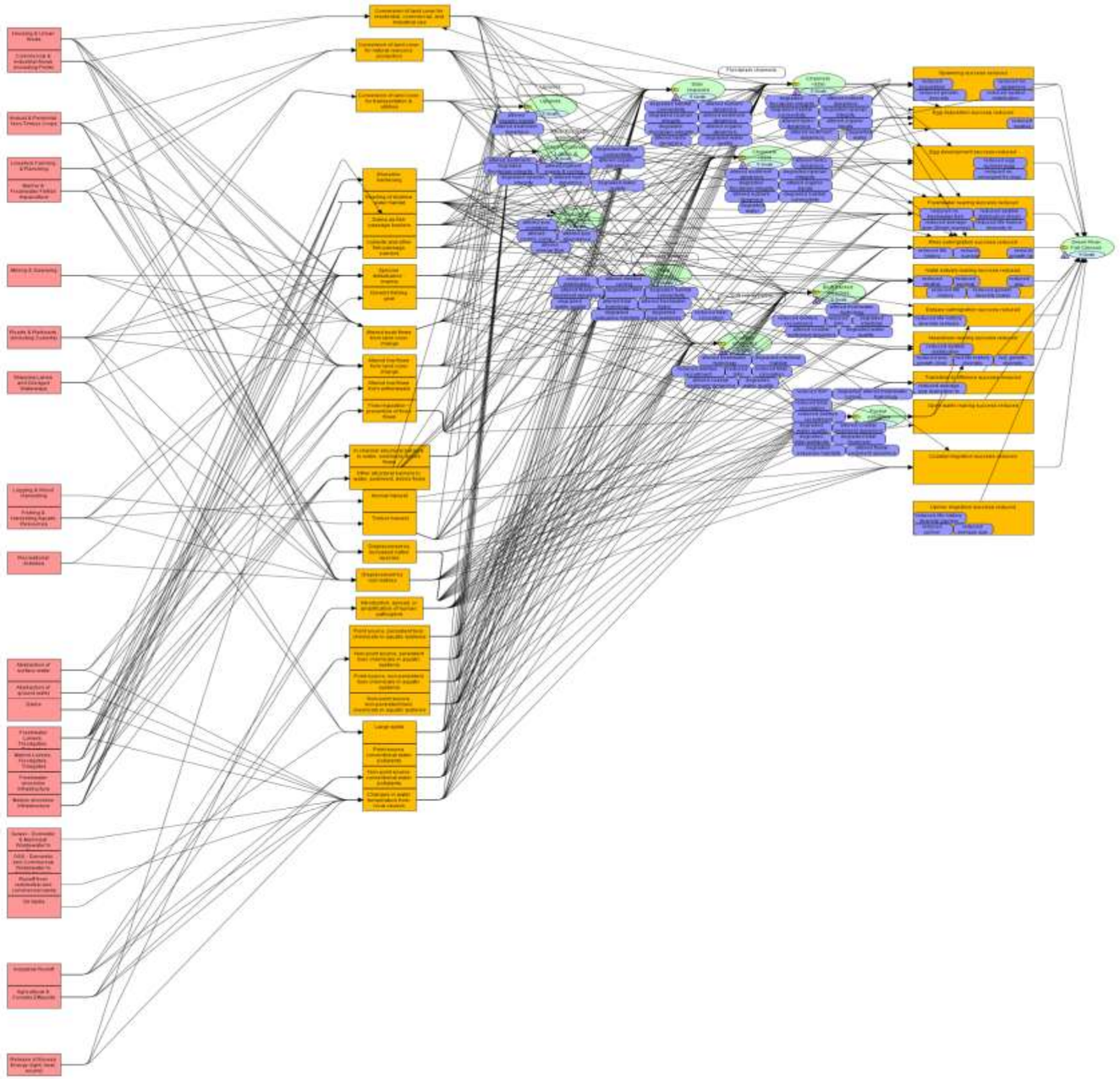
A.2.1. Current Context in Our Watershed: Conceptual Models

The conceptual models included here illustrate our understanding of the cause and effect relationships between contributing factors, pressures and ecosystem components, as described in the 2005 recovery plan and subsequent 3YWPs. Factors can be natural or human-derived and they can include financial, social, cultural, regulatory, or infrastructural issues. They can also include positive factors and opportunities that would be desirable to maintain or strengthen.

Key for Conceptual Models

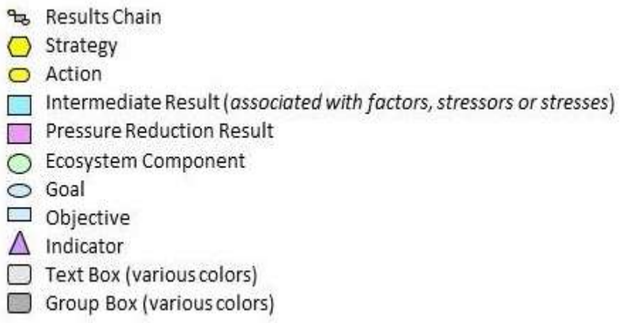
Current Context: 01. Portfolio of Elements



A.2.2. Results Chains

The results chains presented here illustrate our theories of change associated with specific strategies or suites of strategies, as represented in the 2005 recovery plan and subsequent 3YWPs.

Key and Definitions for Results Chains



In this section, we use the following symbols and terminology to describe our theories of change:

A strategy is a bundle of actions that, when combined, are intended to achieve a common goal. Strategies are intended to mitigate pressures or their underlying conditions and root causes, restore ecosystems or species populations, or provide capacity to achieve goals. Strategies include one or more actions (capital projects, programs, etc.) and are designed to achieve specific outcomes, objectives, and goals.

Actions focus on delivery of a specific outcome or output associated with a desired result. Actions include capital projects (e.g. restoration and acquisition), program development or implementation, education and outreach, research, etc. Actions can be completed on a near-term (i.e. 2 years or less) or longer-term time scale.

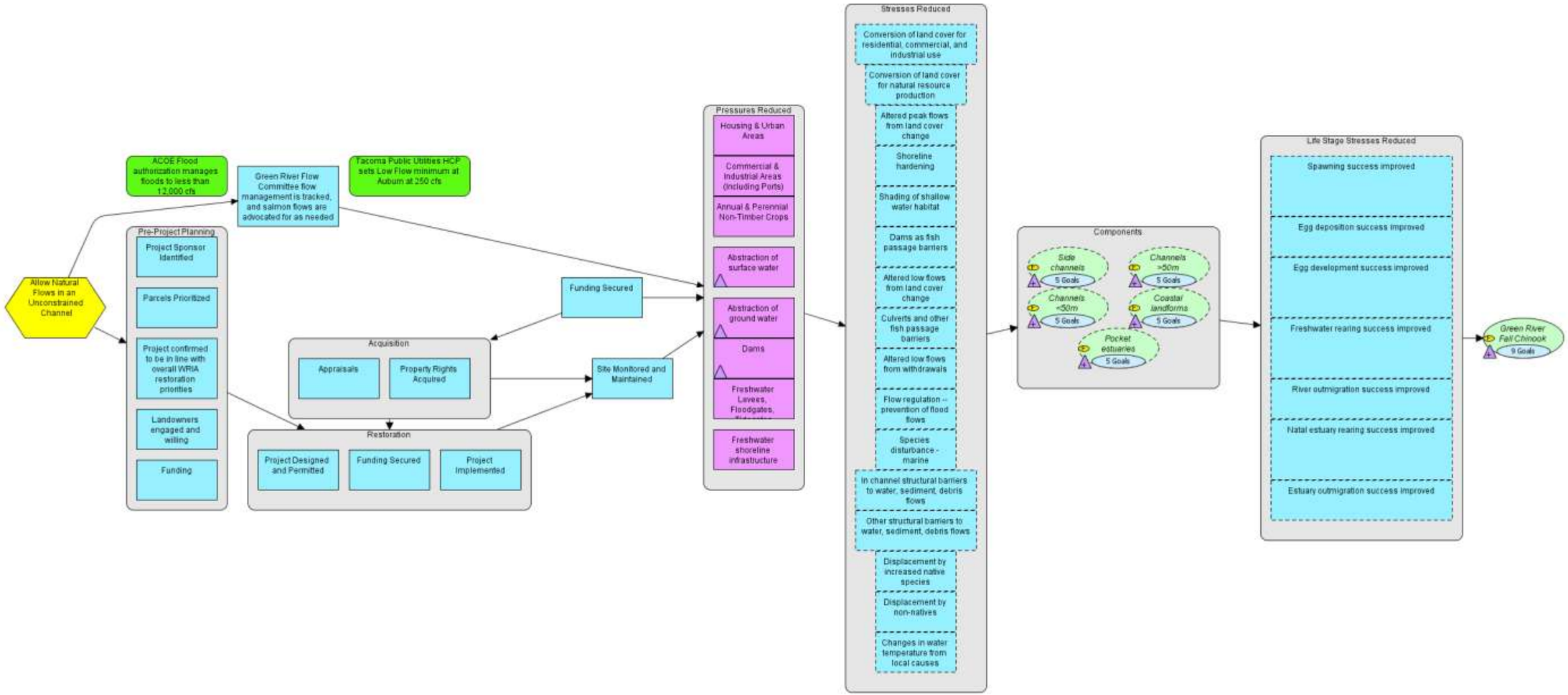
Intermediate results are the expected changes following the implementation of a strategy or action that are necessary steps toward achieving a desired future status or goal. Within a results chain, intermediate results may be identified for results boxes (blue) as well as pressure reduction boxes (purple).

Objectives are the desired outcomes for a subset of intermediate results, most often those which are easily monitored or those which provide the most useful information about effectiveness of a specific course of action.

Effectiveness indicators are most often developed for critical intermediate results within a results chain, or those that can provide the most information about whether actions are having the desired effects. They can include indicators of implementation, effectiveness, or validation and are used to assess whether progress is being made toward specific objectives and goals. In the *Measuring Effectiveness* tables in the following section, indicators are rated as follows: 4 = Very High Priority, 3 = High Priority, 2 = Medium Priority, 1 = Low Priority, blank = Priority Not Specified.

THEORY OF CHANGE: Allow Natural Flows in an Unconstrained Channel ()

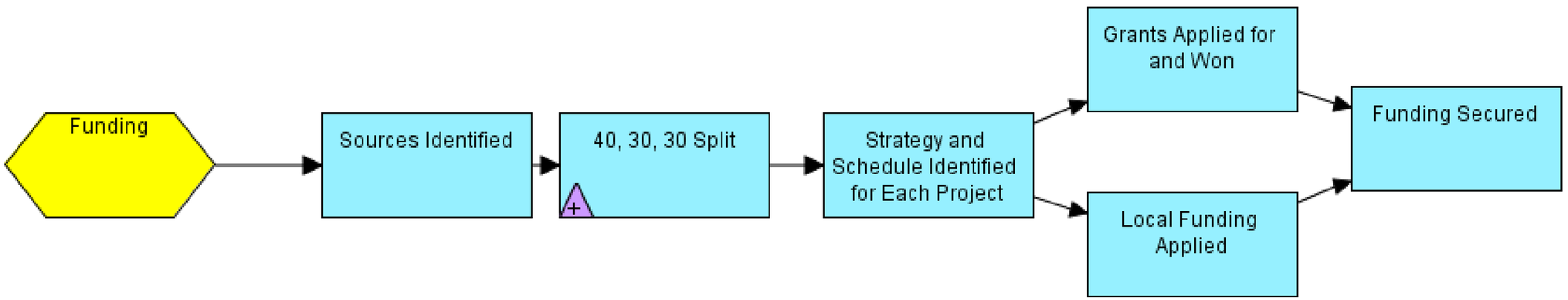
Description: Allowing natural disturbance-type flows in a relatively unconstrained river channel will enhance habitat diversity and will provide habitats that can support spawning and rearing salmon at a greater variety of flow conditions (compared with high flows in a constrained channel), thereby leading to expanded salmon spatial distribution, greater juvenile salmon growth, and higher survival.



THEORY OF CHANGE: Funding ()

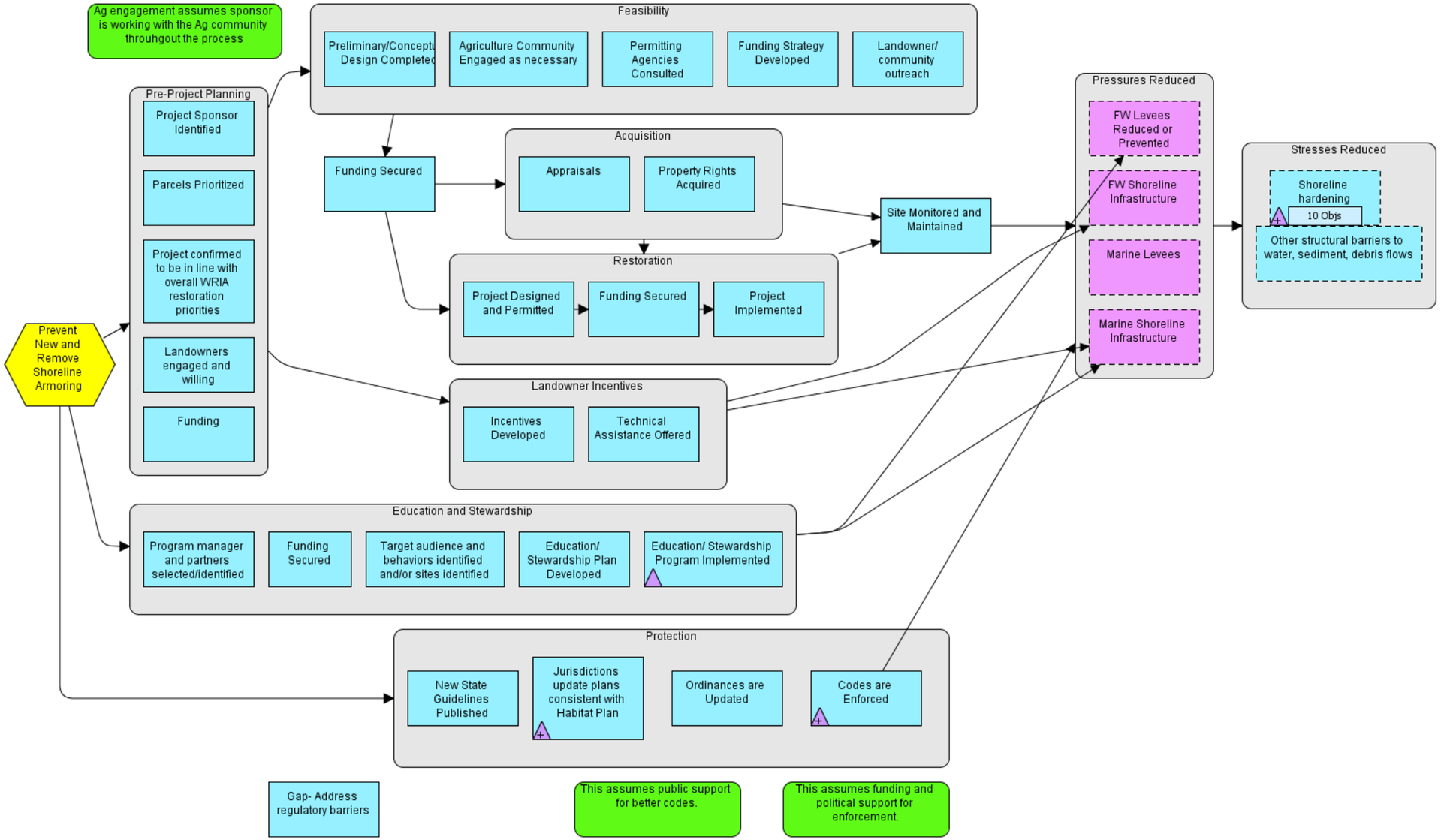
Description: The focus of management action implementation efforts in this habitat plan will be on the following distinct habitats that are limiting viable salmonid populations in WRIA 9:
-- Duwamish Estuary transition zone habitat;
-- Middle Green River, Lower Green River, Duwamish Estuary, Marine Nearshore rearing habitat; and
-- Middle Green and upper Lower Green River spawning habitat.

Because of the importance of the transition zone and the negative effect on habitat recovery efforts upstream if a severe transition zone habitat limitation does exist, 40% of funding for management actions recovery efforts will be focused on the transition zone. The remaining 60% of funding for management action recovery efforts will be split 30% for the rearing habitats and 30% for the spawning habitats as described above. This allocation of funding would apply over the first 1o year period of the Habitat Plan (i.e., annual funding allocations could vary from this distribution) and would be subject to change as part of adaptive management.



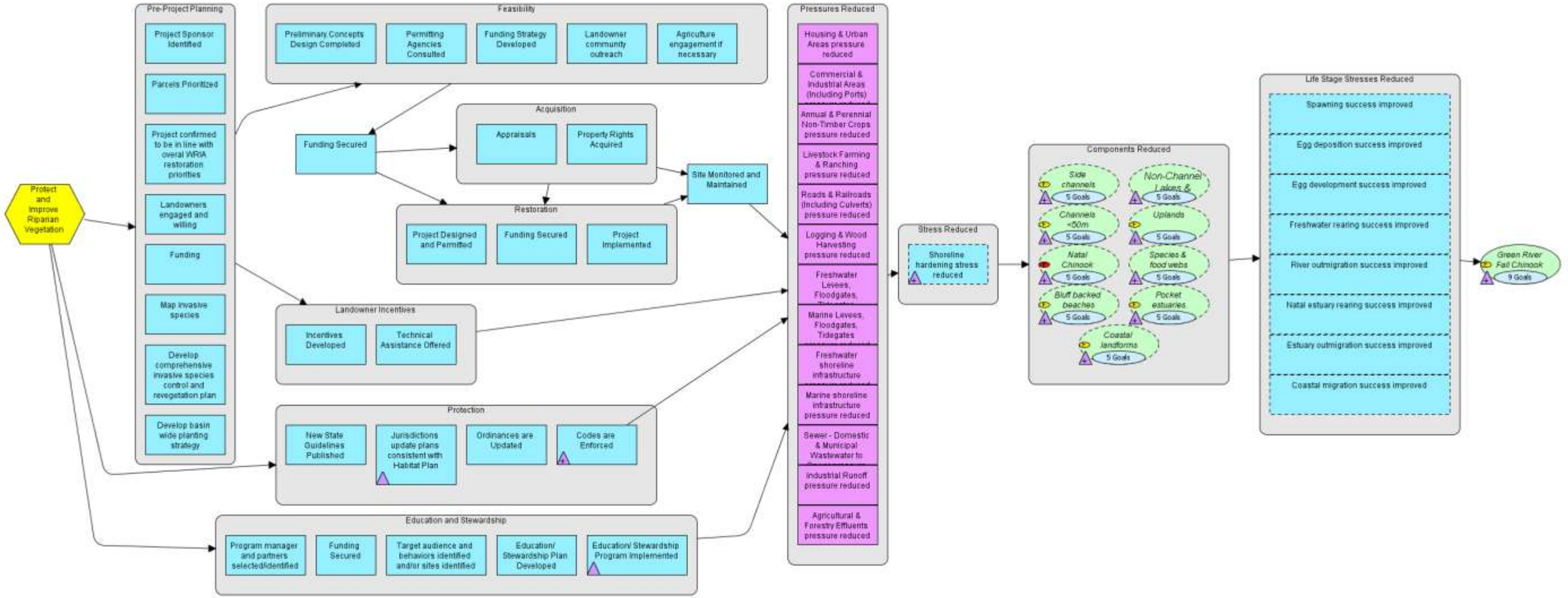
THEORY OF CHANGE: Prevent New and Remove Shoreline Armoring ()

Description: Preventing new bank and shoreline armoring and fill and removing existing armoring, fill, and other impediments (e.g., levees) will enhance habitat quality and quantity and lead to improved juvenile salmon survival, spatial distribution, and diversity.



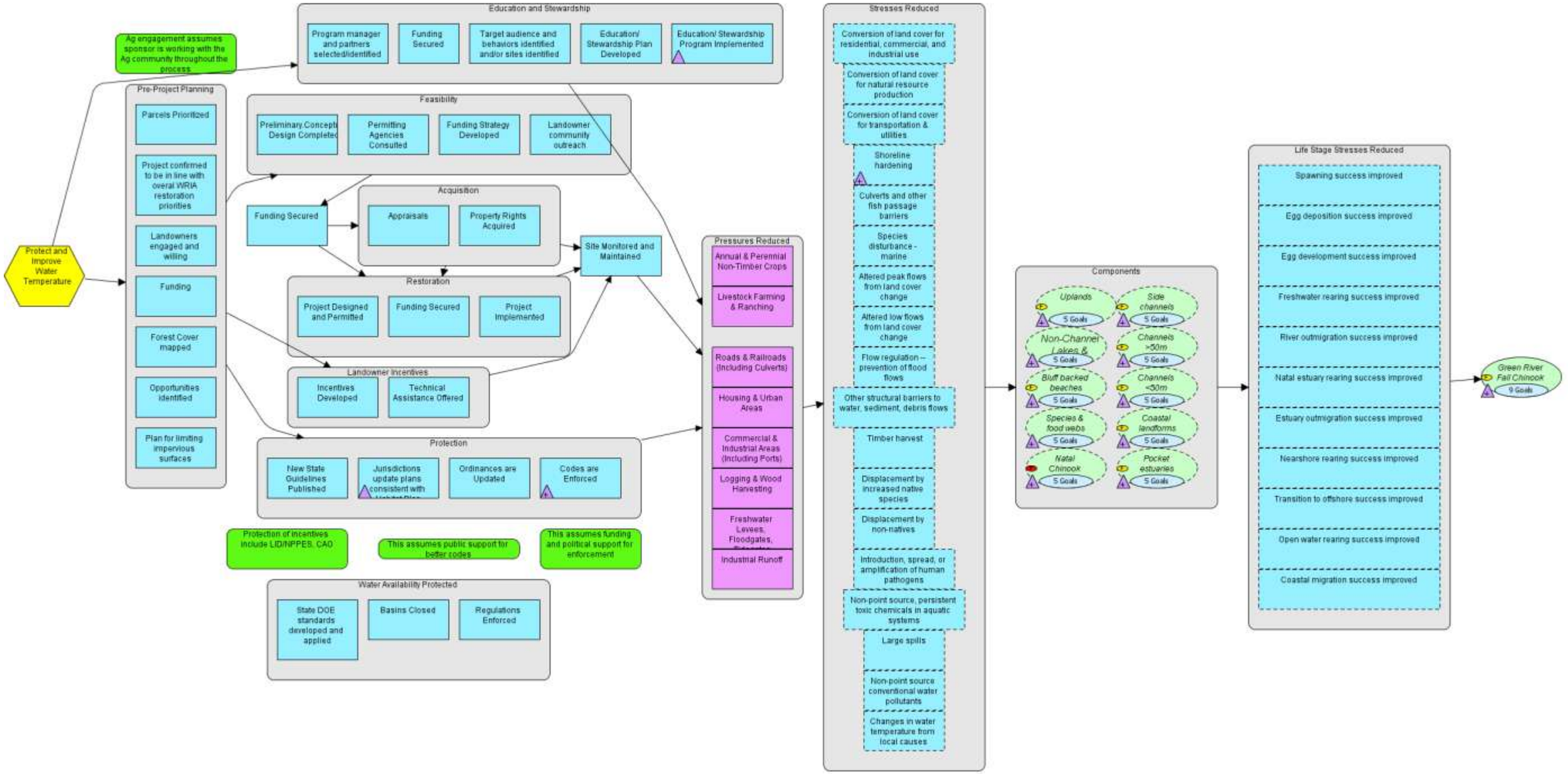
THEORY OF CHANGE: Protect and Improve Riparian Vegetation ()

Description: Protecting and improving riparian zone conditions by adding native riparian vegetation will enhance habitat quality by improving water quality, stabilizing streambanks, providing overhanging vegetation and large woody debris (LWD), and contributing organic matter, nutrients, and terrestrial prey items, thereby leading to greater juvenile salmon growth and higher survival.



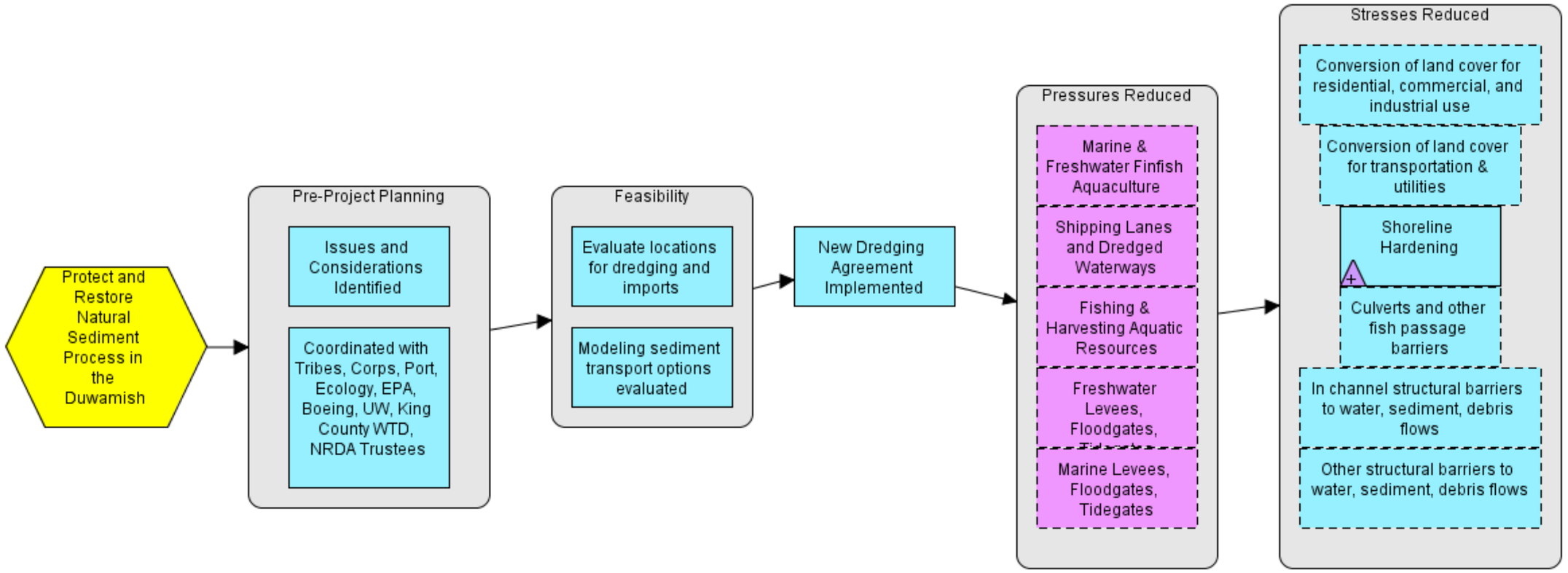
THEORY OF CHANGE: Protect and Improve Water Temperature ()

Description: Protecting and improving water temperature by addressing point and nonpoint sources will enhance habitat quality and lead to greater juvenile salmonid growth, disease resistance, and survival. Improved water quality will also enhance survival of adult salmon.



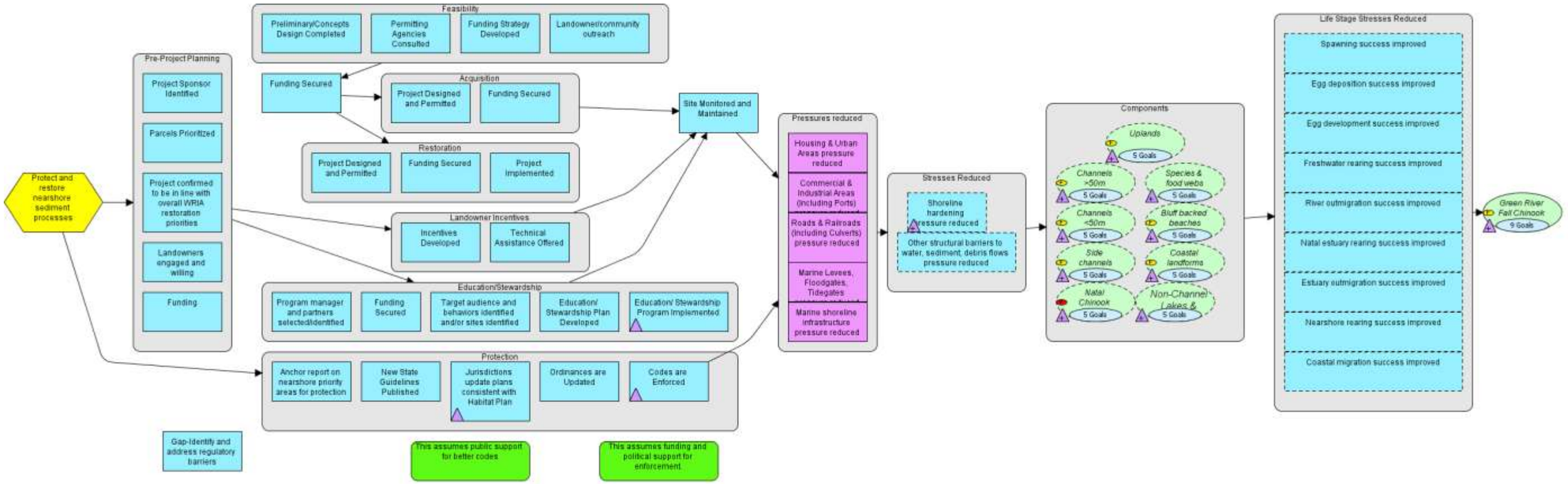
THEORY OF CHANGE: Protect and Restore Natural Sediment Process in the Duwamish ()

Description: Protecting and restoring natural sediment process (supply-transport-delivery) in the Duwamish will increase the quantity and quality of available juvenile salmon rearing habitat, including salmon prey production.



THEORY OF CHANGE: Protect and restore nearshore sediment processes ()

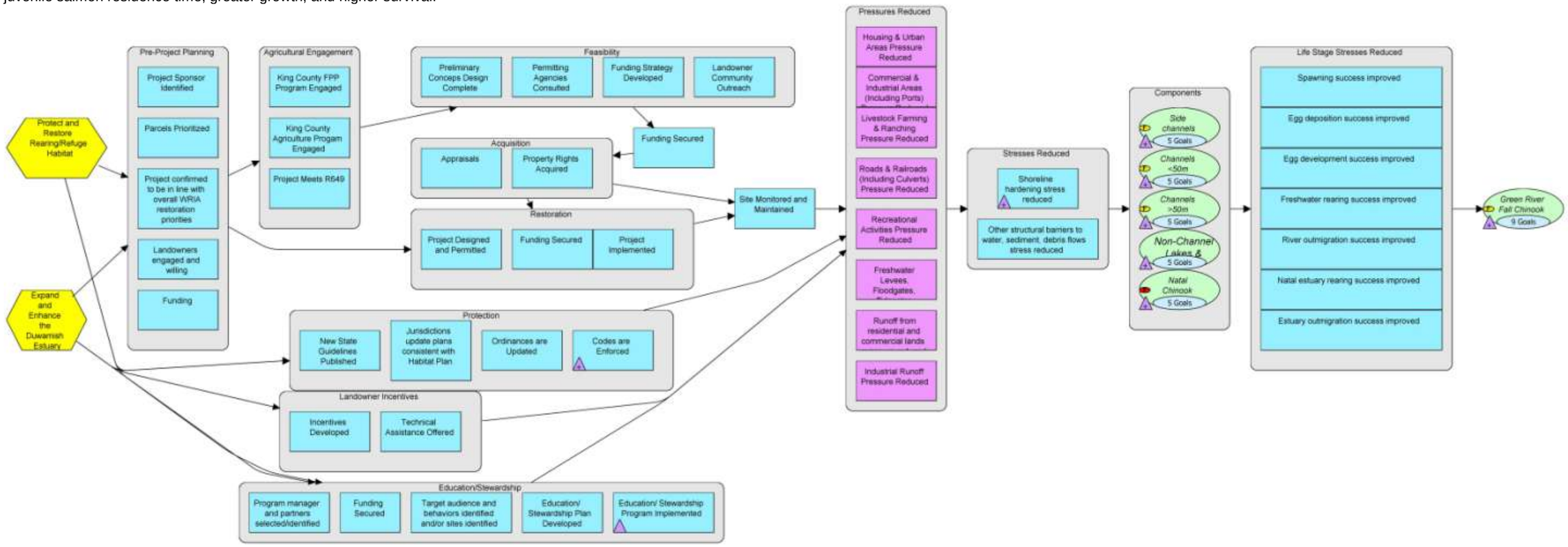
Description: Protecting and restoring nearshore sediment transport processes by reconnecting sediment sources and removing shoreline armoring that impacts sediment transport will lead to greater prey production, greater juvenile salmon growth, and higher survival.



THEORY OF CHANGE: Protect and Restore Rearing Refuge and Habitat ()

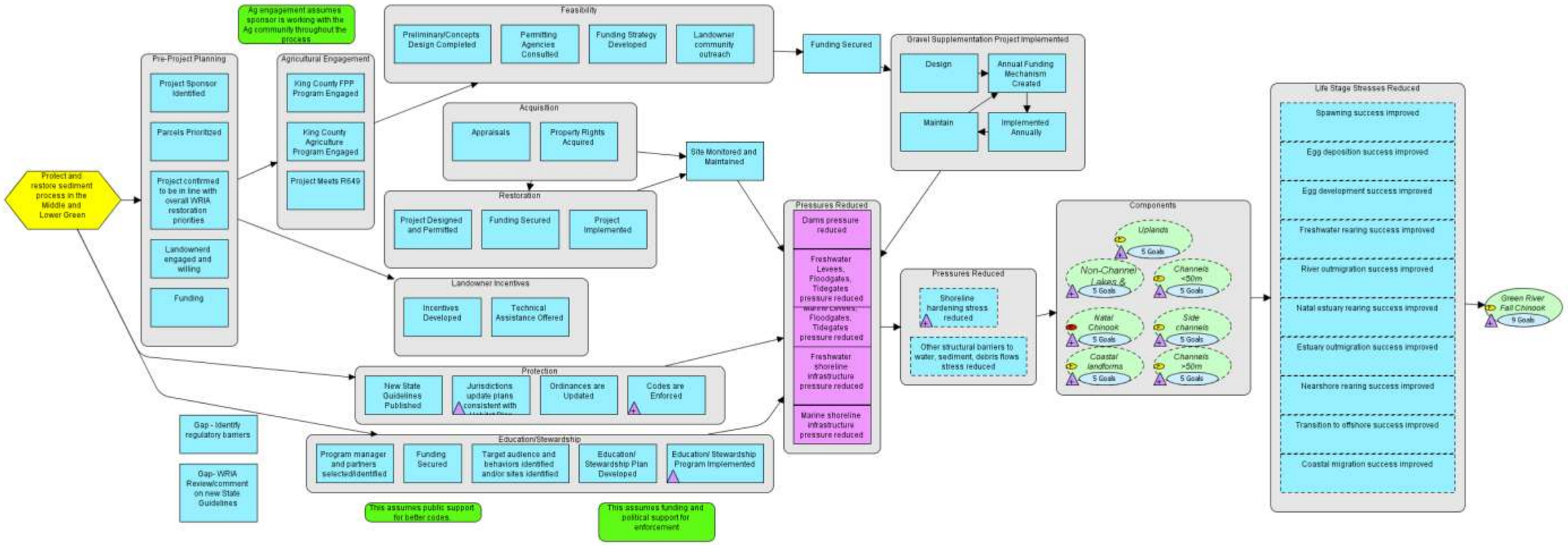
Description: Protecting, creating, and restoring habitat that provides refuge (particularly side channels, off channels, and tributary access) and habitat complexity (particularly pools) for juvenile salmon in the Middle and Lower Green subwatersheds over a range of flow conditions and at a variety of locations (e.g., mainstem channel edge, river bends, and tributary mouths) will enhance habitat quality and quantity and lead to greater juvenile salmon residence time, greater growth, and higher survival.

Expanding and enhancing the Duwamish estuary, particularly vegetated shallow subtidal and intertidal habitats and brackish marshes by restoring dredged, armored, and filled areas, will enhance habitat quantity and quality and lead to greater juvenile salmon residence time, greater growth, and higher survival.



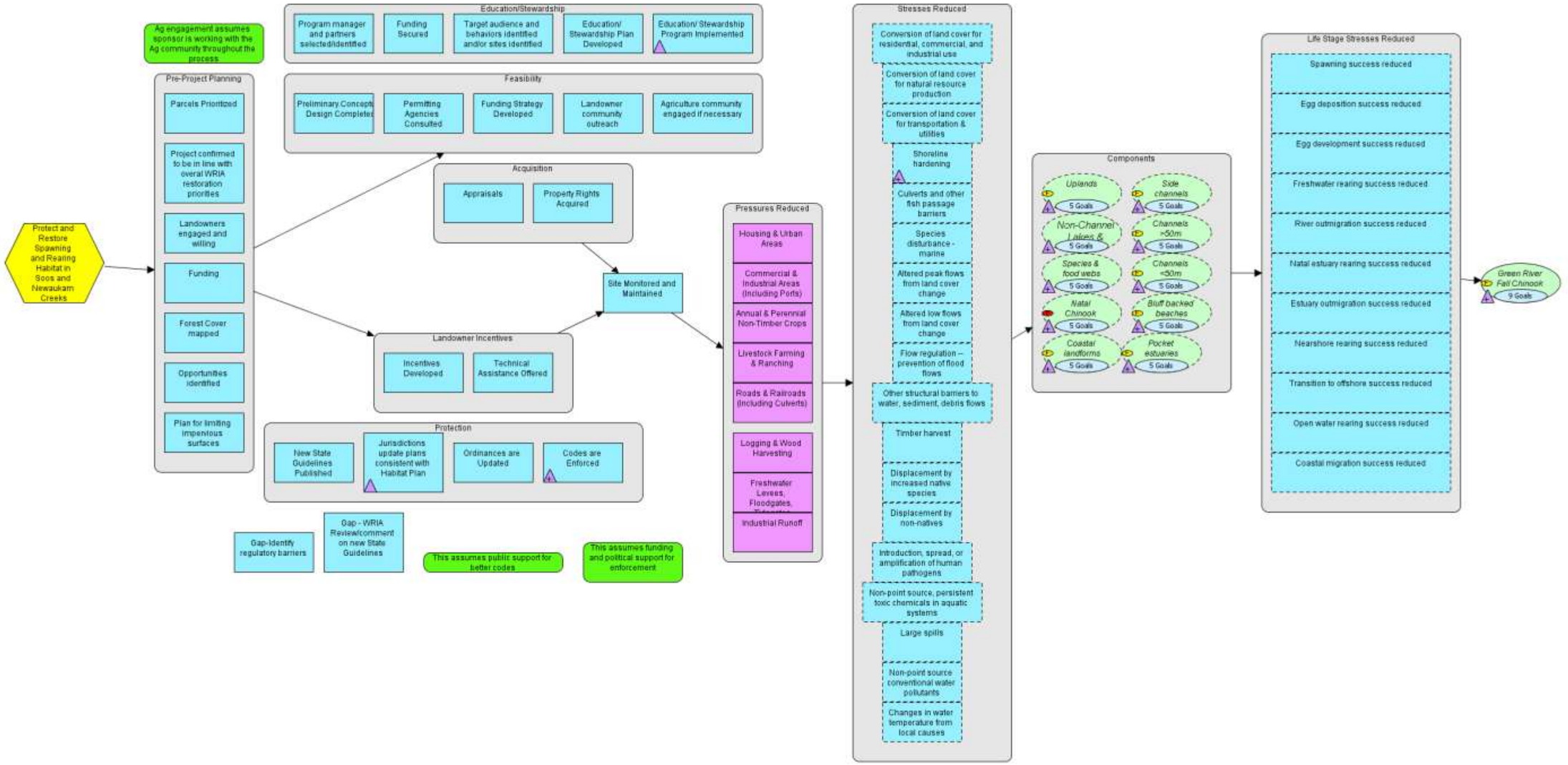
THEORY OF CHANGE: Protect and Restore Sediment Processes in the Middle and Lower Green ()

Description: Protecting and restoring natural sediment recruitment (particularly spawning gravels) by reconnecting sediment sources to the river will help maintain spawning habitat.



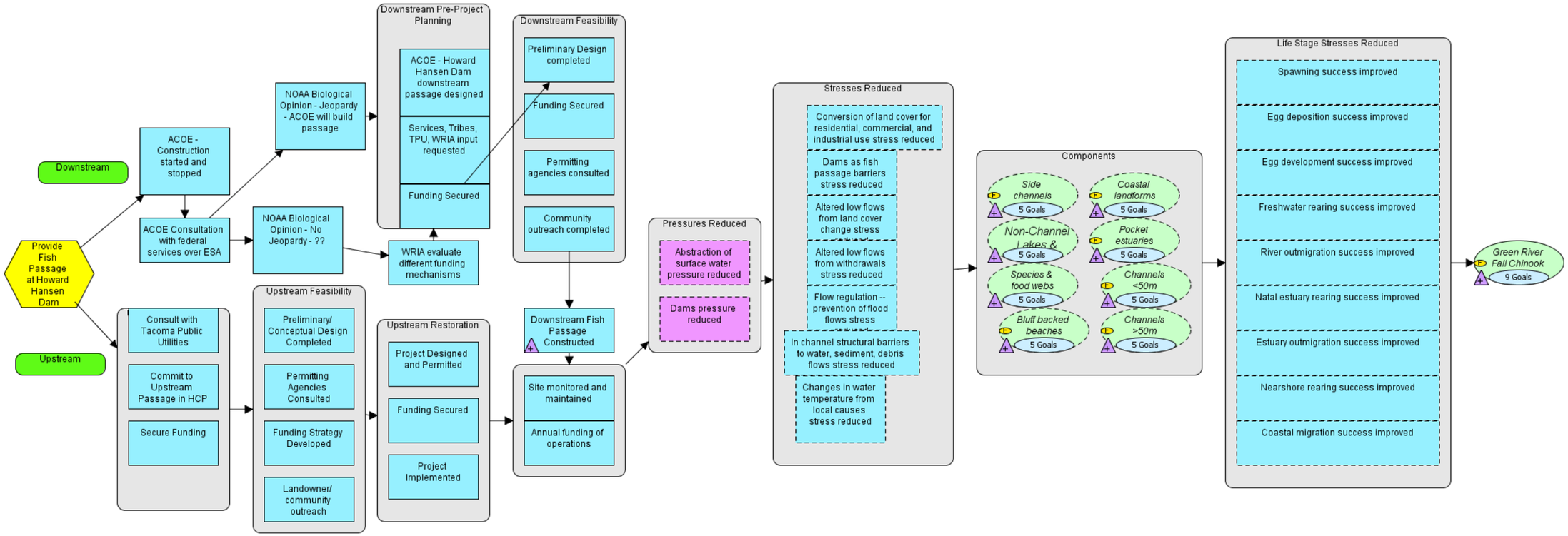
THEORY OF CHANGE: Protect and Restore Spawning and Rearing Habitat in Soos and Newk Creeks ()

Description: Preserving and restoring spawning and rearing habitat in lower Newaukum and Soos Creeks will increase habitat quality and quantity, thereby increasing productivity and spatial structure of Green River Chinook salmon.



THEORY OF CHANGE: Provide Fish Passage ()

Description: Preserving and restoring spawning and rearing habitat in lower Newaukum and Soos Creeks will increase habitat quality and quantity, thereby increasing productivity and spatial structure of Green River Chinook salmon.



THEORY OF CHANGE: Reduce Upland Impacts by protecting forest cover, limiting impervious surfaces, and implementing low impact development ()

Description: Preserving and protecting against watershed and upland impacts by implementing Low Impact Development techniques, including minimizing impervious surfaces, will maintain habitat quality by helping maintain flow, maintain water quality, and reduce sedimentation, thereby leading to greater salmon survival.

Maintaining regional groundwater recharge and base flows to the mainstem Green River through forest retention and Low Impact Development techniques will maintain spawning and rearing habitat.