

Fish Passage Scenario #:

- A. Upstream passage device at Scott Dam:**
- B. Upstream passage device at Cape Horn Dam:**
- C. Designed for upstream passage of targeted species and life stages:**
- D. Potential upstream passage limitations for non-targeted species:**
- E. Downstream passage device at Scott Dam:**
- F. Downstream passage device at Cape Horn Dam:**
- G. Designed for downstream passage of targeted species and life stages:**
- H. Potential downstream passage limitations for non-targeted species:**
- I. Assumptions/Considerations/Notes:**
- J. Questions/comments/data gaps/Pros/Cons:**

Fish Passage Scenario # 1:

- A. Upstream passage at Scott Dam:** Full volitional upstream passage via conventional fish ladder with ancillary features to support adult Pacific Lamprey migration.
- B. Upstream Passage at Cape Horn Dam:** Full volitional upstream passage via conventional fish ladder with ancillary features to support adult Pacific Lamprey migration.
- C. Designed for upstream passage of targeted species and life stages:** Adult Chinook salmon, winter-run steelhead, summer-run steelhead, and Pacific lamprey.
- D. Potential upstream passage limitations for non-targeted species:** Juvenile salmonids, native fish species.
- E. Downstream passage at Scott Dam:** Downstream passage designed with juvenile salmonids and steelhead kelt bypass systems, guide nets, and/or spillway.
- F. Downstream Passage at Cape Horn Dam:** Improved downstream passage designed with juvenile salmonids and steelhead kelt bypass systems, guide nets, and/or spillway.
- G. Designed for downstream passage of targeted species and life stages:** Juvenile steelhead and Chinook salmon; adult steelhead kelts.
- H. Potential downstream passage limitations for non-targeted species:** Juvenile lamprey and native fish species.

Fish Passage Scenario # 1:

I. Assumptions/Considerations/Notes:

- Requires near-total rebuild of fish ladder and flow release system at CHD and substantial improvements at SD.
- Non-target fish species may pass upstream and downstream within certain hydraulic conditions aligned with their behavior and swimming capabilities depending the specific type of fish ladders chosen and the individual fish species. Designing to the target adult fish species means nominal 1-foot drops per pool which may exclude some non-target fish species like suckers. Additional research and possible studies on the behavior, swimming capabilities and passage timing for non-target, desirable native fish species would be needed to ascertain the passage performance of selected fishway types and concept designs. Some non-target fish species or life stages may not be able to pass upstream at all. For example, juvenile steelhead may not be able to ascend a very tall fish ladder design to 1-foot pool drops and may eventually reject ascending a very tall fish ladder even if there were twice as many pools for 6-inch drops per pool.
- The target fish species (adult and juvenile) are driven/able to safely transit/navigate the reservoirs without rejection due to issues like predation, changes in water temperature, or hydraulic cues. Guide nets are used to influence navigation and may also influence water temperature to a lesser degree, positively or negatively. Guide nets can help control predation but may also allow for concentration of predators if not managed effectively.
- Scenario could include a Floating Surface Collector (FSC) connected to the juvenile fish bypass system at SD if LP juvenile fish transit study shows good results. If LP juvenile fish transit study results are not good then a Head of Reservoir or In-River downstream migrant collection and transport may be only way to achieve some amount of safe, timely, reliable and effective downstream fish passage.
- Only passive fish passage monitoring for the fish ladders and bypass systems. That is, no active trapping or handling of any fish but active systems could be built-in and phased out as certainty in fish passage enumeration or other parameters is achieved. Additionally, if eradication of pike minnow is desired fish trapping for segregation of fish is more easily built-in to fish ladders.

J. Questions/comments/data gaps:

Fish Passage Scenario #1a: Mead and Hunt

- A. Upstream passage device at Scott Dam:** Full Volitional conventional ladder.
- B. Upstream passage device at Cape Horn Dam:** N/A
- C. Designed for upstream passage of targeted species and life stages:** Adult winter-run steelhead and Chinook salmon.
- D. Potential upstream passage limitations for non-targeted species:** Juvenile salmonids, Pacific lamprey, adult summer-run steelhead, other native fish species.
- E. Downstream passage device at Scott Dam:** Guide nets.
- F. Downstream passage device at Cape Horn Dam:** N/A
- G. Designed for downstream passage of targeted species and life stages:** Juvenile salmonids, steelhead kelts.
- H. Potential downstream passage limitations for non-targeted species:** Pacific lamprey, other native fish species, steelhead kelts (duration?).

Fish Passage Scenario #1a: Mead and Hunt

I. Assumptions/Considerations/Notes:

- Mead and Hunt Scott Dam fish ladder concept may provide adequate upstream and downstream passage of the target fish species subject to further evaluation primarily concerning Lake Pillsbury (LP) reservoir elevations and flow releases during key periods of migration for the target fish species. Lamprey passage features may have to be added to the concept to ensure good success for that species.

J. Questions/comments/data gaps/Pros/Cons:

Fish Passage Scenario #2:

- A. **Upstream passage device at Scott Dam:** Non-volitional. Trap and truck from Cape Horn Dam for release into safe Lake Pillsbury locations.
- B. **Upstream passage device at Cape Horn Dam:** Improved trapping facility at Cape Horn Dam for species sorting/selective access, etc. Selected individuals for release upstream of Cape Horn Dam and Scott Dam.
- C. **Designed for upstream passage of targeted species and life stages:** Adult Chinook salmon, winter-run steelhead, summer-run steelhead, and Pacific lamprey.
- D. **Potential upstream passage limitations for non-targeted species:** Juvenile salmonids, other native fish species.
- E. **Downstream passage device at Scott Dam:** Status quo – spillover
- F. **Downstream passage device at Cape Horn Dam:** Status quo – spillover, notches, or ladder
- G. **Designed for downstream passage of targeted species and life stages:** Juvenile salmonids, Chinook salmon; adult steelhead kelts.
- H. **Potential downstream passage limitations for non-targeted species:** Juvenile Pacific lamprey, other native fish species.

Fish Passage Scenario #2:

I. Assumptions/Considerations/Notes:

- Assumes full selective access of adult fish coming into a new trapping, sorting, holding, and transfer facility at CHD. Facility concept includes a new lower leg of fish ladder to allow volitional movement into the trap. Existing Van Arsdale Fisheries Station entirely rebuilt.
- Status quo for downstream fish passage at CHD and SD. Assumes the target fish species (adult and juvenile) are willing and able to safely transit/navigate the reservoirs without rejection due to issues like predation, changes in water temperature, or hydraulic cues. Could consider incremental improvements like those outlined in FP-1 to increase efficiency and survival after study of existing downstream fish passage conditions like the LP juvenile fish transit study.

J. Questions/comments/data gaps:

Fish Passage Scenario #3:

- A. Upstream passage device at Scott Dam:** Non-volitional. Collection, handling, transfer and release (CHTR) facilities at Scott Dam.
- B. Upstream passage device at Cape Horn Dam:** Improved full volitional upstream passage design (ladder, etc).
- C. Designed for upstream passage of targeted species and life stages:** Adult Chinook salmon, winter-run, summer-run steelhead trout, and Pacific lamprey.
- D. Potential upstream passage limitations for non-targeted species:** Juvenile salmonids, other native fish species.
- E. Downstream Passage at Scott Dam:** Floating Surface Collector within near Scott dam or at tributary mouths.
- A. Downstream Passage at Cape Horn Dam:** Improved full volitional downstream passage design (ladder, etc).
- B. Designed for downstream passage of targeted species and life stages:** Juvenile salmonids; adult steelhead kelts.
- C. Potential downstream passage limitations for non-targeted species:** Juvenile Pacific lamprey, other native fish species.

Fish Passage Scenario #3:

I. Assumptions/Considerations/Notes:

- The CHTR facilities at SD includes a short section of fish ladder for volitional entry leading to trapping, sorting, holding and transfer station. Allows for full segregation of adult fish coming into the station. Transfer selected fish to either truck for transport to selected release location(s) into reservoir or transfer by WHOOSH system, elevator (or other) to boat at SD for LP transport to head of reservoir releases. Could consider truck transport to above LP release locations after study of strategic access considerations.
- Consider incremental improvements like those outlined in FP-1 to increase efficiency and survival after study of existing downstream fish passage conditions like the LP juvenile fish transit study. If shown viable a FSC at SD would likely be a trap and haul for downstream migration given the CHTR facility for upstream migration.
- Full volitional fish passage at SD could be phased in as population increases and other management aspects are handled effectively.

J. Questions/comments/data gaps:

Fish Passage Scenario #4:

- A. Upstream passage at Scott Dam:** Full Volitional. Full Scott Dam removal that includes Lake Pillsbury sediment management and active habitat restoration (passage routes on lake bed, wildlife refuge, etc.).
- B. Upstream passage device at Cape Horn Dam:** Full volitional upstream passage design (ladder, etc.). No disruption to fish passage – passive monitoring.
- C. Designed for upstream passage of targeted species and life stages:** Adult Chinook salmon, winter-run steelhead, summer-run steelhead, and Pacific lamprey. All species at Scott Dam.
- D. Potential upstream passage limitations for non-targeted species:** Juvenile salmonids, other native fish species. No limitations to passage for all species at Scott Dam (no dam).
- E. Downstream Passage at Scott Dam:** Full Scott Dam removal that includes Lake Pillsbury sediment management and active habitat restoration. Passage for all species.
- F. Downstream Passage at Cape Horn Dam:** Full volitional downstream passage design (spillway, notches, ladder, etc.).
- G. Designed for downstream passage of targeted species and life stages:** Juvenile steelhead, Chinook salmon; adult steelhead kelts at CHD.
- H. Potential downstream passage limitations for non-targeted species:** Juvenile Pacific lamprey, other native fish species. No downstream passage limitations for all species at Scott Dam (no dam).

Fish Passage Scenario #4:

I. Assumptions/Considerations/Notes:

- Consider incremental downstream fish passage improvements at CHD like those outlined in FP-1.
- Only passive fish passage monitoring for the CHD fish ladder but an active system could be built-in and phased out as certainty in fish passage enumeration or other parameters is achieved.

J. Questions/comments/data gaps:

Fish Passage Scenario #5:

- A. **Upstream passage at Scott Dam: Full volitional.** Full Scott Dam removal that includes Lake Pillsbury sediment management and active habitat restoration.
- B. **Upstream Passage at Cape Horn Dam:** Improved trapping and passage facility at Cape Horn Dam for monitoring and sorting of targeted fish species. Targeted species released upstream of Cape Horn Dam.
- C. **Designed for upstream passage of targeted species and life stages:** Adult Chinook salmon, winter-run steelhead, summer-run steelhead, and Pacific lamprey. All species benefit at Scott Dam (no dam).
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 - A. **Potential upstream passage limitations for non-targeted species:** Adult Chinook salmon, winter-run steelhead, summer-run steelhead, and Pacific lamprey.
 - B. **Downstream Passage at Scott Dam:** Full Scott Dam removal that includes Lake Pillsbury sediment management and active habitat restoration.
 - C. **Downstream Passage at Cape Horn Dam:** Full volitional downstream passage design (spillway, notches ladder, etc.)
 - D. **Designed for downstream passage of targeted species and life stages:** Juvenile steelhead trout, Chinook salmon; adult steelhead kelts.
 - E. **Potential downstream passage limitations for non-targeted species:** Juvenile Pacific lamprey, other native fish species. No downstream passage limitations for all species at Scott Dam (no dam).

Fish Passage Scenario #5:

I. Assumptions/Considerations/Notes:

- Full selective access of adult fish coming into a new trapping, sorting, holding, and transfer facility at CHD. Release selected fish at strategic locations above LP as SD removal and LP restoration are implemented. Full volitional CHD fish passage could be phased in as SD removal and LP restoration stabilizes or continue with CHD trapping for fish segregation to build the Upper Eel River Anadromous Fish Sanctuary.
- Consider incremental downstream fish passage improvements at CHD like those outlined in FP-1.

J. Questions/comments/data gaps:

Fish Passage Scenario #6:

- A. Upstream passage at Scott Dam:** Full volitional with partial removal of Scott Dam and conventional fish ladder with ancillary features to support adult Pacific Lamprey migration.
- B. Upstream Passage at Cape Horn Dam:** Full volitional upstream passage via conventional fish ladder with ancillary features to support adult Pacific Lamprey migration.
- C. Designed for upstream passage of targeted species and life stages:** Adult Chinook salmon, winter/summer-run steelhead trout, and Pacific lamprey.
- D. Potential upstream passage limitations for non-targeted species:** Adult Chinook salmon, winter-run steelhead, summer-run steelhead, and Pacific lamprey.
- E. Downstream Passage at Scott Dam:** Improved downstream passage designed with juvenile and steelhead kelt bypass systems and guide nets.
- F. Downstream Passage at Cape Horn Dam:** Improved downstream passage designed with juvenile and steelhead kelt bypass systems and guide nets.
- G. Designed for downstream passage of targeted species and life stages:** Juvenile steelhead trout, Chinook salmon, and Pacific Lamprey; adult steelhead kelts.
- H. Potential downstream passage limitations for non-targeted species:**

Fish Passage Scenario #6:

- A. Upstream passage at Scott Dam:** Full volitional with partial removal of Scott Dam and conventional fish ladder with ancillary features to support adult Pacific Lamprey migration.
- B. Upstream Passage at Cape Horn Dam:** Full volitional upstream passage via conventional fish ladder with ancillary features to support adult Pacific Lamprey migration.
- C. Designed for upstream passage of targeted species and life stages:** Adult Chinook salmon, winter/summer-run steelhead trout, and Pacific lamprey.
- D. Potential upstream passage limitations for non-targeted species:** Adult Chinook salmon, winter-run steelhead, summer-run steelhead, and Pacific lamprey.
- E. Downstream Passage at Scott Dam:** Improved downstream passage designed with juvenile and steelhead kelt bypass systems and guide nets.
- F. Downstream Passage at Cape Horn Dam:** Improved downstream passage designed with juvenile and steelhead kelt bypass systems and guide nets.
- G. Designed for downstream passage of targeted species and life stages:** Juvenile steelhead trout, Chinook salmon, and Pacific Lamprey; adult steelhead kelts.
- H. Potential downstream passage limitations for non-targeted species:**

Fish Passage Scenario #6:

I. Assumptions/Considerations/Notes:

- Consider contingencies for LP sediment management and restoration if passive approach shows bad results.
- Interim status quo for CHD but consider contingencies from sediment impacts.
- After sediment settles to natural background conditions implement improved fish passage at CHD. Could be incremental toward full volitional fish passage or include segregation of adult fish coming into CHD like that in FP-5 (to build the Upper Eel River Anadromous Fish Sanctuary).

J. Questions/comments/data gaps: