Summary

Meeting dates: December 6-7, 2013 Commission Meeting

Agenda item 4: Update of Chapter 220-110 Hydraulic Code Rules

Presenter(s): Randi Thurston, Protection Division Manager

Background summary:

This briefing will inform the Fish and Wildlife Commission about three proposed new hydraulic code rule sections.

This presentation will cover:

1) New section 220-110-100 Common construction requirements
2) New section 220-110-410 Artificial aquatic habitat structures
3) New section 220-110-340 Intertidal forage fish spawning habitat surveys
4) New section 220-110-350 Seagrass and macroalgae surveys

Approximately 25 minutes will be needed for the presentation and questions/answers.

Policy issue(s) you are bringing to the Commission for consideration:

None, briefing only

Public involvement process used and what you learned:

N/A

Action requested:

None, briefing only

Draft motion language:

N/A

Justification for Commission action:

N/A

Communications Plan:

N/A

Form revised 12/5/12

Section Title: WAC 220-110-100 Common Construction Requirements

Background: This section contains common construction requirements that apply to many types of hydraulic projects. These requirements were consolidated into a single section to reduce the duplication of provisions.

Summary of New Section or Proposed Changes: This new section specifies the construction requirements common to many kinds of hydraulic projects. Common construction requirements include job site access, equipment use, construction materials, sediment and erosion control containment, in-water work area isolation, fish removal, and job site repair and revegetation.

Public Comments:

Support

No specific comments received to date.

Concerns

Ecology expressed a concern that HPA rules in this section do not meet Ecology's water quality standards. HPA rules address protection of fish life only. The rules that protect water quality from construction activities are outcome-based and not prescriptive. Only areas of water quality directly relevant to protection of fish life during project construction are included in rule (e.g., sediment, flow, etc.).
The following language will be added to the draft rules to address Ecology's concerns "HPAs do not exempt the applicant from obtaining other appropriate permits and following the rules or regulations of local, federal, and other Washington state agencies."

Draft Rule Language:

220-110-100 Common construction requirements

WAC 220-110-100 has common construction requirements that apply to many kinds of hydraulic projects. All projects must meet the requirements in WAC 220-110-080 – Mitigation requirements for hydraulic project approvals and the requirements in WAC 220-110-100 through 220-110-440 that are included in the HPA. The department will require certain technical provisions depending upon the individual proposal and site specific characteristics. Additional special provisions may be included, as necessary to address site-specific conditions.

(1) DESCRIPTION

Common construction requirements can apply to many hydraulic projects. However, not all common construction requirements will be applied to a specific project. Common construction requirements include job site access, equipment use, construction materials, sediment and erosion control containment, in-water work area isolation, fish removal, and job site repair and revegetation.

(2) FISH LIFE CONCERNS

Construction and other work can negatively affect fish life. Some activities may kill or injure fish while others can cause behavioral changes that reduce fish growth and survival. Some activities can damage the habitat used for spawning and egg incubation, rearing, feeding, hiding from predators and migration.

(3) STAGING AREAS

(a) Establish staging areas (used for construction equipment storage, vehicle storage, fueling, servicing, hazardous material storage, etc.) in a manner and at a location that will prevent contaminants including but not limited to, petroleum products, hydraulic fluid, fresh cement, sediments, sediment-laden water, chemicals, or any other toxic or harmful materials from entering waters of the state.

(4) JOB SITE ACCESS

(a) Avoid and then minimize the number of temporary access roads. Use existing roadways or travel paths whenever possible.

(b) Design and locate temporary access roads to avoid sediment from erosion entering waters of the state.

(c) Mark boundaries of clearing limits associated with site access and construction to avoid and minimize damage or removal of riparian, wetland and aquatic vegetation.

(5) EQUIPMENT USE

(a) Avoid and minimize damage or removal of riparian, aquatic and wetland vegetation by confining the use of equipment to specific access and work corridors.

(b) Unless there are geological, engineering or safety constraints, use hand-held equipment or tools rather than heavy equipment.

(c) Unless there are geological, engineering or safety constraints, keep equipment out of the water.

(d) If wet or muddy conditions exist, in or near a riparian or wetland area, use equipment that reduces ground pressure.

(e) Check equipment daily for leaks and complete any necessary repairs in an upland location prior to using the equipment in or around the water.

(f) Backfill trenches, depressions and holes daily if they will be inundated by water of the state.

(6) VESSEL OPERATION

(a) Prevent impacts to the bed and submerged aquatic vegetation from vessel grounding, anchoring, and propeller wash.

(b) Maintain anchor cable tension so anchor cables do not drag on the bed of waters of the state.

(7) CONSTRUCTION MATERIALS

(a) Store all construction and deconstruction material in a manner and at a location that will prevent contaminants including but not limited to, petroleum products, hydraulic fluid, fresh cement, sediments, sediment-laden water, chemicals, or any other toxic or harmful materials from entering waters of the state.

(b) Do not stockpile construction material in the wetted area of rivers, streams and lakes or below mean higher high water line in marine waters.

(c) Use only clean, suitable material as fill material (e.g., no trash, debris, car bodies, asphalt, concrete, etc.).

(d) Sufficiently cure structures containing concrete prior to coming into contact with waters of the state to prevent leaching.

(e) Construct forms for any wet concrete to prevent leaching of wet concrete. Place impervious material over any exposed concrete not lined with forms that will come in contact with waters of the state. Forms and impervious materials must remain in place until the concrete is cured.

(f) Do not use wood treated with creosote, pentachlorophenol, or chromated copper arsenate (CCA) in any hydraulic project. Wood treated with other preservatives may be used, provided the wood meets Western Wood Preservers post-treatment requirements. The wood must be sufficiently cured prior to installation to minimize leaching.

(g) Completely contain sawdust, trimmings, or drill shavings from treated wood with tarps or other methods during installation or removal of structures.

(h) Unless there are engineering constraints, do not use tires in any hydraulic project (e.g., floatation, fenders, and hinges). Where they exist in waters of the state, the department will work with the property owner to replace tires with authorized materials.

(8) CONSTRUCTION-RELATED SEDIMENT, EROSION AND POLLUTION CONTAINMENT

(a) When appropriate, work in the dry (e.g. when no natural flow is occurring in the channel, or when flow is diverted around the work site).

(b) Protect all disturbed areas from erosion. Maintain erosion and sediment control until repair of the job site is complete.

(c) If high flow or high tide conditions inundate the project area, stop all project activities except those needed to prevent erosion and siltation of waters of the state.

(d) Prevent contaminants from construction, including but not limited to, petroleum products, hydraulic fluid, fresh cement, sediments, sediment-laden water, chemicals, or any other toxic or harmful materials from entering or leaching into waters of the state.

(e) Route wastewater from work activities and water removed from within an isolated work area to an upland area above the limits of anticipated floodwater. Remove fine sediment and other contaminants prior to discharging the wastewater to waters of the state.

(f) Deposit waste material such as construction debris, silt, excess dirt, or overburden resulting from the project to an upland area above the limits of anticipated floodwater.

(g) Deposit all trash from the project in an approved upland disposal site.

(h) Prevent the transport and introduction of invasive species by thoroughly cleaning vessels, equipment, boots, waders and other gear.

(9) IN-WATER WORK AREA ISOLATION USING BLOCK NETS

(a) Do not install block nets at sites with heavy vegetation, large cobble or boulders, undercut banks, deep pools, etc., due to the difficulty of securing and/or maintaining nets. Install a downstream block net if fish may re-enter the work area from

downstream.

(b) Install block nets at sites that have reduced flow volume or velocity, uniformity of depth and good accessibility.

(c) Once the first block net is secured at the upstream end, use a second block net to herd fish downstream and out of the project area.

(d) The department must determine the size of block net opening. This will be dependent on the bypass design, the purpose of the block net and the fish species likely to be present.

(e) Install block nets at an angle to the direction of flow (not perpendicular to the flow) to avoid entrapping fish in the net.

(f) To anchor block nets, bags filled with clean gravel must be placed along the bottom of the nets.

(g) Secure block nets along both banks and the channel bottom to prevent failure as a result of debris accumulation, high flows, and/or flanking.

(h) In order to keep fish out of the work site, leave block nets in place until the work is complete and conditions are suitable for fish.

(i) Check block nets a minimum of three times a day for entangled fish and accumulated debris.

(10) IN-WATER WORK AREA ISOLATION USING A TEMPORARY BYPASS

(a) For projects where construction takes place within the wetted perimeter, isolate fish from the work area by using either a total bypass to reroute the entire stream through a temporary channel or pipe, or a partial bypass such as a cofferdam to exclude fish from a certain area, such as along one stream bank.

(b) The hydraulic capacity of the stream bypass must be equal to or greater than the peak flow event expected during the time the bypass will be in operation. Conduct a hydrologic analysis to determine the magnitude of this flow event.

(c) Provide fish passage during times of the year when fish are expected to move.

(d) Sequence the work to minimize the duration of dewatering.

(e) Use the least impacting method to temporarily bypass or exclude water from the work area that is feasible for the type of work involved. Consider the physical characteristics of the site and the anticipated volume of water flowing through the work area.

(f) Design the temporary bypass to minimize the length of the dewatered stream channel.

(g) Flows downstream of the project site must be maintained to ensure survival of all downstream fish, during all phases of bypass installation and decommissioning.

(h) Install the temporary bypass prior to initiation of other construction work in the wetted perimeter.

(i) The department may require the installation of a cofferdam or similar device at the upstream and downstream end of the bypass to prevent backwater from entering the work area.

(j) Return diverted water to the channel immediately downstream of the work area. Dissipate flow energy from the diversion to prevent scour / erosion to the channel and bank.

(k) If the diversion inlet is a gravity diversion that provides fish passage, place the diversion

outlet in a location that facilitates gradual and safe reentry of fish into the stream channel.

(l) If the diversion inlet is a pump diversion in a fish-bearing stream the pump intake structure must have a fish screen installed, operated, and maintained in accordance with RCW 77.57.010 and 77.57.070. Screen the pump intake by one of the following:

(i) Perforated plate: 0.094 inch (maximum opening diameter).

(ii) Profile bar: 0.069 inch (maximum width opening).

(iii) Woven wire: 0.087 inch (maximum opening in the narrow direction).

(m) The minimum open area for all types of fish guards is 27%. The screened intake must have enough surface area to ensure that the velocity through the screen is less than 0.4 feet per second.

(n) The fish screen must remain in place whenever water is withdrawn from the stream through the pump intake.

(o) Maintain fish screens to prevent injury or entrapment of fish.

(p) Remove fish screens on dewatering pumps in the isolated work area only after all fish are safe and excluded from the work area.

(q) Isolate pump hose intakes with block nets so that fish do not get near the intake.

(r) Prior to restoring water to the work area, stabilize the bed with clean material sized to match undisturbed sediments.

(s) Complete all in-water and channel restoration work prior to re-watering the work area.

(11) IN-WATER WORK AREA ISOLATION USING A COFFERDAM STRUCTURE

(a) Use modeling to determine the impact of the cofferdam on water-surface elevations during all anticipated flows. The department may not require modeling for short-term cofferdams on low flow streams.

(b) Consider the infiltration rate of seepage flow from the riverbed and from banks when designing the cofferdam.

(c) Install and remove cofferdams in a manner that ensures water quality is maintained.

(d) Dissipate flow energy from the diversion to prevent scour / erosion to the channel and bank.

(12) IN-WATER WORK WITHOUT A BYPASS OR COFFERDAM

(a) In the following instances, the department will not require the use of a cofferdam, bypass or similar structure to separate the work area from waters of the state:

(i) When installing a cofferdam, bypass or similar structure would cause greater impacts to fish life than it would prevent;

(ii) When the work area is in deep or swiftly flowing water;

(iii) When turbidity is not a concern;

(iv) When fish can be excluded by nets or screens, or

(v) When fish are not present.

(13) FISH REMOVAL

(a) All persons participating in fish capture and removal must have training, knowledge, and skills in the safe handling of fish.

(b) A person with at least forty hours of electrofishing experience must be on-site to conduct or direct all electrofishing activity.

(c) The department and affected tribes may assist with capturing and moving fish life from the job site if personnel are available.

(d) Place block nets up and downstream of the in-water work area as specified in sub-section 9 of this section.

(e) Capture and safely move fish life from the work area to the nearest suitable free-flowing water.

(14) JOB SITE REPAIR AND REVEGETATION

(a) Restore the disturbed bed, bank, and riparian areas similar to their pre-project natural condition.

(b) Remove any temporary fills in their entirety and return the affected areas to their pre-project elevation and contours. Removal must occur by the end of the in-water work window if fill material could erode into or result in delivery of sediment-laden water into waters of the state.

(c) Abandon temporary roads in wet or flood-prone areas by the end of the in-water work period.

(d) By the end of the in-water work period, remove all temporary stream crossings and restore the bed and banks to pre-project condition.

(e) Remove all materials or equipment from the site and dispose of all excess spoils and/or waste materials properly upon completion of the project.

(f) Backfill trenches, depressions and holes if they will be inundated by water of the state.

(g) All structures removed and/or replaced must not reenter water of the state unless authorized by the department.

(h) Do not return in-stream flows to the work area until all in-channel work is completed and the bed and banks are stabilized to minimize sediment delivery to the stream or stream channel.

(i) Replace native riparian, aquatic and wetland vascular plants (except noxious weeds) damaged or destroyed by construction using a proven methodology.

(j) The department must approve planting densities and maintenance requirements for replanting on a site-specific basis.

(k) Complete replanting during the first dormant season (late fall through late winter) following project completion. Maintain plantings for a minimum of three years to ensure a minimum of 80 percent survival. Failure to achieve the 80 percent survival in year three will require submission of a plan with follow up measures to achieve requirements or reasons to modify requirements.

(l) The department may waive the requirement to plant vegetation where the potential for natural revegetation is adequate, or where geological, engineering or safety factors preclude it.

(m) The department may require fencing or other structures as necessary to prevent access to revegetated sites by livestock, wildlife or unauthorized persons until the plantings are well established.

(n) The department may require a vegetation monitoring and contingency plan per WAC 220-110-100.

(o) Remove temporary erosion and sediment control methods after job site repairs are complete.

(15) PERMITTEE NOTIFICATION

(a) If a fish kill occurs or fish are observed in distress at the job site, immediately cease all activities causing harm. Immediately notify the department of the problem. If the likely cause of the fish kill or fish distress is water quality related, also notify the Washington Military Department Emergency Management Division at 1-800-258-5990. Activities related to the fish kill or fish distress must not resume until the department gives approval. The department may require additional measures to mitigate impacts.

(b) The department may require the permittee to notify the department before starting work, during work, and upon project completion to allow for pre-project consultation and inspection.

Section Title: WAC 220-110-410 Artificial Aquatic Habitat Structures

Background: In recent years, there has been an increased interest in the creating artificial habitat structures. The existing WACs have no specific technical requirements for these structures.
The section reflects current fish science and technology measures to avoid or minimize adverse modifications to fish and shellfish habitat from placement of artificial habitat structures. The Habitat and Fish programs worked closely to develop these rules to ensure that the proposed HPA rules reflected the appropriate portions of the rockfish recovery plan as well as policies of the Fish program.

Summary of New Section or Proposed Changes: This new section includes requirements for artificial aquatic habitat structures and includes the specifications the structures must fill, a requirement that the resource benefits of the structure must outweigh its negative impacts, and requirements for preconstruction surveys. It includes specific requirements for siting and constructing artificial reefs.

Public Comments:

Support

No specific comments received to date.

Concerns

No specific comments received to date.

Draft Rule Language:

220-110-410 Artificial Aquatic Habitat Structures

All projects must meet the requirements in WAC 220-110-080 – Mitigation requirements for hydraulic project approvals and the requirements in WAC 220-110-100 through 220-110-440 that are included in an HPA. The department will require certain technical provisions depending upon the individual proposal and site specific characteristics. Additional special provisions may be included, as necessary to address site-specific conditions.

(1) DESCRIPTION

An artificial aquatic habitat structure is a human placed and designed structure that is intended to provide long-term alterations to fresh or saltwater bottom or mid-water habitat. The structure is designed and located to contribute to the management of fish and shellfish. Examples include the construction of artificial reefs and the creation or restoration of spawning beds.

(2) FISH HABITAT CONCERNS

Artificial aquatic habitat structures draw large numbers of fish for the same reasons natural habitat structures do: they provide shelter, food, and a place for some species to spawn. They

have holes and crevices in which both predator and prey can hide. However, these structures alter the seabed and change the natural habitat. This alteration can change the make-up of the fish community and displace fish that used the natural habitat. Since artificial aquatic habitat structures can draw large numbers of fish into one place they may worsen overfishing.

(3) ARTIFICIAL AQUATIC HABITAT STRUCTURE DESIGN

(a) Aquatic habitat structures must meet one or more of the following needs:

(i) Enhancement of fish viewing opportunity at a specific location.

(ii) Enhancement or conservation of aquatic resources.

(iii) Mitigation for impacted fish habitat.

(b) Resource benefits must outweigh negative impacts caused by construction and placement of the structure.

(c) The department may require compensatory mitigation for unavoidable construction impacts to fish, shellfish and their habitat.

(d) The department will require a preconstruction survey.

(i) Post-construction quarterly monitoring must follow recognized and acceptable biological protocols that are approved by the department. Results of completed surveys must be submitted to the department annually.

(ii) Saltwater sites require at least four preconstruction surveys. One survey must be conducted during each seasonal quarter (January – March, April – June, July – September, and October – December).

(iii) The department may require additional surveys.

(e) A complete application to construct an aquatic habitat enhancement structure must include the results of an approved pre-construction survey(s), a statement of the fishery or habitat need the proposed structure will address, ongoing maintenance needs, if any, and a plan for quarterly monitoring for two years after construction.

(f) Artificial aquatic habitat structures must fill a habitat need identified in (3)(a). HPA applications must include the target species, species groups, or life stages that a person wants to enhance or rebuild. The critical habitat and environmental requirements of those species must be identified.

(4) ARTIFICIAL AQUATIC HABITAT STRUCTURE CONSTRUCTION

(a) Locate the structure two-hundred yards away from other areas of hard-rock habitat to reduce the probability of an invasive species infestation.

(b) Locate the structure in an area that minimize disturbance to adjacent shorelines.

(c) Construct the structures with high density materials that are non-toxic and inert in sea water.

(d) Use clean materials (i.e., no materials that would leach metals, petroleum products or other hazardous materials) to construct the structure.

(e) At least ninety-five percent of the construction materials must be more than one foot in diameter.

(f) Avoid the use of vertical walls. Structures must consist of piles of loose material, or separate modules.

(g) The placement of the structure must minimize impacts to fish life and the habitat on the

natural substrate covered by the materials.

(h) Total coverage of the natural substrate by reef material must not exceed fifty percent of the total permitted area.

(i) Any one rock pile or module must not cover more than ten percent of the total permitted area.

(j) The distance between each rock pile must exceed fifty feet.

Section Title: WAC 220-110-340 Intertidal Forage Fish Spawning Habitat Surveys

Background: In documented surf smelt spawning areas where the spawning season is longer than six months, a permittee may work if a forage fish spawning survey shows no eggs are present on the beach. The department may also require a spawning survey when work has to occur outside the surf smelt or Pacific sand lance work windows in potential spawning areas. The department would use the survey to determine if mitigation is needed for lost forage fish production.

Summary of New Section or Proposed Changes: This new section describes WDFW's current protocols for surveys of intertidal forage fish (surf smelt and sand lance) spawning habitat.

Public Comments:

Support

No specific comments received to date.

Concerns

Surf smelt and sand lance spawning beds are saltwater habitats of special concern. The department can specify restrictions on project type, design, location, and timing to protect saltwater habitats of special concern, or areas in close proximity with similar bed materials. WDFW has been conducting surveys in Puget Sound for more than thirty years to identify beaches where surf smelt and sand lance spawn. The department has documented about 259 lineal statute miles of Washington State shoreline as surf smelt spawning beach.
An environmental advocacy group has appealed more than 20 HPAs in the last four months. One of their major issues is that the department does not require the permittee to hire a department-trained biologist to conduct spawning surveys on beaches with potential surf smelt and sand lance spawning beds. The department's position is that permitting biologists should not put the same restrictions on potential habitat as on documented habitat because we cannot prove the restrictions are warranted. Also, if the HPA is appealed, it is our opinion the more burdensome restrictions would not be upheld by the PCHB.
In addition, RCW 77.55.231 states "Conditions imposed upon a permit must be reasonably related to the project. The permit conditions must ensure that the project provides proper protection for fish life, but the department may not impose conditions that attempt to optimize conditions for fish life that are out of proportion to the impact of the proposed project."
Putting more burdensome restrictions in HPAs when those restrictions cannot be defended with existing data would be an attempt to optimize conditions for fish life, in the department's opinion.

Draft Rule Language:

220-110-340 Intertidal forage fish spawning bed surveys

All projects must meet the requirements in WAC 220-110-080 – Mitigation requirements for hydraulic project approvals and the requirements in WAC 220-110-100 through 220-110-440 that are included in

an HPA. The department will require certain technical provisions depending upon the individual proposal and site specific characteristics. Additional special provisions may be included, as necessary to address site-specific conditions.

(1) DESCRIPTION

The department uses intertidal forage fish spawning bed surveys to determine presence, absence, quantity and timing of surf smelt (*Hypomesus pretiosus*) and Pacific sand lance (*Ammodytes hexapterus*) spawning. The department may require an applicant to hire a qualified, department-trained biologist to conduct an intertidal forage fish spawning survey prior to work in potential surf smelt and Pacific sand lance spawning habitat or in documented surf smelt spawning areas where the spawning season is six months or longer. The presence of eggs may restrict project type, design, location, and timing.

(2) FISH LIFE CONCERNS

Surf smelt and Pacific sand lance are important food for marine mammals, birds, and fishes, including Pacific salmon. The department protects forage fish spawning beds by limiting construction activities on beaches where spawning is documented.

(3) INTERTIDAL FORAGE FISH SURVEYS

(a) A biologist must complete the department's forage fish spawning beach survey training to be approved by the department to conduct intertidal forage fish spawning bed surveys.

(b) A biologist must follow the department-approved intertidal forage fish spawning protocol and use the standard department data sheets when conducting forage fish spawning beach survey. The protocol and data sheets are available on the department's website. The department may modify this protocol where it is only necessary to determine the presence or absence of surf smelt eggs.

(c) A biologist must submit the completed, standard department data sheets to the department within 48 hours of the survey.

(d) If a permittee wants to work in an area where the surf smelt spawning season is six months or longer, the permittee may have a biologist conduct an intertidal forage fish spawning bed survey to determine if surf smelt eggs are present. If the survey shows eggs are not present, the permittee may start work. The permittee must start work within 48 hours of a survey. If the permittee does not complete the work within seven days of the start of project, an additional survey is required. The biologist must conduct a survey every seven days until the work is completed. If a survey shows eggs are present, work must stop and the department must prohibit work waterward of the OHWL for a minimum of three weeks. Work may not begin until a new survey shows there are no eggs present.

(e) In documented intertidal forage fish spawning areas, the department must not allow work during surf smelt spawning seasons shorter than six months or during the Pacific sand lance spawning season. The department will make exceptions for projects receiving emergency, imminent danger and expedited HPAs.

(f) The department may require an intertidal forage fish spawning bed survey if the job site is in close proximity to documented forage fish spawning bed and the beach at the job site has similar bed materials.

Section Title: WAC 220-110-350 Seagrass and Macroalgae Habitat Surveys

Background: WDFW requires surveys for seagrass and macroalgae habitat to ensure protection of these important habitats. The department may require an applicant to submit a seagrass and macroalgae survey as part of an HPA application for the following work:

- Construction of a new dock, mooring buoy, or other overwater structure;
- Construction of a replacement overwater structure outside the previously allowed footprint;
- New dredging, trenching, filling, or grading; or
- Maintenance dredging, trenching, filling, or grading outside the previously allowed footprint.

Summary of New Section or Proposed Changes: This new section describes WDFW's current protocol for seagrass and macroalgae habitat surveys.

Public Comments:

Support
No specific comments received to date.

Concerns

No specific comments received to date.

Draft Rule Language:

220-110-350 Seagrass and macroalgae habitat surveys

All projects must meet the requirements in WAC 220-110-080 – Mitigation requirements for hydraulic project approvals and the requirements in WAC 220-110-100 through 220-110-440 that are included in an HPA. The department will require certain technical provisions depending upon the individual proposal and site specific characteristics. Additional special provisions may be included, as necessary to address site-specific conditions.

(1) DESCRIPTION

The department may require an applicant to hire a qualified professional diver/biologist to conduct one or more seagrass and macroalgae habitat surveys. The department has developed survey guidelines for seagrass and macroalgae habitat to improve protection of these important habitats in Puget Sound and coastal waters. The guidelines contain protocols for both preliminary and advanced surveys to assist in the evaluation of potential impacts to these habitats at job sites with various conditions. Statistical considerations are an integral part of the advanced surveys so the guidelines include a sample size calculator to aid in determining the appropriate number of samples the diver/biologist must take at a particular site. The guidelines are available on the department's website.

(2) FISH LIFE CONCERNS

Seagrass and macroalgae play a critical role in the nearshore ecosystem as primary producers, generating nutrients and substrate that form the base of the food chain. The dense and complex

structure created by seagrass and macroalgae beds also provide refuge and foraging habitat for a wide range of fishes, invertebrates and other organisms, many of which are valued from a cultural and economic standpoint.

Direct impacts can occur on a local or site-specific scale through impacts to substrate and light levels. Dredging and filling, or otherwise altering the substrate can make a site uninhabitable for these plants and the numerous species dependent on them. For example, boat propellers and anchors can physically damage plants, disturb sediments, and alter the habitat by creating high-energy wakes. Overwater structures such as piers, docks, and floats decrease the amount of light available. This can cause a substantial reduction in the size and diversity of the plant community.

(3) SEAGRASS AND MACROALGAE SURVEYS

(a) The department may require an applicant to submit a seagrass and macroalgae survey as part of an HPA application for the following work:

(i) Construction of a new dock, mooring buoy or other overwater structure;

(ii) Construction of a replacement overwater structure outside the previously allowed footprint;

(iii) New dredging, trenching, filling or grading; or

(iv) Maintenance dredging, trenching, filling, or grading outside the previously allowed footprint.

(b) The department will use the survey to do the following:

(i) Determine if seagrass or macroalgae are present at the proposed work area.

(ii) Evaluate if the applicant can locate and construct the structure or activity to avoid or minimize impacts to seagrass or macroalgae.

(iii) Establish a location for the structure or activity that will minimize impacts when avoidance is not possible.

(c) Advanced surveys must occur between June 1 and October 1 and are conducted to do the following:

(i) Quantify the impact from the structure or activity to seagrass and macroalgae.

(ii) Quantify the performance of mitigation actions.

(d) The department must measure direct impacts by calculating the total area and density of seagrass and macroalgae affected by the project. The department uses this information to help calculate the size of the mitigation area required to compensate for seagrass and macroalgae loss.

(e) The department must measure mitigation success by comparing seagrass and macroalgae densities at a mitigation (or impact) site to those of a reference site. These comparisons must be statistically rigorous. The department has established monitoring standards for these surveys: a) $\alpha = 0.10$, b) power $(1 - \beta) = 0.90$, and c) a difference of mean eelgrass density of $\geq 20\%$. The department has developed survey guidelines for seagrass and macroalgae habitat. The department will consider other survey methods provided they meet the established monitoring standards.

(f) Divers/biologists who are professionals qualified to identify the predominant seagrass and macroalgae species in the work area must conduct the surveys.

(g) If the department approves a monitoring and contingency plan, the department may require a diver/biologist to monitor project impacts to determine seagrass or macroalgae loss and the required mitigation.

(h) Survey results and interpretation are subject to department approval.