

## **Applying Adaptive Management to Geoduck Aquaculture Discussion Outline**

This outline is intended to assist SARC members in gaining a common working definition of adaptive management, and a common perspective on its application to this project.

Adapting practices and policies over time is inherent in the approach taken by HB 2220. The bill lays out two parallel and interrelated tracks: Evaluating and improving the Shoreline policy and permitting process through the SMP Guidelines update; and pursuing scientific research on key environmental issues related to geoduck aquaculture. The bill specifically requires Ecology to update the Guidelines as Sea Grant research is completed. Due to this, the issue of adaptive management seems particularly relevant to the SARC process. This outline identifies possible sources of information and potential contexts for applying adaptive management to geoduck aquaculture activities.

The following **description of adaptive management** is suggested for this discussion (simplified from several sources):

Adaptive management is a process where activities of a specific operation are adjusted over time to better achieve the intended outcomes. Adaptive management is guided by site-specific monitoring and by improved scientific information.

Adaptive management might be likened to a radar system that alerts us when operations are not functioning as predicted, and also gives us a menu and regulatory tool to require modifications that should be considered and applied to make course corrections.

The following background on adaptive management is from Wetlands in Washington State, Volume 2, April 2005, Chapter 12 "Protecting and Managing Wetlands":

"We do not know, or fully understand, all the cause and effect relationships between human actions on the land and the functions performed by wetlands. Thus, we cannot fully predict the outcome of actions taken to protect and manage wetlands, other natural resources and critical areas, as well as landscape processes. Monitoring the effectiveness of protection measures in the context of adaptive management is the most efficient way to face this uncertainty.

Adaptive management is a commitment by a local government to change approaches for protecting and managing wetlands and to redirect resources as warranted by new information. A willingness to make improvements to address insufficiencies identified through this monitoring step is important.

Some of the characteristics of adaptive management are:

- Acknowledgement that there is still much uncertainty about what policy or practice is best for solving each particular issue related to protecting and managing wetlands
- Careful design and implementation of a monitoring plan designed to reveal the knowledge that is currently lacking
- Monitoring of both the resource itself and the implementation of plans and practices used to protect the resource
- Analysis of the outcomes of policies and practices in terms of the original objectives
- Incorporation of the results into future decisions"

It is essential to balance environmental certainty and regulatory certainty for permit holders, along with administrative practicality. Monitoring and reporting requirements must be practical and specific, including assurances of data accuracy. Action levels must be clear, especially for applying adaptive management to on-going activities. We need clear information, procedures and implications: “If \_\_\_\_, then \_\_\_\_...”

The need for good baseline information as the foundation for adaptive management was highlighted by the recent Supreme Court case on the Skagit County GMA Critical Areas regulations (*Swinomish*). The Court found that the County’s adaptive management approach was inadequate due to poor baseline information – without this information, the Court found, the County would not be able to respond to a need for further action to protect habitat functions and values.

In regard to adaptive management as it applies to SARC, at least three principle **sources of information** are potentially applicable:

- **Site monitoring** includes baseline studies and on-going monitoring. These requirements are identified in permits and/or BMPs. This information is collected by the permittee. A monitoring plan should be submitted and approved, so everyone is on the same page regarding data collection objectives and methods. Site-specific information is vital to adjusting practices to better achieve land use permit objectives.
- **Compliance monitoring and assessment** by agencies are vital (and often overlooked) prerequisites for successful adaptive management. Two related but distinct questions need to be answered:
  - Is the project following the conditions of the permit?
  - Are these conditions achieving the intended result?

Agency compliance monitoring is essential to answer the above questions. In addition, compliance monitoring can identify unanticipated events or issues which were not included in the original monitoring plan, but are having a significant impact on environmental or other objectives.

Tracking individual projects to determine whether conditions placed on permits are achieving the intended result allows continual improvement in standards and permit conditions. If a standard is not achieving the intended result, we can adjust it – or we may find that we need to focus attention on a different aspect of the land use activity. *Follow-up on permits is vital to assessing whether our permit conditions are proving to be effective, and making needed adjustments in them.*

- **Improved scientific understanding**, in the case of geoduck aquaculture, will be provided through the Sea Grant research projects; research at DNR leased sites; and from the multiple institutions involved with shellfish aquaculture research. Improved understanding of Puget Sound conditions will also inform adaptive management.

For discussion, **four contexts** are suggested as having potential for applying adaptive management to geoduck aquaculture. We will need to consider all of these in the design of revised Guidelines for Shoreline Master Programs regarding geoduck aquaculture siting and operation. The four contexts are:

1. **Adjustment of practices on existing operations to meet existing permit objectives.**

For example, escaped plastic materials may indicate the need for increased litter control and patrols after winter storms to meet the stated permit objectives of controlling litter. Within an existing permit, *outcomes* are generally protected for an authorized activity; however, it may be feasible and important to modify certain *practices* to address environmental and other concerns...

2. **Adjustment at the time of harvest/replanting cycle** may also be indicated by scientific research or site-specific monitoring. For example, research could determine that the setback distance from a particular environmental feature should be increased from the original standard. Several mechanisms may be available to implement harvest cycle adjustments, such as permit renewals, requirements for on-going adaptation included in the original permit, or guidance provided by local or state agencies. Adjustment in practices over multiple harvest cycles may be particularly important for incorporating the results of Sea Grant and other research.

Achieving the appropriate balance between regulatory certainty for existing uses and incorporating new science will require creative, innovative approaches. One potential example would be permit duration for Substantial Development Permits that balances environmental and regulatory certainty, in place of the fallback timeframe of five years. State law was amended several years ago to provide this flexibility. The challenge is designing the appropriate timeframe for a use that does not operate on a predetermined fixed schedule, since growth rates, markets and other factors influence the timing of geoduck harvest.

3. **On-going update of local or state standards and BMPs.** Results from scientific research and permit monitoring may lead to updates in standards and BMPs. Updates may occur on the local or state level. HB 2220 specifically requires Ecology to update our SMP Guidelines on geoduck aquaculture as the Sea Grant research is completed. Siting and operation of new geoduck aquaculture operations should be based on the most current scientific understanding. Permits for new uses should also be based on evaluation of the effectiveness of conditions applied to earlier permits – there should be ongoing effort to improve the clarity of permit language, and to improve benchmarks for gauging compliance.

4. **SMP review on the 7-year cycle:** This is the review cycle stipulated by the Legislature. Local communities will examine implications of new information - including information on geoduck aquaculture siting and operation. SMP update topics may include broad policy issues that influence geoduck aquaculture and other shoreline uses - for example, criteria and siting for habitat reserve areas. SMP update reviews may also result in revisions in specific standards for geoduck aquaculture. The 7-year cycle provides an opportunity for adaptive management - for altering policies, regulations and standards where needed to meet SMP objectives.