

For California, the Objectives Hierarchy is designed as follows:

[2] American Rivers is separately working with SARP on a project aimed at reviewing dams on National Forest Lands, which will complement this effort and can be integrated if desired by partners. There will also be a Phase 2 of the project that will incorporate additional partner priorities, such as the Delta Stewardship Council.

PRIMARY OBJECTIVE: ***Identify priority dams to remove or remediate in the State of California.***

A priority dam for removal would be a dam that meets the following criteria:

1. Opens access to high quality habitat:

- ***Landcover:*** *Average amount of the river floodplain in the upstream network that is in natural landcover types. -1 = not available.*
- ***SizeClasses:*** *Number of unique upstream size classes that could be gained by removal of this dam or assessed road/stream crossing. -1 = not available.*
- ***PercentUnaltered:*** *Percent of the total upstream functional river network length from this dam or assessed road/stream crossing that is not specifically identified in NHD or the National Wetlands Inventory as altered (canal / ditch, within a reservoir, or other channel alteration). -1 = not available.*
- ***UpstreamDams:*** *Number of dams at the upstream ends of the functional network for this dam or* assessed road/stream crossing.

2. Opens access to habitat for any of the following priority species: SGCN, TE, and anadromous species

- ***BaselineFishHabitatUpstreamMiles:*** *More than 0 miles in the upstream river network from this dam or assessed road/stream crossing that are attributed as habitat based on the California Baseline Fish Habitat dataset. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by the California Fish Passage Forum; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*
- ***StateSGCNSpp:*** *At least one state-listed Species of Greatest Conservation Need (SGCN), compiled from element occurrence data within the same.*
- ***TESpp:*** *At least one federally-listed threatened or endangered aquatic species, compiled from element occurrence data within the same.*

3. Addresses impacts from climate change

- ***PercentResilient:*** *Percent of the upstream functional river network length from this dam or assessed road/stream crossing that is within watersheds identified by The Nature Conservancy with above average or greater freshwater resilience (v0.44), including miles in waterbodies. -1 = not available. See https://www.maps.tnc.org/resilientrivers/#/explore for more information.*
- ***MilesToOutlet:*** *Miles between this dam or assessed road/stream crossing and the downstream-most point (e.g., ocean, river outlet, interior basin, etc.) on the full aquatic network on which it occurs. -1 = not available.*
- ***TotalDownstreamDams:*** *Total number of dams between this dam or assessed road/stream crossing and the downstream-most point the full aquatic network on which it occurs (e.g., river mouth). -1 = not available.*
- ***UpstreamUnalteredWetlandAcres:*** *Area in acres of all unaltered freshwater wetlands that intersect any reach in the upstream functional network. Wetlands are derived from specific wetland types in the National Wetlands Inventory (freshwater scrub-shrub, freshwater forested, freshwater emergent) and NHD (swamp/marsh) and exclude any specifically marked by the data provider as altered. Use with caution because wetlands may not be correctly subdivided by dams or dikes in the data sources, and altered wetlands may not be marked as such. -1 = not available.*

Filters are also available to identify tribal ancestral territories, forest service land, and project opportunities that enhance community safety such as dam age, regulatory status, hazard, condition, and degree of regulation.

To create the prioritization for California, the prioritization tool (aquaticbarriers.org) was run online for the state and downloaded as a csv file. This dataset was brought into ArcGIS pro and exported into a point feature class. A python script was created that ranks and weights the feature class according to the objective's hierarchy, producing ranking fields for each indicator, followed by criterion scores, and a final score using the weighting outlined in **Figure 2**. Maps outlining the criterion scores and final score for all of the dams in California available for the initial prioritization can be found in **Figures 4-9**. When additional priorities are identified (e.g., through discussions with partners), the prioritization is re-run, generating a new list. In other words, the prioritization maps in figures 5-11 represent a snapshot in time, as the list is ever evolving based on partner input.

WEIGHT	CRITERIA				
30%	HABITAT QUALITY	RANK SCHEMES	RANK FIELD NAME	RANK	WEIGHT
	% NATURAL LANDCOVER IN FLOODPLAIN	LINEAR	LANDCOVER_RANK	HIGHER % HIGHER PRIORITY	25
	% UNALTERED	LINEAR	ALTERATION_RANK	HIGHER % HIGHER PRIORITY	5
	# CROSSINGS IN UPSTREAM WATERSHED	LINEAR	UPSTREAMXINGS_ RANK	FEWER XINGS HIGHER PRIORITY	10
	# SIZE CLASSES	LINEAR	SIZECLASSES_RANK	MORE CLASSES HIGHER PRIORITY	35
	# DAMS IN UPSTREAM NETWORK	LINEAR	UPSTREAMDAMS_ RANK	FEWER DAMS HIGHER PRIORITY	25
					100%
35%	SPECIES / ANADROMY				
	BASELINE DIADROMOUS MILES > 0 OR SGCN >0 OR TE > 0	BINARY		PRESENCE/ABSENCE BINARY 1 OR 0	100%
35%	CLIMATE				
	% RESILIENT	LINEAR	PERCENTRESILIENT_ RANK	MORE RESILIENCY HIGHER PRIORITY	50
	# MILES TO OCEAN	LINEAR	MILESTOOUTLET_ RANK	FEWER MILES HIGHER PRIORITY	15
	# DOWNSTREAM DAMS	LINEAR	DOWNSTREAMDAMS_ RANK	FEWER DOWNSTREAM DAMS HIGHER PRIORITY	15
	# FRESHWATER WETLAND ACRES UPSTREAM	LINEAR	WETLANDS_RANK	MORE ACRES HIGHER PRIORITY	20
					100%
FILTER	TRIBAL PARTNERSHIP			FILTER/SORT	
	IN TRIBAL COMMUNITY: NINSENAN, KARUK, SHASTA, YUROK, PIT RIVER, MECHOOPDA, MOUNTAIN MAIDU, ME-WUK, MIWOK PAIUTE, WASHOE, WINTU, NYYHMY				
FILTER	COMMUNITY SAFETY			FILTER/SORT	
	YEAR CONSTRUCTED			50 YEARS OR OLDER	
	HAZARD			HIGH OR SIGNIFICANT HAZARD	
	REGULATORY STATUS			REGULATED BY STATE OR FEDERAL AGENCY	
	CONDITION			POOR OR UNSATISFACTORY CONDITION	
	DEGREE OF REGULATION (RATIO OF WATERBODY SIZE / MEAN ANNUAL FLOW			HIGHER RATIO HIGHER PRIORITY	

Figure 2: Ranks and weights used in the objective hierarchy prioritization for California.

These criterion scores and final scores were binned into priority categories of Very Low, Low, Medium, and High priority categories, using quantiles. These categories for each criterion allow partners to isolate the different criteria to see priorities for each (e.g., anadromous habitat gains), as well as the final score. This is useful because there may be structures that are high priority for habitat or species that are marked as low priority for other objectives, yet they are dam removal opportunities worth exploring to decrease river fragmentation to address water and habitat quality issues. SARP recommended using a mix of criterion priority scores/categories as well as the final priority score/category to explore dams for addition to the Active 150 List through time.

3. Creating the Actice 150 List

The state of California consists of numerous datasets of dams created from multiple inventories as outlined in the introduction of this report. Review from SARP consisted of correcting locational errors, adding missing attribute information, such as FERC status and water rights information. American Rivers and SARP also reviewed structures to assess whether or not a dam removal was feasible and should be elevated to the Active List based on a combination of desktop aerial review (i.e., Does the dam have a large impoundment with docks? Is it a very large hydropower dam?), research to determine use and potential project status, and priority (i.e., Would removal reconnect priority habitat, address biodiversity declines, or enhance the climate resilience of a watershed?).

3.1 QUALITY ASSURANCE AND QUALITY CONTROL OF DATA

Many times, data contains errors, and more barriers are found through the review process, creating an iterative approach to identifying an active list of projects. At the start of this project, there were 2,853 ranked dams within the state. SARP reviewed all dams on streams greater than 6th order, all dams that would open at least 6 perennial stream miles, and all dams that were ranked in the top 25% of dams. This totaled 778 dams, and 91 of these were added to the initial draft of the Active List for review by American Rivers. In addition, 112 were marked as unsure for the active list and needed further review by American Rivers staff.

While this review occurred, SARP simultaneously QA/QC'ed the data for errors and researched high priority structures to add locally relevant information on feasibility and project status where possible. Because SARP is not local to California, this draft Active List needed further review from American Rivers and Partners to confirm active list projects. For instance, American Rivers staff added to the list those barriers known to be a priority for their partners (e.g., Battle Creek Hydroelectric Project dams), currently undergoing remediation (e.g., Kilarc-Cow Hydroelectric Project dams), or those project where removal planning is underway (e.g., Potter Valley Hydroelectric Project dams, Chico Creek).

3.2 DEVELOPMENT OF THE ACTIVE 150 TOOL

To better facilitate this review, SARP created an application for the QA/QC of barriers by all partners, dubbed the CA Active 150 List and Feedback Tool (**Figure 3**). This app allows anyone to view the prioritization, view the current version of the Active List, provide further review of structures on the active list, or add other active projects to the list. In addition, users can see the raw output prioritization of structures filtering barriers that open salmonid habitat (as identified by California Baseline Fish Habitat Data analysis) and other criteria that would allow the further identification of new priority projects for the active list.

American Rivers went through all of the 91 structures that SARP initially identified, added other feasible projects to the list, including those that partners are working to remove or are in various states of project planning based on local knowledge. American Rivers reviewed data regarding nearby infrastructure and potential dam uses for over 2,000 structures, ultimately narrowing the list down to 300 dams for further review and/or landowner outreach based on feasibility criteria, dam age and hazard level, water rights, and local knowledge. Through outreach and discussion with land managers and owners, American Rivers further refined the initial draft list to identify 150 active and potentially active projects, primarily based on the feasibility of the removal and dam owner willingness to engage – the California Active 150.

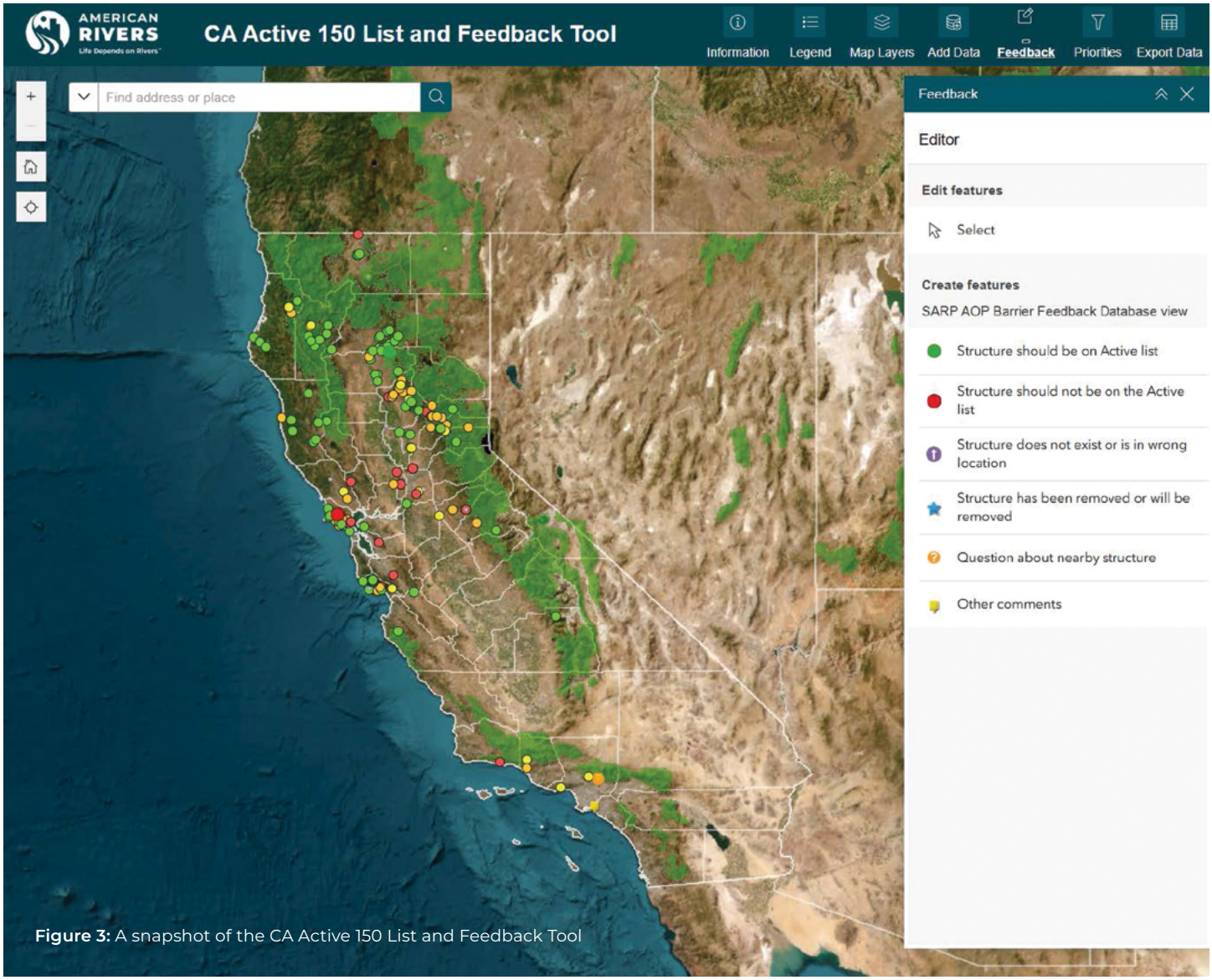


Figure 3: A snapshot of the CA Active 150 List and Feedback Tool

4. Final Product: Active List as of December 2025

At the end of January 2026, following the review from SARP and American Rivers and discussions with the Forum and its members, the Active List for California consisted of 150 dams that are available within the application for exploration (**figure 4**). These dams were identified using a combination of priority scores, social feasibility determinations based on review by SARP and American Rivers, grant opportunities, and existing partnerships.

Of these 150 dams, 90 of them are located on anadromous salmonid habitat. These 150 dams along with their priority scores and categories were exported and given to American Rivers for further review and action. Given that prioritization and project selection is a dynamic and intricate process involving both exploring low hanging fruit options that are socially feasible, as well as priority structures, not all barriers on the active list are the highest priority structures within the analysis.

As technology improves and more field surveys are complete, additional dams are continuously added to the inventory. New dams are analyzed monthly and given priority scores, which feed into the Active 150 application. Both lower priority structures as well as unscored structures demonstrate the challenges of marrying the social landscape on the ground with a desktop analysis.



5. Next steps

With the first phase of Active List development complete, American Rivers is now in the process of beta testing the application with interested member organizations of the Forum. During the beta test process, American Rivers is working with SARP to further evaluate how the ranks and weights are highlighting projects, and modifying those weights, as appropriate. In other words, if a dam is known to be a state priority, but is not identified as such by application of the current MCDA framework, modifications are made to see what influence minor changes in ranks and weights have on identification of priority structures.

Finally, American Rivers is working with partners at SARP and at Four Corners Mapping & GIS to identify the best user experience for various types of partners, including data scientists, dam removal practitioners, funders, and decision makers. As the Active 150 process is iterative, the prioritization is updated and applied to newly identified structures monthly, making each version of the list is a snapshot in time that represents partner and collaborator dam removal priorities.

American Rivers anticipates releasing a publicly accessible ArcGIS application for partner use in Fall 2026.

Appendix I: California Prioritization Results

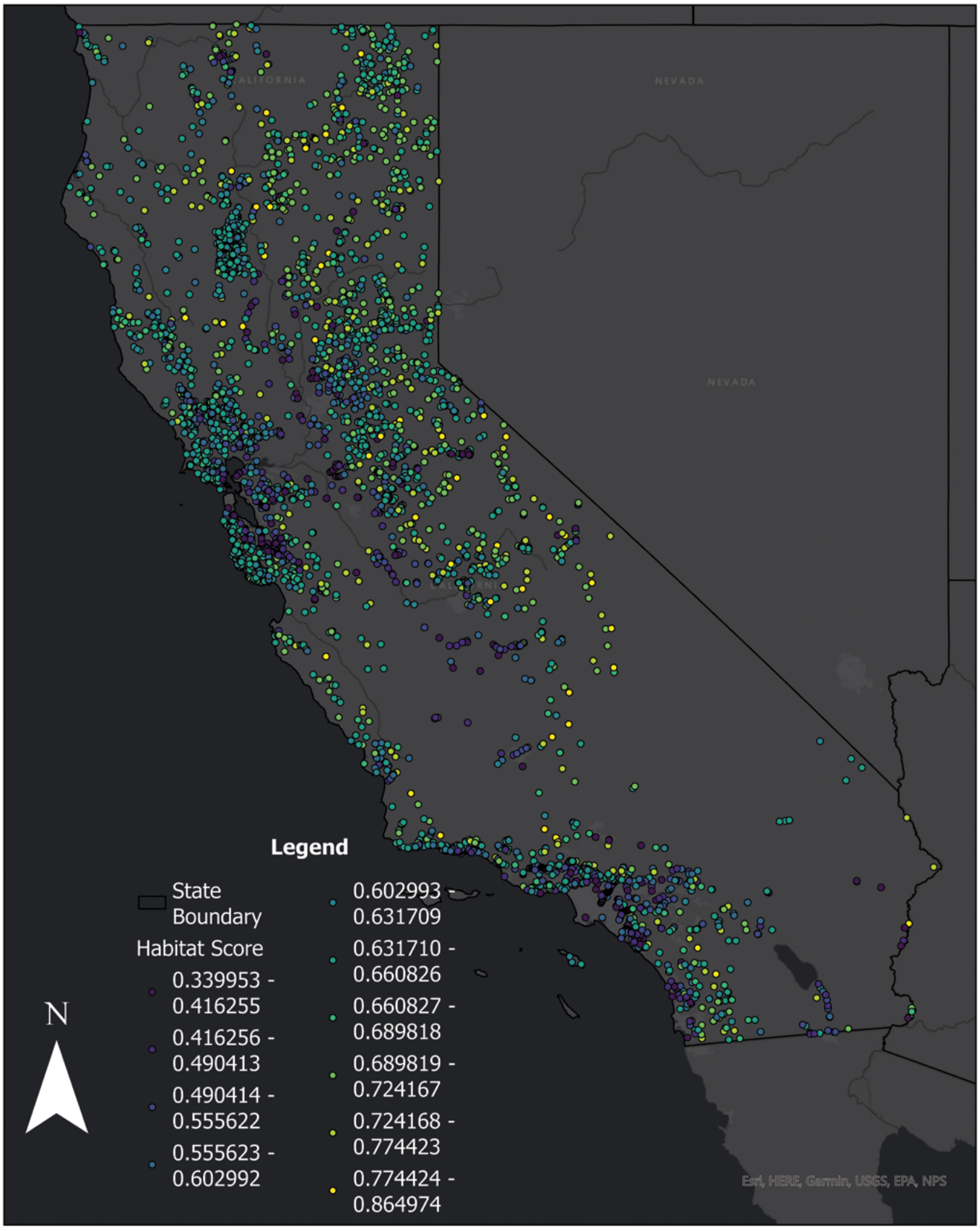


Figure 4: Habitat Criterion Scores for California Prioritization

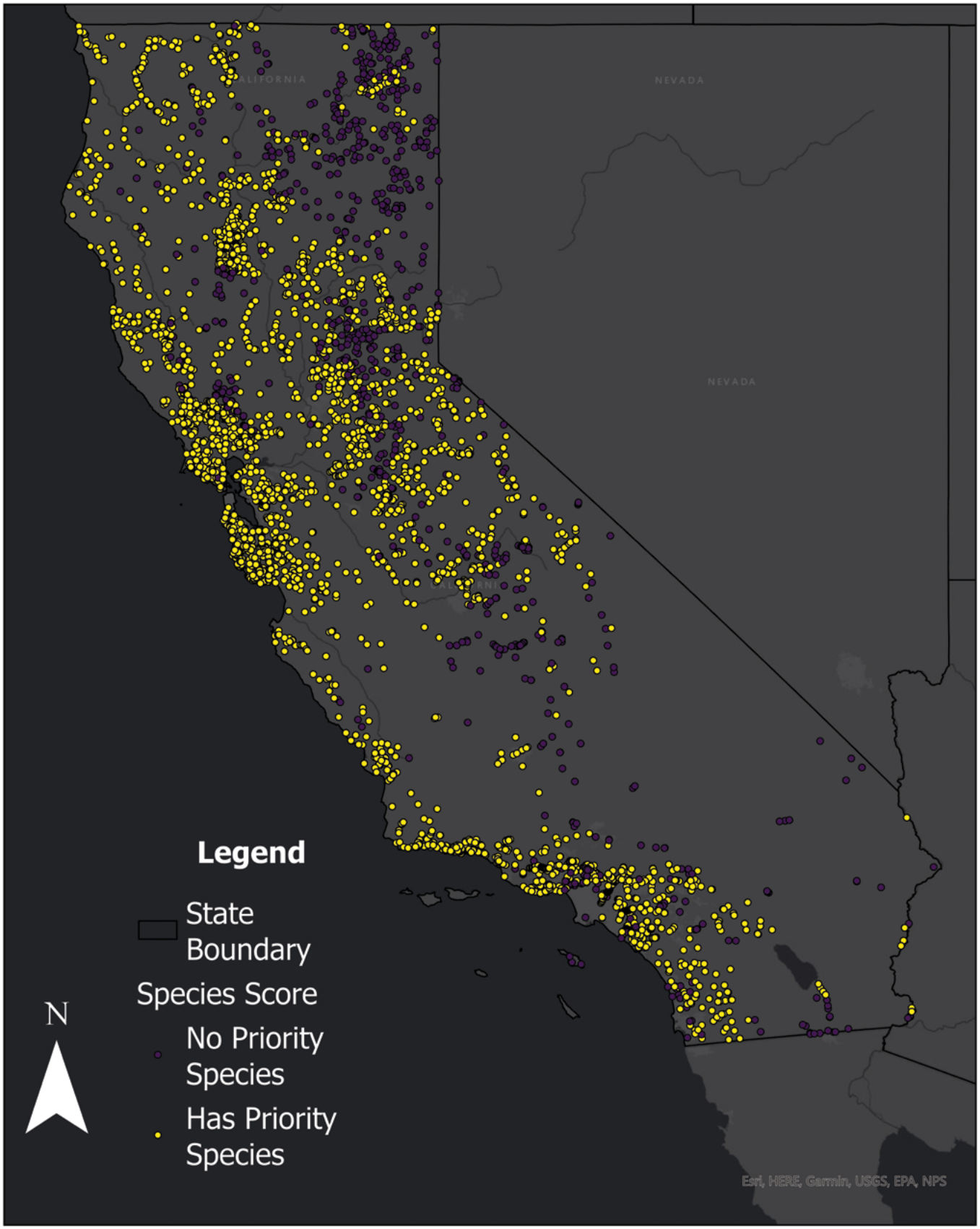


Figure 5: Species Criterion Score California Prioritization

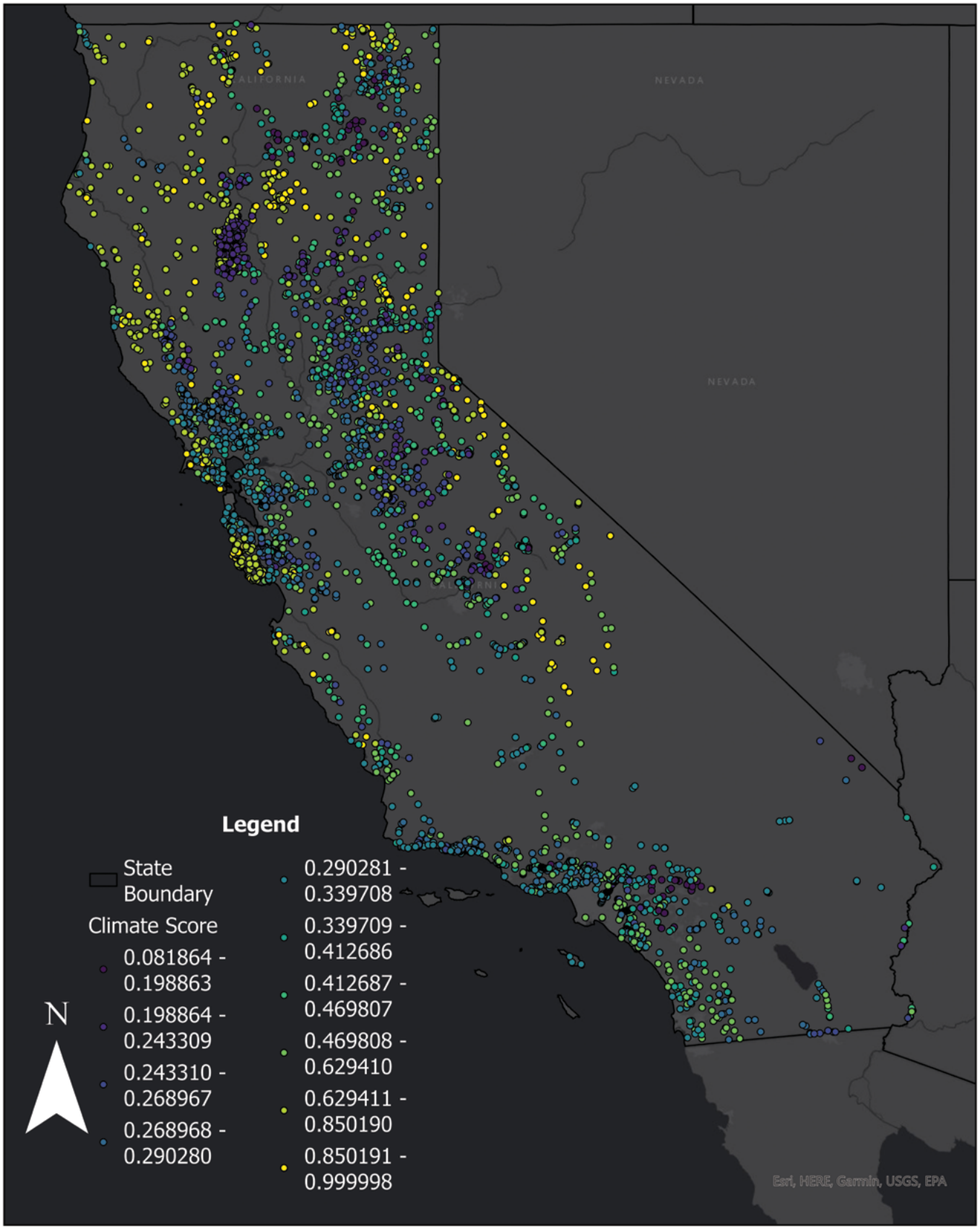


Figure 6: Climate Criterion Score California Prioritization

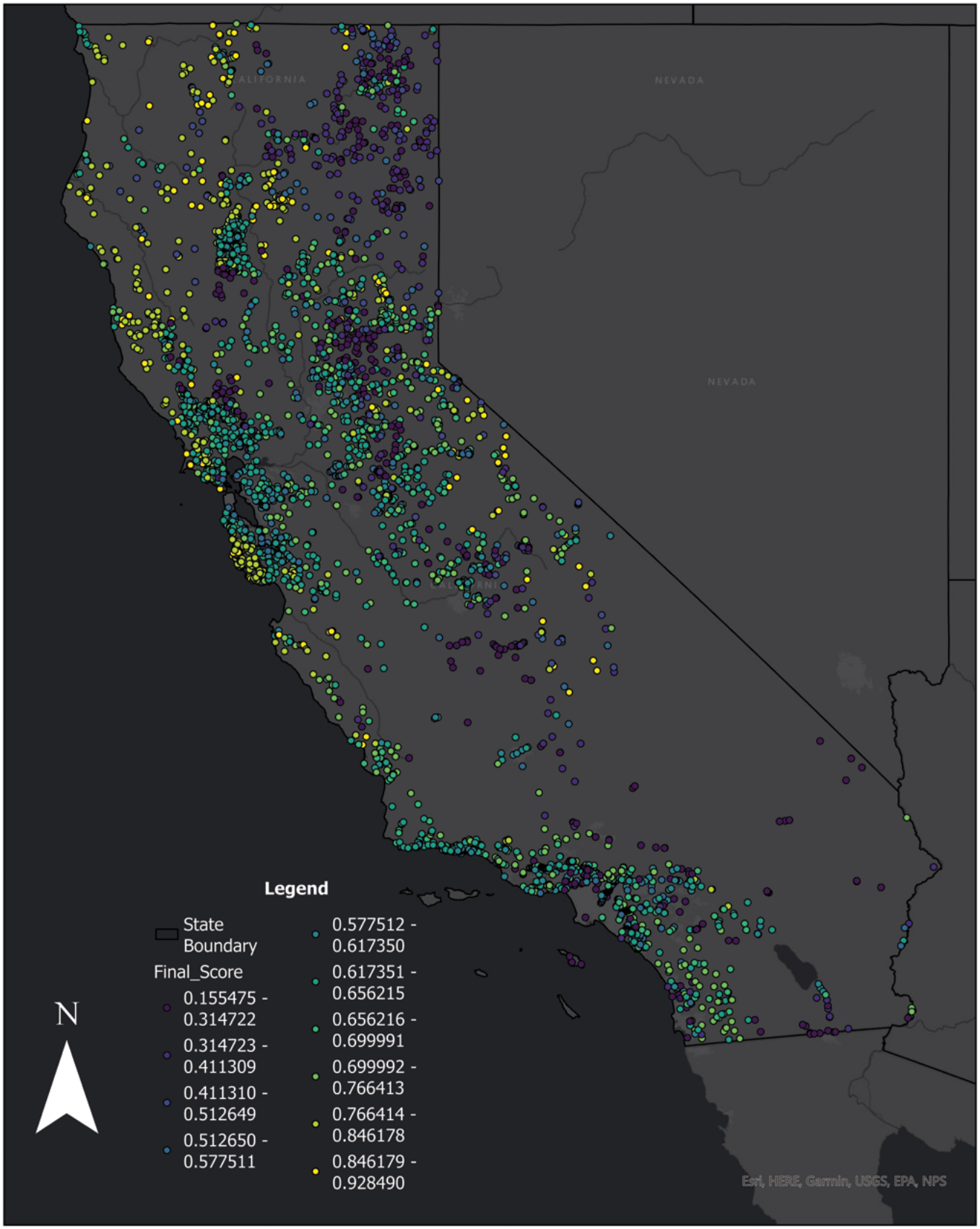


Figure 7: Final Priority Score for All Ranked Dams in California Prioritization

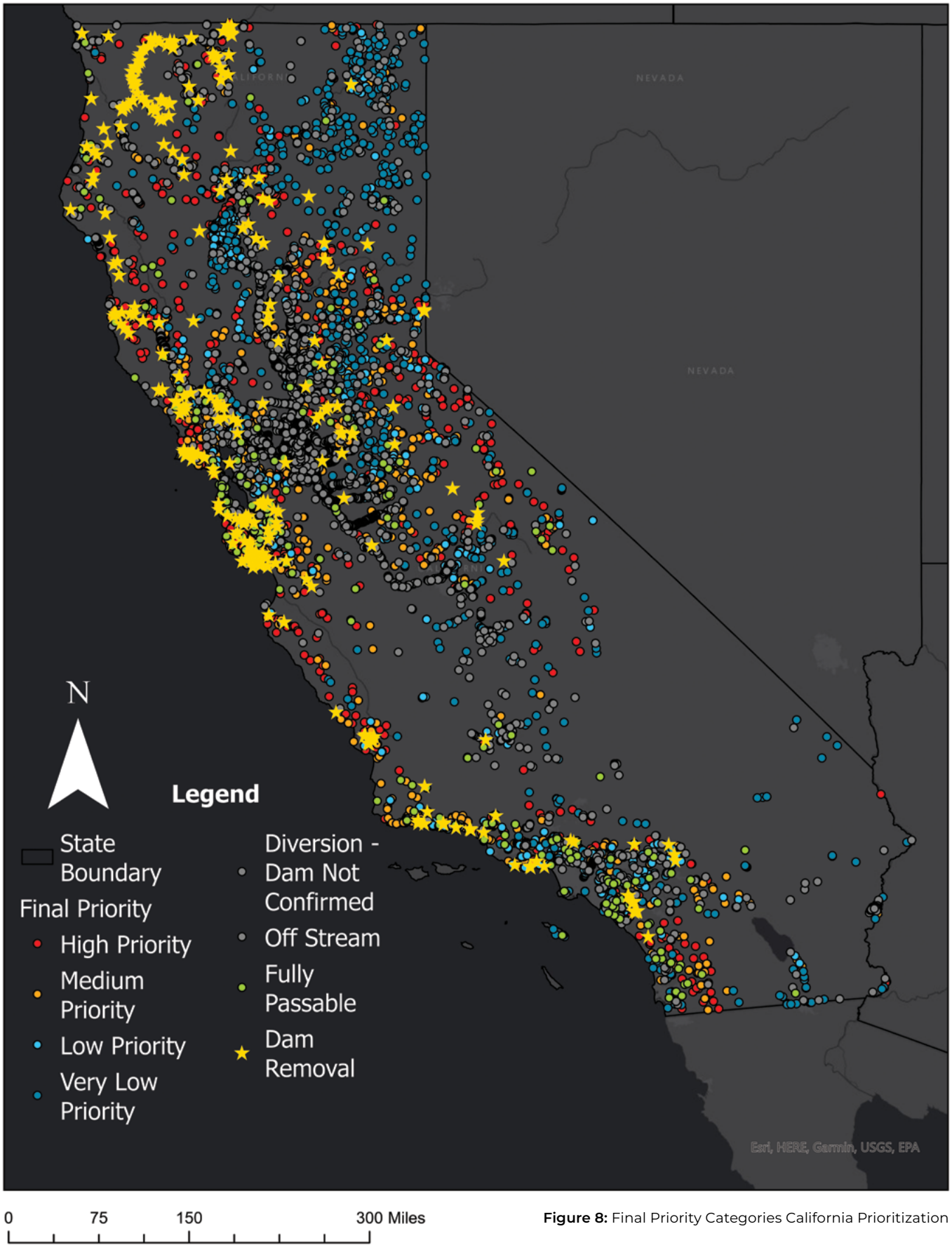


Figure 8: Final Priority Categories California Prioritization

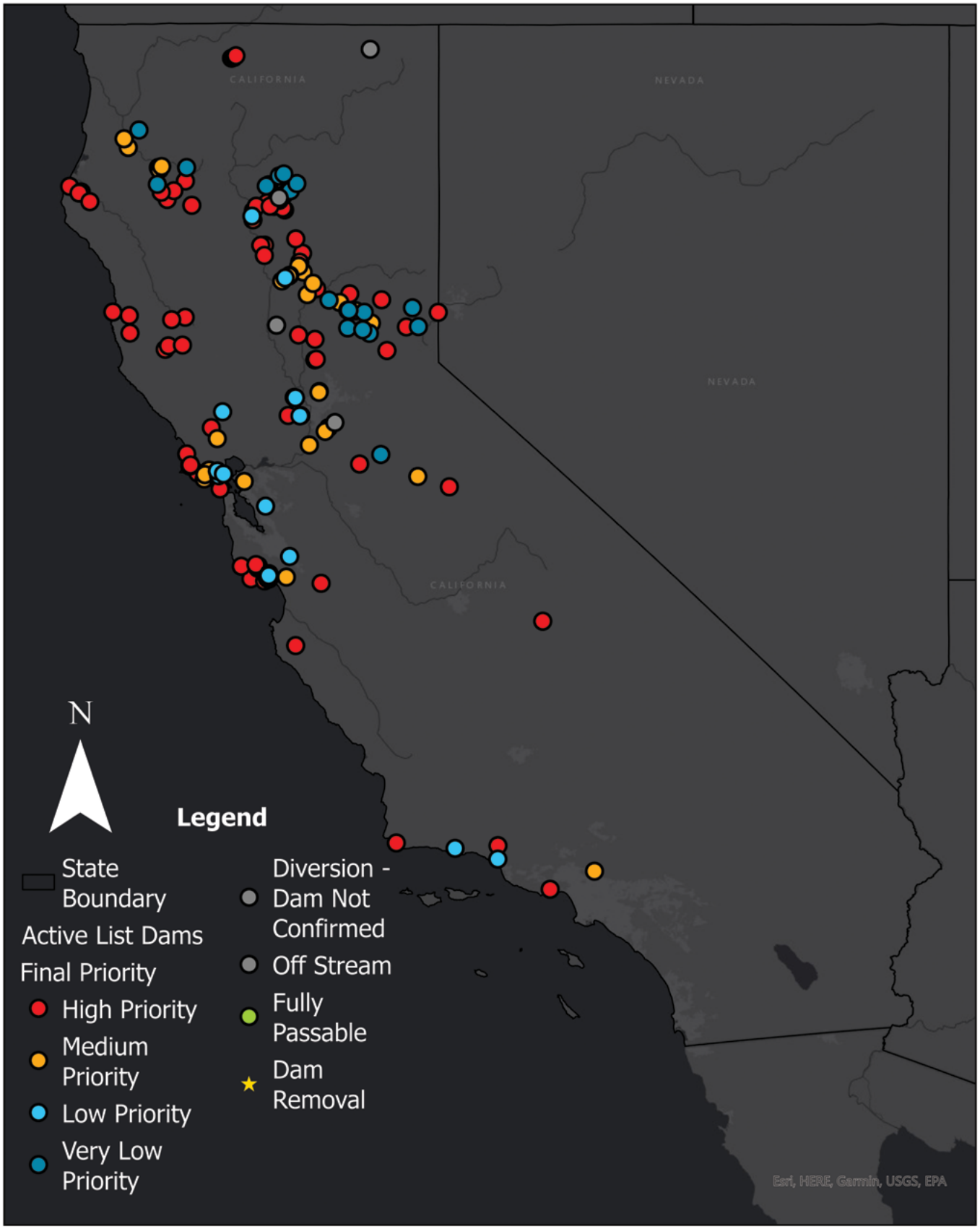


Figure 9: Priority Category of Active List Dams

Appendix II: Added CA prioritization final rank and category fields

Note: Ranking field names can be found in Figure 3. Additional fields of indicators can be found in Appendix III.

Habitat_Criterion_Score: Combined score using the habitat indicators ranked and weighted as described in figure above.

Habitat_Priority_Category: Habitat criterion scores broken into quantiles and categorized, high to very low priority.

Climate_Criterion_Score: Combined score using the climate indicators ranked and weighted as described in figure above.

Climate_Priority_Category: Climate criterion scores broken into quantiles and categorized, high to very low priority.

Final_Score: Final score combining all three criteria, ranked and weighted as described in figure 3 above. Final_Priority_Category: Final scores broken into quantiles and categorized, high to very low priority.

Appendix III: Detailed metadata for menu of indicators available in the National Aquatic Barrier Prioritization Tool results

Data version: *3.14.0*

Data published: *02/17/2026*

Downloaded from: *https://aquaticbarriers.org*

Filename: *aquatic_barrier_ranks.csv*

BarrierType*: Type of barrier*

lat: *Latitude in WGS84 geographic coordinates.*

lon: *Longitude in WGS84 geographic coordinates.*

Name: *dam or assessed road/stream crossing name, if available.*

SARPID: *SARP Identifier.*

Source: *Source of this record in the inventory.*

SourceID: *Identifier of this dam or assessed road/stream crossing in the source database.*

Snapped: *Indicates if the dam or assessed road/stream crossing was snapped to a flowline. Note: not all barriers snapped to flowlines are used in the network connectivity analysis.*

NHDPlusID: *Unique NHD Plus High-Resolution flowline identifier to which this dam or assessed road/stream crossing is snapped. -1 = not snapped to a flowline. Note: not all barriers snapped to flowlines are used in the network connectivity analysis.*

River: *River or stream name where dam or assessed road/stream crossing occurs, if available.*

StreamSizeClass: *Stream size class based on total catchment drainage area in acres. 1a: <2,471 acres, 1b: 2,471-24,709 acres, 2: 24,710-127,999 acres, 3a: 128,000-640,001 acres, 3b: 640,002-2,471,049 acres, 4: 2,471,050-6,177,624 acres, 5: >= 6,177,625 acres.*

FlowsToOcean: *indicates if this dam or assessed road/stream crossing was snapped to a stream or river that is known to flow into the ocean. Note: this underrepresents any networks that traverse regions outside the analysis region that would ultimately connect the networks to the ocean.*

NIDID: *National Inventory of Dams Identifier (legacy ID); this value was provided in earlier versions of NID or partner databases and may no longer match the latest ID, and may also have duplicate IDs or incorrectly-associated IDs.*

NIDFederalID: *National Inventory of Dams Federal Identifier (new ID) that can be used to join to the latest version of NID.*

PartnerID: *Identifier used by local partners for this dam or assessed road/stream crossing.*

Estimated: *Dam represents an estimated dam location based on NHD high resolution waterbodies or other information.*

AnnualVelocity: *Annual velocity at the downstream end of the NHD Plus High Resolution flowline to which this dam or assessed road/stream crossing has been snapped, in square feet per second. -1 if not snapped to flowline or otherwise not available.*

AnnualFlow: *Annual flow at the downstream end of the NHD Plus High Resolution flowline to which this dam or assessed road/stream crossing has been snapped, in square cubic feet per second. -1 if not snapped to flowline or otherwise not available.*

TotDASqKm: *Total drainage area in square kilometers at the downstream end of the NHD Plus High Resolution flowline to which this dam or assessed road/stream crossing has been snapped, as reported by NHD. -1 if not snapped to flowline or otherwise not available.*

YearCompleted: *year that construction was completed, if available. 0 = data not available.*

FERCRegulated: *Identifies if the dam or assessed road/stream crossing is regulated by the Federal Energy Regulatory Commission, if known.*

StateRegulated: *Identifies if the dam or assessed road/stream crossing is regulated at the state level, if known.*

NRCSDam: *Identifies if the dam or assessed road/stream crossing is a flood control dam constructed in partnership with the USDA Natural Resources Conservation Service.*

FedRegulatoryAgency: *Identifies the federal regulatory agency for this dam or assessed road/stream crossing, if known.*

WaterRight: *Identifies if the dam or assessed road/stream crossing has an associated water right, if known.*

IsPriority: *Indicates if the dam or assessed road/stream crossing has been identified as a priority by resource managers, if known.*

Height: *dam or assessed road/stream crossing height in feet, if available. 0 = data not available.*

Length: *dam or assessed road/stream crossing length in feet, if available. 0 = data not available.*

Width: *dam or assessed road/stream crossing width in feet, if available. 0 = data not available.*

Hazard: *Hazard rating of this dam or assessed road/stream crossing, if known.*

Construction: *material used in dam or assessed road/stream crossing construction, if known.*

Purpose: *primary purpose of dam or assessed road/stream crossing, if known.*

Passability: *passability of the dam or assessed road/stream crossing, if known. Note: assessment dates are not known.*

FishScreen: *Whether or not a fish screen is present, if known.*

ScreenType: *Type of fish screen, if known.*

Feasibility: *feasibility of dam or assessed road/stream crossing removal, based on reconnaissance. Note: reconnaissance information is available only for a small number of dam or assessed road/stream crossings.*

Recon: *Field reconnaissance notes, if available.*

Diversion: *Identifies if dam is known to be a diversion. Note: diversion information is available only for a small number of dams.*

LowheadDam: *Identifies if dam is known or estimated to be a lowhead dam. Note: lowhead dam information is available only for a small number of dams.*

StorageVolume: *Identifies the reported normal storage volume (acre/feet) of the impounded waterbody, from NID NormStor attribute, if known.*

WaterbodyAcres: *area in acres of waterbody associated with dam. -1 = no associated waterbody*

Fatality: *number of fatalities recorded at this location from Locations of Fatalities at Submerged Hydraulic Jumps (https://krcproject.groups.et.byu.net/browse.php)*

Removed: *Identifies if the dam or assessed road/stream crossing has been removed for conservation, if known. Removed barriers will not have values present for all fields.*

YearRemoved: *year that barrier was removed or mitigated, if available. All barriers removed prior to 2000 or where YearRemoved is unknown were lumped together for the network analysis. 0 = data not available or not removed / mitigated.*

Condition: *Condition of the dam or assessed road/stream crossing as of last assessment, if known. Note: assessment dates are not known.*

PassageFacility: *type of fish passage facility, if known.*

TESpp: *Number of federally-listed threatened or endangered aquatic species, compiled from element occurrence data within the same subwatershed (HUC12) as the dam or assessed road/stream crossing. Note: rare species information is based on occurrences within the same subwatershed as the barrier. These species may or may not be impacted by this dam or assessed road/stream crossing. Information on rare species is very limited, and comprehensive information has not been provided for all states at this time.*

StateSGCNSpp: *Number of state-listed Species of Greatest Conservation Need (SGCN), compiled from element occurrence data within the same subwatershed (HUC12) as the dam or assessed road/stream crossing. Note: rare species information is based on occurrences within the same subwatershed as the dam or assessed road/stream crossing. These species may or may not be impacted by this dam or assessed road/stream crossing. Information on rare species is very limited, and comprehensive information has not been provided for all states at this time.*

RegionalSGCNSpp: *Number of regionally-listed Species of Greatest Conservation Need (SGCN), compiled from element occurrence data within the same subwatershed (HUC12) as the dam or assessed road/stream crossing. Note: rare species information is based on occurrences within the same subwatershed as the dam or assessed road/stream crossing. These species may or may not be impacted by this dam or assessed road/stream crossing. Information on rare species is very limited, and comprehensive information has not been provided for all states at this time.*

Trout: *Identifies one or more interior or eastern native trout species (Apache, brook, bull, cutthroat, Gila, lake, and redband) that are present within the same subwatershed (HUC12) as the dam or assessed road/stream crossing based on in available natural heritage data and other data sources. Note: absence means that occurrences were not present in the available natural heritage data and should not be interpreted as true absences.*

DiadromousHabitat: *Indicates if the dam or assessed road/stream crossing occurs on a stream reach associated with the habitat of one or more anadromous or catadromous species, based on multiple data sources. Please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

OwnerType: *Land ownership type. This information is derived from the BLM Surface Management Agency dataset for federal lands and CBI Protected Areas Database and TNC Secured Lands Database for non-federal lands, to highlight ownership types of particular importance to partners. NOTE: does not include most private land.*

BarrierOwnerType: *Barrier ownership type, if available. For unsurveyed road / stream crossings, this information is derived from the National Bridge Inventory, US Census TIGER Roads route type, and USFS National Forest road / stream crossings database ownership information, and may not be fully accurate.*

ProtectedLand: *Indicates if the dam or assessed road/stream crossing occurs on public land as represented within the BLM Surface Management Agency dataset, CBI Protected Areas Database of the U.S., or TNC Secured Lands Database.*

SourceLink: *Link to additional information about this dam or assessed road/stream crossing provided by the data source.*

EJTract: *Within an overburdened and underserved Census tracts a defined by the Climate and Environmental Justice Screening tool.*

EJTribal: *Within a disadvantaged tribal community as defined by the Climate and Environmental Justice Screening tool based on American Indian and Alaska Native areas as defined by the US Census Bureau. Note: all tribal communities considered disadvantaged by the Climate and Environmental Justice Screening tool.*

NativeTerritories: *Native / indigenous people's territories as mapped by Native Land Digital (https://native-land.ca/*

WildScenicRiver: *Name of the designated Wild & Scenic River(s) if within 250 meters of this dam or assessed road/stream crossing.*

FishHabitatPartnership: *Fish Habitat Partnerships working in the area where the dam or assessed road/stream crossing occurs. See https://www.fishhabitat.org/the-partnerships for more information.*

Basin: *Name of the hydrologic basin (HUC6) where the dam or assessed road/stream crossing occurs.*

Subbasin: *Name of the hydrologic subbasin (HUC8) where the dam or assessed road/stream crossing occurs.*

Subwatershed: *Name of the hydrologic subwatershed (HUC12) where the dam or assessed road/stream crossing occurs.*

HUC2: *Hydrologic region identifier where the dam or assessed road/stream crossing occurs.*

HUC6: *Hydrologic basin identifier where the dam or assessed road/stream crossing occurs.*

HUC8: *Hydrologic subbasin identifier where the dam or assessed road/stream crossing occurs.*

HUC10: *Hydrologic watershed identifier where the dam or assessed road/stream crossing occurs.*

HUC12: *Hydrologic subwatershed identifier where the dam or assessed road/stream crossing occurs.*

State: *State where dam or assessed road/stream crossing occurs.*

County: *County where dam or assessed road/stream crossing occurs.*

CongressionalDistrict: *Congressional District where dam or assessed road/stream crossing occurs (118th Congressional Districts).*

Excluded: *this dam or assessed road/stream crossing was excluded from the connectivity analysis based on field reconnaissance or manual review of aerial imagery.*

Invasive: *this dam or assessed road/stream crossing is identified as a beneficial to restricting the movement of invasive species and is not ranked.*

OnLoop: *this dam or assessed road/stream crossing occurs on a loop within the NHD High Resolution aquatic network and is considered off-network for purposes of network analysis and ranking.*

HasNetwork: *indicates if this dam or assessed road/stream crossing was snapped to the aquatic network for analysis. 1 = on network, 0 = off network. Note: network metrics and scores are not available for dam or assessed road/stream crossings that are off network.*

Ranked: *this dam or assessed road/stream crossing was included for prioritization. Some barriers that are beneficial to restricting the movement of invasive species or that are water diversions without associated barriers are excluded from ranking.*

Intermittent: *indicates if this dam or assessed road/stream crossing was snapped to a stream or river reach coded by NHDPlusHR as an intermittent or ephemeral. -1 = not available.*

Canal: *indicates if this dam or assessed road/stream crossing was snapped to a stream or river reach coded by NHDPlusHR as a canal or ditch. -1 = not available.*

StreamOrder: *NHDPlus Modified Strahler stream order. -1 = not available.*

Landcover: *average amount of the river floodplain in the upstream network that is in natural landcover types. -1 = not available.*

SizeClasses: *number of unique upstream size classes that could be gained by removal of this dam or assessed road/stream crossing. -1 = not available.*

PerennialSizeClasses: *number of unique upstream size classes of perennial stream reaches that could be gained by removal of this dam or assessed road/stream crossing. -1 = not available.*

MainstemSizeClasses: *number of unique upstream size classes within mainstem networks that could be gained by removal of this dam or assessed road/stream crossing. -1 = not available.*

TotalUpstreamMiles: *number of miles in the upstream functional river network from this dam or assessed road/stream crossing, including miles in waterbodies. -1 = not available.*

PerennialUpstreamMiles: *number of perennial miles in the upstream functional river network from this dam or assessed road/stream crossing, including miles in waterbodies. Perennial reaches are all those not specifically coded by NHD as ephemeral or intermittent, and include other types, such as canals and ditches that may not actually be perennial. Networks are constructed using all flowlines, not just perennial reaches. -1 = not available.*

IntermittentUpstreamMiles: *number of ephemeral and intermittent miles in the upstream functional river network from this dam or assessed road/stream crossing, including miles in waterbodies. Ephemeral and intermittent reaches are all those that are specifically coded by NHD as ephemeral or intermittent, and specifically excludes other types, such as canals and ditches that may actually be ephemeral or intermittent in their flow frequency. -1 = not available.*

AlteredUpstreamMiles: *number of altered miles in the upstream functional river network from this dam or assessed road/stream crossing, including miles in waterbodies. Altered reaches are those specifically identified in NHD or the National Wetlands Inventory as altered (canal / ditch, within a reservoir, or other channel alteration). -1 = not available.*

UnalteredUpstreamMiles: *number of unaltered miles in the upstream functional river network from this dam or assessed road/stream crossing, including miles in waterbodies. Unaltered miles exclude reaches specifically identified in NHD or the National Wetlands Inventory as altered (canal / ditch, within a reservoir, or other channel alteration). -1 = not available.*

PercentUnaltered: *percent of the total upstream functional river network length from this dam or assessed road/stream crossing that is not specifically identified in NHD or the National Wetlands Inventory as altered (canal / ditch, within a reservoir, or other channel alteration). -1 = not available.*

PerennialUnalteredUpstreamMiles: *number of unaltered perennial miles in the upstream functional river network from this dam or assessed road/stream crossing, including miles in waterbodies. Unaltered miles exclude reaches specifically identified in NHD or the National Wetlands Inventory as altered (canal / ditch, within a reservoir, or other channel alteration). -1 = not available.*

PercentPerennialUnaltered: *percent of the perennial upstream functional river network length from this dam or assessed road/stream crossing that is not specifically identified in NHD or the National Wetlands Inventory as altered (canal / ditch, within a reservoir, or other channel alteration). See PerennialUpstreamMiles. -1 = not available.*

PercentResilient: *percent of the upstream functional river network length from this dam or assessed road/stream crossing that is within watersheds identified by The Nature Conservancy with above average or greater freshwater resilience (v0.44), including miles in waterbodies. -1 = not available. See https://www.maps.tnc.org/resilientrivers/#/explore for more information.*

UpstreamDrainageAcres: *approximate drainage area in acres of all NHD High Resolution catchments within upstream functional network of dam or assessed road/stream crossing. Includes the total catchment area of any NHD High Resolution flowlines that are cut by barriers in the analysis, which may overrepresent total drainage area of the network. -1 = not available.*

UpstreamUnalteredWaterbodyAcres: *area in acres of all unaltered lakes and ponds that intersect any reach in upstream functional network; these waterbodies are not specifically marked by data sources as altered and are not associated with dams in this inventory. Use with caution because waterbodies may not be correctly subdivided by dams in the data sources, and altered waterbodies may not be marked as such. -1 = not available.*

UpstreamUnalteredWetlandAcres: *area in acres of all unaltered freshwater wetlands that intersect any reach in the upstream functional network. Wetlands are derived from specific wetland types in the National Wetlands Inventory (freshwater scrub-shrub, freshwater forested, freshwater emergent) and NHD (swamp/marsh) and exclude any specifically marked by the data provider as altered. Use with caution because wetlands may not be correctly subdivided by dams or dikes in the data sources, and altered wetlands may not be marked as such. -1 = not available.*

TotalDownstreamMiles: *number of miles in the complete downstream functional river network from this dam or assessed road/stream crossing, including miles in waterbodies. Note: this measures the length of the complete downstream network including all tributaries, and is not limited to the shortest downstream path. -1 = not available.*

FreeDownstreamMiles: *number of free-flowing miles in the downstream functional river network. Excludes miles in altered reaches in waterbodies. -1 = not available.*

FreePerennialDownstreamMiles: *number of free-flowing perennial miles in the downstream functional river network. Excludes miles in altered reaches in waterbodies. See PerennialUpstreamMiles for definition of perennial reaches. -1 = not available.*

FreeIntermittentDownstreamMiles: *number of free-flowing ephemeral and intermittent miles in the downstream functional river network. Excludes miles altered reaches in waterbodies. See IntermittentUpstreamMiles for definition of intermittent reaches. -1 = not available.*

FreeAlteredDownstreamMiles: *number of free-flowing altered miles in the downstream functional river network from this dam or assessed road/stream crossing. Excludes miles in altered reaches in waterbodies. See AlteredUpstreaMiles for definition of altered reaches. -1 = not available.*

FreeUnalteredDownstreamMiles: *number of free-flowing altered miles in the downstream functional river network from this dam or assessed road/stream crossing. Excludes miles in altered reaches in waterbodies. See UnalteredUpstreamMiles for definition of unaltered reaches. -1 = not available.*

GainMiles: *absolute number of miles that could be gained by removal of this dam or assessed road/stream crossing. Calculated as the minimum of the TotalUpstreamMiles and FreeDownstreamMiles unless the downstream network flows into the Great Lakes or the Ocean and has*

no downstream barriers, in which case this is based only on TotalUpstreamMiles. For removed barriers, this is based on the barriers present at the time this barrier was removed, with the exception of those that are immediately upstream and removed in the same year. -1 = not available.

PerennialGainMiles: *absolute number of perennial miles that could be gained by removal of this dam or assessed road/stream crossing. Calculated as the minimum of the PerennialUpstreamMiles and FreePerennialDownstreamMiles unless the downstream network flows into the Great Lakes or the Ocean and has no downstream barriers, in which case this is based only on PerennialUpstreamMiles. For removed barriers, this is based on the barriers present at the time this barrier was removed, with the exception of those that are immediately upstream and removed in the same year. -1 = not available.*

TotalNetworkMiles: *sum of TotalUpstreamMiles and FreeDownstreamMiles. -1 = not available.*

TotalPerennialNetworkMiles: *sum of PerennialUpstreamMiles and FreePerennialDownstreamMiles. -1 = not available.*

TotalUpstreamMainstemMiles: *number of miles in the upstream mainstem river network from this dam or assessed road/stream crossing, including miles in waterbodies. Mainstems are defined as having >= 1 square mile drainage area and on the same stream order as the reach where the dam is located. -1 = not available.*

PerennialUpstreamMainstemMiles: *number of perennial miles in the upstream mainstem river network from this dam or assessed road/stream crossing, including miles in waterbodies. See TotalUpstreamMainstemMiles for definition of mainstem and PerennialUpstreamMiles for definition of perennial reaches. Networks are constructed using all flowlines, not just perennial reaches. -1 = not available.*

IntermittentUpstreamMainstemMiles: *number of ephemeral and intermittent miles in the upstream mainstem river network from this dam or assessed road/stream crossing, including miles in waterbodies. See TotalUpstreamMainstemMiles for definition of mainstem and IntermittentUpstreamMiles for definition of intermittent reaches. -1 = not available.*

AlteredUpstreamMainstemMiles: *number of altered miles in the upstream mainstem river network from this dam or assessed road/stream crossing, including miles in waterbodies. See TotalUpstreamMainstemMiles for definition of mainstem and AlteredUpstreamMiles for definition of altered reaches. -1 = not available.*

UnalteredUpstreamMainstemMiles: *number of unaltered miles in the upstream mainstem river network from this dam or assessed road/stream crossing, including miles in waterbodies. See TotalUpstreamMainstemMiles for definition of mainstem and UnalteredUpstreamMiles for definition of unaltered reaches. -1 = not available.*

PerennialUnalteredUpstreamMainstemMiles: *number of unaltered perennial miles in the upstream mainstem river network from this dam or assessed road/stream crossing, including miles in waterbodies. See TotalUpstreamMainstemMiles for definition of mainstem and PerennialUnalteredUpstreamMiles for definition of perennial unaltered reaches. -1 = not available.*

PercentMainstemUnaltered: *percent of the upstream mainstem river network length from this dam or assessed road/stream crossing that is not specifically identified in NHD or the National Wetlands Inventory as altered (canal / ditch, within a reservoir, or other channel alteration). -1 = not available.*

FreeLinearDownstreamMiles: *number of miles in the linear downstream flow direction between this dam or assessed road/stream crossing and the next barrier downstream (if any) or downstream-most point (e.g., ocean, river outlet, interior basin, etc.) on the full aquatic network on which it occurs. Excludes miles in altered reaches in waterbodies. -1 = not available.*

FreePerennialLinearDownstreamMiles: *number of perennial miles in the linear downstream flow direction between this dam or assessed road/stream crossing and the next barrier downstream or downstream-most point on the full aquatic network on which it occurs. Excludes miles in altered reaches in waterbodies. See PerennialUpstreamMiles for definition of perennial reaches. -1 = not available.*

FreeIntermittentLinearDownstreamMiles: *number of ephemeral and intermittent miles in the linear downstream flow direction between this dam or assessed road/stream crossing and the next barrier downstream or downstream-most point on the full aquatic network on which it occurs. Excludes miles in altered reaches in waterbodies. See IntermittentUpstreamMiles for definition of intermittent reaches. -1 = not available.*

FreeAlteredLinearDownstreamMiles: *number of altered miles in the linear downstream flow direction between this dam or assessed road/stream crossing and the next barrier downstream or downstream-most point on the full aquatic network on which it occurs. Excludes miles in altered reaches in waterbodies. See AlteredUpstreamMiles for definition of altered reaches. -1 = not available.*

FreeUnalteredLinearDownstreamMiles: *number of unaltered miles in the linear downstream flow direction between this dam or assessed road/stream crossing and the next barrier downstream or downstream-most point on the full aquatic network on which it occurs. Excludes miles in unaltered reaches in waterbodies. See UnalteredUpstreamMiles for definition of unaltered reaches. -1 = not available.*

MainstemGainMiles: *absolute number of mainstem miles that could be gained by removal of this dam or assessed road/stream crossing. Calculated as the minimum of the TotalUpstreamMainstemMiles and FreeLinearDownstreamMiles unless the downstream network flows into the Great Lakes or the Ocean and has no downstream barriers, in which case this is based only on TotalUpstreamMainstemMiles. -1 = not available.*

PerennialMainstemGainMiles: *absolute number of perennial mainstem miles that could be gained by removal of this dam or assessed road/stream crossing. Calculated as the minimum of the PerennialUpstreamMainstemMiles and FreePerennialLinearDownstreamMiles unless the downstream network flows into the Great Lakes or the Ocean and has no downstream barriers, in which case this is based only on TotalUpstreamMainstemMiles. -1 = not available.*

TotalMainstemNetworkMiles: *sum of TotalUpstreamMainstemMiles and FreeLinearDownstreamMiles. -1 = not available.*

TotalMainstemPerennialNetworkMiles: *sum of PerennialUpstreamMainstemMiles and FreePerennialLinearDownstreamMiles. -1 = not available.*

UpstreamWaterfalls: *number of waterfalls at the upstream ends of the functional network for this dam or assessed road/stream crossing. -1 = not available.*

UpstreamDams: *number of dams at the upstream ends of the functional network for this dam or assessed road/stream crossing.*

UpstreamSmallBarriers: *number of assessed road/stream crossings within the functional network if this barrier is a dam or at the upstream ends of the functional network if this barrier is a road/stream crossing. -1 = not available.*

UpstreamRoadCrossings: *number of uninventoried estimated road crossings within the functional network for this dam or assessed road/stream crossing. -1 = not available.*

UpstreamHeadwaters: *number of headwaters within the functional network for this dam or assessed road/stream crossing. -1 = not available.*

TotalUpstreamRoadCrossings: *total number of uninventoried estimated road crossings upstream of this dam or assessed road/stream crossing; includes in all functional networks above this dam or assessed road/stream crossing. -1 = not available.*

TotalDownstreamWaterfalls: *total number of waterfalls between this dam or assessed road/stream crossing and the downstream-most point the full aquatic network on which it occurs. -1 = not available.*

TotalDownstreamDams: *total number of dams between this dam or assessed road/stream crossing and the downstream-most point the full aquatic network on which it occurs (e.g., river mouth). -1 = not available.*

TotalDownstreamSmallBarriers: *total number of assessed road/stream crossings between this dam or assessed road/stream crossing and the downstream-most point the full aquatic network on which it occurs. -1 = not available.*

MilesToOutlet: *miles between this dam or assessed road/stream crossing and the downstream-most point (e.g., ocean, river outlet, interior basin, etc.) on the full aquatic network on which it occurs. -1 = not available.*

InvasiveNetwork: *indicates if there is an invasive species barrier at or downstream of this dam or assessed road/stream crossing.*

CaBaselineFishHabitatUpstreamMiles: *number of miles in the upstream river network from this dam or assessed road/stream crossing that are attributed as habitat based on the California Baseline Fish Habitat dataset. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by the California Fish Passage Forum; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

FreeCaBaselineFishHabitatDownstreamMiles: *number of free-flowing miles in the downstream river network from this dam or assessed road/stream crossing that are attributed as habitat based on the California Baseline Fish Habitat dataset. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by the California Fish Passage Forum; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

ChinookSalmonHabitatUpstreamMiles: *number of miles in the upstream river network from this dam or assessed road/stream crossing that are attributed as habitat for Chinook salmon. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

FreeChinookSalmonHabitatDownstreamMiles: *number of free-flowing miles in the downstream river network from this dam or assessed road/stream crossing that are attributed as habitat for Chinook salmon. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

CohoSalmonHabitatUpstreamMiles: *number of miles in the upstream river network from this dam or assessed road/stream crossing that are attributed as habitat for coho salmon. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

FreeCohoSalmonHabitatDownstreamMiles: *number of free-flowing miles in the downstream river network from this dam or assessed road/stream crossing that are attributed as habitat for coho salmon. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

PacificLampreyHabitatUpstreamMiles: *number of miles in the upstream river network from this dam or assessed road/stream crossing that are attributed as habitat for Pacific lamprey (limited to Oregon). Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet (limited to Oregon); please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

FreePacificLampreyHabitatDownstreamMiles: *number of free-flowing miles in the downstream river network from this dam or assessed road/stream crossing that are attributed as habitat for Pacific lamprey (limited to Oregon). Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet (limited to Oregon); please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

RedbandTroutHabitatUpstreamMiles: *number of miles in the upstream river network from this dam or assessed road/stream crossing that are attributed as habitat for redband trout. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

FreeRedbandTroutHabitatDownstreamMiles: *number of free-flowing miles in the downstream river network from this dam or assessed road/stream crossing that are attributed as habitat for redband trout. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

SteelheadHabitatUpstreamMiles: *number of miles in the upstream river network from this dam or assessed road/stream crossing that are attributed as habitat for steelhead trout. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

FreeSteelheadHabitatDownstreamMiles: *number of free-flowing miles in the downstream river network from this dam or assessed road/stream crossing that are attributed as habitat for steelhead trout. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

StreamnetAnadromousHabitatUpstreamMiles: *number of miles in the upstream river network from this dam or assessed road/stream crossing that are attributed as habitat for anadromous species identified by StreamNet. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

FreeStreamnetAnadromousHabitatDownstreamMiles: *number of free-flowing miles in the downstream river network from this dam or assessed road/stream crossing that are attributed as habitat for anadromous species identified by StreamNet. Habitat reaches are not necessarily contiguous. Habitat is estimated at the NHDPlusHR flowline level based on best available habitat data provided by StreamNet; please see https://aquaticbarriers.org/habitat_methods for more information. -1 = not available.*

CrossingCode: *crossing identifier.*

NearestCrossingID: *The SARPID of the nearest road/stream crossing point, if any are found within 50 meters*

NearestUSGSCrossingID: *The ID of the nearest road/stream crossing point in the USGS Database of Stream Crossings in the United States (2022), if any are found within 50 meters. Will be blank for crossings from other sources*

Road: *road name, if available.*

RoadType: *type of road, if available.*

CrossingType: *type of road / stream crossing, if known.*

Constriction: *type of constriction at road / stream crossing, if known.*

PotentialProject: *reconnaissance information about the crossing, including severity of the barrier and / or potential for removal project.*

BarrierSeverity: *barrier severity of the dam or assessed road/ stream crossing, if known. Note: assessment dates are not known.*

SARP_Score: *The best way to consider the aquatic passability scores is that they represent the degree to which crossings deviate from an ideal crossing. We assume that those crossings that are very close to the ideal (scores > 0.6) will present only a minor or insignificant barrier to aquatic organisms. Those structures that are farthest from the ideal (scores < 0.4) are likely to be either significant or severe barriers. These are, however, arbitrary distinctions imposed on a continuous scoring system and should be used with that in mind. -1 = not available.*

ProtocolUsed: *Name of survey protocol used*

NC tier: *network connectivity tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for network connectivity and tier 20 represents the lowest 5%. -1 = not prioritized.*

WC tier: *watershed condition tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for watershed condition and tier 20 represents the lowest 5%. -1 = not prioritized.*

NCWC_tier: *combined network connectivity and watershed condition tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for the combined network connectivity and watershed condition and tier 20 represents the lowest 5%. -1 = not prioritized.*

PNC_tier: *perennial network connectivity tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for network connectivity and tier 20 represents the lowest 5%. -1 = not prioritized.*

PWC_tier: *perennial watershed condition tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for watershed condition and tier 20 represents the lowest 5%. -1 = not prioritized.*

PNCWC_tier: *combined perennial network connectivity and watershed condition tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for the combined network connectivity and watershed condition and tier 20 represents the lowest 5%. -1 = not prioritized.*

MNC_tier: *mainstem network connectivity tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for network connectivity and tier 20 represents the lowest 5%. -1 = not prioritized.*

MWC_tier: *mainstem watershed condition tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for watershed condition and tier 20 represents the lowest 5%. -1 = not prioritized.*

MNCWC_tier: *mainstem combined network connectivity and watershed condition tier for your selected subset. Tier 1 represents the dam or assessed road/stream crossings within the top 5% of scores for the combined network connectivity and watershed condition and tier 20 represents the lowest 5%. -1 = not prioritized.*

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