

DEVELOPMENT OF A TEMPERATURE CONTROL POLICY FOR THE COASTAL AND INTERSTATE WATERS OF CALIFORNIA

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The State Water Resources Control Board is involved in the development of a policy for the control of temperature in the interstate and coastal waters of California. I hope to stimulate your interest and encourage you to participate in this process. The Board is making a special effort to obtain input from marine biologists and others who are concerned with protection of the ocean environment.

Water quality control policies for the coastal and interstate waters were adopted by the Board in 1967. As required by the Federal Water Quality Control Act, these policies were submitted to the Secretary of the Interior for approval and adoption as federal water quality control standards. The policies were accepted by the Secretary of the Interior with certain exceptions. The temperature control standards were not accepted because they were in the form of general statements rather than in a form containing definite numerical standards which could be applied either to the waste discharge or the receiving waters.

The Board has been in the process of developing temperature control standards since that time. They solicited advice from many agencies, private companies, and individuals. Public hearings were called in March 1969, and April 1970, to obtain comments and recommendations on proposed standards. Review of the testimony from these hearings led the Board to decide that it would be preferable to develop a general policy for temperature control in the coastal and interstate waters rather than simple numerical standards. The policy would serve as a planning guide for state agencies and waste dischargers and it would guide the Regional Water Quality Control Board in the establishment of waste discharge requirements and water quality control plans. The draft of a proposed policy was sent to agencies, companies, and individuals who had expressed an interest in the subject, and their comments and recommendations were requested. A special effort was made to obtain recommendations from marine institutions and professional marine biologists. Recommendations received by the Board have resulted in a draft of a temperature control policy which will be considered for adoption by the Board at a special hearing on December 16, 1970.

The primary sources of heated discharges to water are industrial cooling and process waters and municipal discharges. Very little factual data on the problems caused by these heated discharges had been presented, but the Board was convinced that there could be a problem in the future unless controls were established. The increasing demand for electrical power is causing utilities to plan large steam generating plants

fired by nuclear energy. These plants must waste about 65 percent of the heat generated. The most economical way for them to dissipate the waste is to use a large volume of cooling water which is pumped past condensers and then discharged back to the receiving water. There is also a surprising amount of heat discharged into the ocean from municipal wastes. Several speakers at this conference have discussed the effects of sewage and toxic materials contained in major discharges in Southern California, but there has been no reference to amount of heat discharged from these outfalls.

It is not unusual to observe a 10-20°F difference in temperature between municipal waste at the point of discharge and the temperature in the receiving water. These facts emphasize that a great deal of heated water is discharged into sewers and much of this waste heat is transferred to the ocean environment.

In the development of a temperature control policy, the Board has divided interstate waters, that is, waters which flow across or form part of the boundary of the state, into various classes. "Cold interstate waters" are those characterized as being suitable for trout and salmon. "Warm interstate waters" are those which are generally suitable for bass and catfish. Estuaries and coastal lagoons where there is a mixing of fresh and saline water are a separate class because of their special characteristics. There is also a class for "enclosed bays" which are defined as coastal indentations where the distance between headlands or harbor works is less than 75 percent of the maximum dimension of the bay. This class was developed in recognition of the need for special controls in coastal waters where there is little circulation. All other oceanic waters between the coastline and the territorial limits of California outside of enclosed bays and estuaries are classified as "coastal waters".

The proposed policy specifies particular controls for each class of water. The controls are based on concepts developed by the Board after consideration of past evidence and future conditions. The concepts for temperature controls in enclosed bays serve as an example. In effect, the Board is saying that existing sources of heated waste may continue their past operation in enclosed bays, but each discharger will be required to conduct an environmental impact study to allow the Regional Water Quality Control Board to determine if it is necessary to revise the waste discharge requirements to adequately protect aquatic resources. No evidence presented to the Board has demonstrated that there is a problem with existing

heated waste discharges in enclosed bays, but the Board is convinced that the threat of water quality impairment is real and the environmental impact studies will be designed to allow us to review the possibility of existing effects, the potential hazards to water quality, and the type of control measures required. It is entirely possible that this first study will demonstrate the need for additional more detailed studies.

New sources of thermal wastes having a temperature greater than 4°F above the natural temperature will be prohibited in enclosed bays. This statement is made to encourage planning since it clearly informs potential dischargers that we do not want more large sources of heat in enclosed bays.

The most stringent controls have been proposed in estuaries because the Board is convinced these are the areas that need the maximum protection. Existing sources of heated wastes will be limited to a maximum rise of 20°F above the natural temperature of the estuary. The maximum temperature at the point of discharge will be limited to 86°F. A zone of passage will be provided for migrating fish and aquatic life in an estuary by limiting the effect of the discharge to not more than 25 percent of the cross-sectional area of well defined channels. In addition, the surface temperature of the water cannot be increased by more than 4°F as a result of heated waste discharges. New discharges proposed for estuaries will also be limited to a maximum discharge temperature of not more than 4°F above the natural temperature. In this way, the Board intends to advise future dischargers that estuaries should not be considered for the disposal of waste heat.

It is recognized that if new discharges are essentially prohibited from enclosed bays and estuaries, some alternative must be provided for the disposal of waste heat until better methods are available for the control or use of waste heat. For this reason, the Board intends to establish controls which will allow the discharge of heated waste into coastal waters except in those areas where it can be demonstrated that adverse effects would result, or where the aquatic environment is of such critical value that no risk of damage should be allowed. By making it possible for discharges of heated waste to go to the ocean, we do not intend to imply that it will always be safe to discharge increasing amounts of heated wastes into the ocean, but we do believe that this alternative provides the least chance for significant damage to the environment considering the new sources of heat that will be developed in the near future and our lack of knowledge of how to control them.

Existing dischargers of heated wastes into coastal waters will be required to conduct an environmental impact report to provide a basis for revised waste discharge requirements. New discharges will not be permitted in areas where the effects of the discharge may increase the temperature in designated areas of biological significance. This will mean, for example, that if you have a kelp community which has been established by the Board as an area of biological significance, that no heated waste discharge will be

allowed to change the temperature in that kelp community at any time.

It is conceived at this time that the Board will ask the Departments of Fish and Game and Parks and Recreation and others to recommend areas of special significance. The regional boards will consider the recommendations of these agencies and others, and make a recommendation to the State Board. The State Board will conduct a public hearing on this recommendation to determine if it is in the public interest to designate the area for special protection from heated waste discharges.

Discharges will also be limited to a maximum rise above natural temperature of not more than 20°F. There may be individual discharges which will be limited to a lower temperature rise for the protection of particular aquatic organisms which pass through the condensers of power plants, or may be swept into the discharge plume from the surrounding water.

Potential dischargers of waste heat into the ocean must also make a predischage study before waste discharge requirements are requested from the regional board. The study will be required to contain oceanographic and biological information, and predict the effect of the discharge on the environment. This study will be reviewed by the Regional Water Quality Control Board which will either establish waste discharge requirements or prohibit the discharge. If waste discharge requirements are established the potential discharger will be required to make a predischage base line study to measure conditions before the actual discharge of waste and to conduct a post discharge study to determine the validity of his predictions and demonstrate compliance with the requirements.

It is not intended that there will be a general rise in temperature of the coastal waters as a result of the cumulative effect of discharges. This will require that the Board establish monitoring stations to continually evaluate the possibility of changes in natural conditions.

The environmental impact studies on existing thermal discharges are to be completed by January 1, 1973. Revised waste discharge requirements will be established by July 1, 1973. All discharges will be required to be in compliance with the revised requirements by January 1, 1976.

Copies of this policy are available from the State Water Resources Control Board in Sacramento.

NOTE: by editor: This policy was adopted by the Board January 7, 1971 and submitted to the Environmental Protection Agency for possible use in setting federal standards.

Question: Is the company the one that will do the survey or is your agency going to be doing the survey?

Dunham: The company will generally be the one that conducts it. There may be certain parts of the studies that will be done by someone else. In all cases, the Regional Water Quality Control Board will set certain specifications for the study and a study plan will be developed by the discharger. The plan will

then be reviewed by the regional board to determine if it complies with the specifications.

Question: The data is the important thing. Why can't you have it built in? And then it will really be a safeguard with no chance of finagling the data.

Dunham: We hope to forestall that by having someone like the Department of Fish and Game evaluate the data.

Question: But your department is not the Department of Fish and Game. You are the one that is controlling the water quality.

Dunham: Right. We can review the data but we don't have enough people to go out and gather it. The discharger will have to gather the data or pay to have it gathered. We will try to watch and see that there is no finagling of the data. If necessary, we will employ consultants of our own choosing for review of the studies and analysis of the data.

Question: What is the absolute rise that you are going to allow in an estuary for more than one plant?

Dunham: We are saying that outside of a limited diffusion area there will be no general rise in temperature. Other limits will help guarantee this. At the end of the pipe, a discharge can't be more than 86°F. There cannot be more than a 4°F increase at the surface of the water.

Question: In other words, if you have an estuary and there is more than one plant discharging water are you going to monitor the absolute rise and the ambient temperature? I question this because estuaries are breeding grounds or nurseries for many types of animals and even a small rise—say $\frac{1}{2}$ °F—could be fatal to the larvae of these types of things.

Dunham: There is no intent that the estuary would be allowed to rise in temperature. This is going to be very difficult. I'm not sure the Board realizes what a difficult task this will be. Recently I heard a talk in Sacramento by a man from the U. S. Geological Survey who had made studies on various streams to determine the impact of heated discharges. They measured the temperature at various distances from the sources. They went as far as 30 kilometers from the source of a nuclear powered plant, and as far as I recall, they found that 40 to 65 percent of the total heat put in the water was still there, 30 kilometers downstream. They conducted studies in several types of waters from North Carolina to the North Platte River in Wyoming where it was winter. I believe there were four different types of streams. From this type of information we are aware that in estuaries it is going to be a tremendous problem to try to monitor and determine what is the ambient or natural temperature, and whether there has been an increase or not.

POLICY REGARDING THE CONTROL OF TEMPERATURE IN THE COASTAL AND INTERSTATE WATERS AND ENCLOSED BAYS AND ESTUARIES OF CALIFORNIA¹

Definition of Terms

1. *Thermal Waste.* Cooling water and industrial process water used for the purpose of transporting waste heat.
2. *Elevated Temperature Waste.* Liquid, solid, or gaseous material including thermal waste discharged at a temperature higher than the ambient temperature of receiving water. Irrigation return water is not considered elevated temperature waste for the purpose of this policy.
3. *Ambient Receiving Water Temperature.* The temperature of the receiving water at locations, depths, and times which represent conditions unaffected by any elevated temperature waste discharge.
4. *Interstate Waters.* All rivers, lakes, artificial impoundments, and other waters that flow across or form a part of the boundary with other states or Mexico.
5. *Coastal Waters.* Waters of the Pacific Ocean outside of enclosed bays and estuaries which are within the territorial limits of California.
6. *Enclosed Bays.* Indentations along the coast which enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays will include all bays where the narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to the following: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Carmel Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.
7. *Estuaries and Coastal Lagoons.* Waters at the mouths of streams which serve as mixing zones for fresh and ocean water during a major portion of the year. Mouths of streams which are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant mixing of fresh and saltwater occurs in the open coastal waters. This definition includes but is not limited to the following: Smith River, Klamath River, Mad River, Eel River, Noyo River, Russian River, Sacramento River (including Suisun Bay), downstream to Carquinez Bridge, Sacramento-San Joaquin Delta as defined by Section 12220 of the California Water Code.
8. *Cold Interstate Waters.* Streams and lakes having a range of temperatures generally suitable for trout and salmon including but not limited to the following: Lake Tahoe, Truckee River, West Fork Carson River, East Fork Carson River, West Walker River and Lake Topaz, East Walker River, Minor California-Nevada waters, Klamath River, Smith River, Goose Lake, and Colorado River from the California-Nevada stateline to the Needles-Topock Highway Bridge.
9. *Warm Interstate Waters.* Interstate streams and lakes having a range of temperatures generally suitable for warm water fishes such as bass and catfish. This definition includes but is not limited to the following: Colorado River from the Needles-Topock Highway Bridge to the northerly international boundary of Mexico, Tijuana River, New River, and Alamo River.
10. *Existing Discharge.* Any discharge (a) which is presently taking place or (b) for which waste discharge requirements have been established and construction commenced prior to the adoption of this policy, or (c) any material change in an existing discharge for which construction has commenced prior to the adoption of this policy. Commencement of construction shall include execution of a contract for on-site construction or for major equipment which is related to the condenser cooling system.
Major thermal discharges under construction which are included within this definition are:
 - A. Diablo Canyon Units 1 and 2, Pacific Gas and Electric Company
 - B. Ormond Beach Generating Station Units 1 and 2, Southern California Edison Company
 - C. Pittsburg No. 7 Generating Plant, Pacific Gas and Electric Company
 - D. South Bay Generating Plant Unit 4 and Encina Unit 4, San Diego Gas and Electric Company
11. *New Discharge.* Any discharge (a) which is not presently taking place unless waste discharge re-

¹ The latest revision of this Policy, now entitled "Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California," dated March 4, 1972 can be obtained from the State Water Resources Control Board, 1416 Ninth Street, Sacramento, California 95814.

quirements have been established and construction as defined in Paragraph 10 has commenced prior to adoption of this policy and (b) which is presently taking place and for which a material change is proposed but no construction as defined in Paragraph 10 has commenced prior to adoption of this policy.

SPECIFIC WATER QUALITY OBJECTIVES

1. *Cold Interstate Waters*

A. Elevated temperature waste discharges into cold interstate waters are prohibited.

2. *Warm Interstate Waters*

A. Thermal waste discharges having a maximum temperature greater than 5°F above ambient receiving water temperature are prohibited.

B. Elevated temperature wastes shall not cause the temperature of warm interstate waters to increase by more than 5°F.

C. Lost River—Elevated temperature wastes discharged to the Lost River shall not cause the temperature of the receiving water to increase by more than 2°F when the receiving water temperature is less than 62°F, and 0°F when the receiving water temperature exceeds 62°F.

3. *Coastal Waters*

A. Existing discharges:

(1) Elevated temperature wastes shall comply with specific temperature limitations and other restrictions necessary to assure protection of the beneficial uses including areas of special biological significance.

B. New discharges:

(1) Elevated temperature wastes shall be discharged a sufficient distance from areas of special biological significance to assure the maintenance of ambient temperature in these areas.

(2) The maximum temperature of thermal waste discharges shall not exceed the ambient temperature of receiving waters by more than 20°F.

(3) Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

4. *Enclosed Bays*

A. Existing discharges:

(1) Elevated temperature waste discharges shall comply with specific temperature limitations and other restrictions necessary to assure protection of beneficial uses.

B. New discharges:

(1) Elevated temperature waste discharges shall comply with specific temperature limitations and other restrictions necessary to assure protection of beneficial uses. The maximum temperature of waste discharges shall not exceed the ambient temperature of the receiving waters by more than 20°F.

(2) Thermal waste discharges having a maximum temperature greater than 4°F above the ambient temperature of the receiving water are prohibited.

5. *Estuaries*

A. Existing discharges:

(1) Elevated temperature waste discharges shall comply with the following:

a. The maximum temperature shall not exceed the ambient receiving water temperature by more than 20°F.

b. Elevated temperature waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above ambient receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.

c. No discharge shall cause a surface water temperature rise greater than 4°F above the ambient temperature of the receiving waters at any time.

d. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

(2) Thermal waste discharges shall comply with the provisions of 5A(1) above and, in addition, the maximum temperature of thermal waste discharges shall not exceed 86°F.

B. New discharges:

(1) Elevated temperature waste discharges shall comply with item 5A(1) above.

(2) Thermal waste discharges having a maximum temperature greater than 4°F above the ambient temperature of the receiving water are prohibited.

(3) Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

GENERAL WATER QUALITY PROVISIONS

1. Additional limitations, including discharge prohibitions, shall be imposed if necessary for the protection of specific beneficial uses including areas of special biological significance.

2. The cumulative effects of elevated temperature waste discharges shall not cause temperatures to be increased except as provided in specific water quality objectives contained herein.

3. The reclamation of waste heat energy from cooling water shall be encouraged.

4. Exceptions to the provisions of this policy may be included in waste discharge requirements to allow the use of heat on an intermittent basis to control fouling organisms if it has been determined that other alternative methods will result in a greater potential for deleterious effects upon beneficial uses.

5. A conditional modification of the objectives of the policy may be authorized upon a finding that an elevated temperature waste discharge operating in compliance with modified objectives will result in the enhancement of beneficial uses.
6. Ambient water temperature will be compared with waste discharge temperature by near-simultaneous measurements accurate to within 1°F. In lieu of near-simultaneous measurements, measurements may be made under calculated conditions of constant waste discharge and receiving water characteristics.
7. Areas of special biological significance shall be designated by the State Board after review of regional board recommendations and public hearing.

IMPLEMENTATION

1. The State Water Resources Control Board and the California Regional Water Quality Control Boards will administer this policy by establishing waste discharge requirements for discharges of elevated temperature wastes.
2. This policy is effective as of the date of adoption by the State Water Resources Control Board and the sections pertaining to temperature control in each of the 32 policies for the individual interstate and coastal waters shall be void and superseded by all applicable provisions of this policy.
3. Existing discharges:
 - A. All dischargers of thermal waste shall be required to conduct a study to define the effect of the discharge on beneficial uses and submit the results thereof to the appropriate regional board prior to January 1973.
- B. Waste discharge requirements for elevated temperature wastes shall be reviewed to determine the need for studies on the effect of the discharge on beneficial uses, changes in monitoring programs and revision of waste discharge requirements.
- C. The scope of any necessary studies shall be as outlined by the regional board or State Board for each discharge.
- D. The regional board shall review all studies and shall make necessary revisions to waste discharge requirements prior to July 1973 to assure compliance with all applicable provisions of this policy.
- E. Revised waste discharge requirements shall include a time schedule which assures compliance at the earliest possible date but not later than January 1976.

4. New discharges:

- A. Every discharger of thermal waste shall submit a pre-discharge study to the appropriate regional board defining the effect of the discharge on beneficial uses prior to the establishment of waste discharge requirements. Dischargers of elevated temperature wastes may be required by the regional board to submit such studies prior to the establishment of waste discharge requirements. The regional board shall include in its requirements appropriate post-discharge studies by the discharger.

**PROCEDURES FOR IMPLEMENTATION OF THE POLICY REGARDING THE
CONTROL OF TEMPERATURE IN THE COASTAL AND INTERSTATE
WATERS AND ENCLOSED BAYS AND ESTUARIES
OF CALIFORNIA**

1. Purpose of the Studies

The temperature control policy adopted by the State Water Resources Control Board on January 7, 1971 requires that all dischargers of thermal wastes conduct a study to define the effect of the discharge on beneficial uses. The regional board may require dischargers of elevated temperature wastes to conduct such a study in any case where there is reason to believe adverse effects may be occurring to beneficial uses and existing monitoring programs are not adequate to allow a determination. The results of the studies will be utilized as a basis for the revision of waste discharge requirements and the development of monitoring programs.

Reports of waste discharge submitted to a regional board after January 7, 1971 must contain sufficient information to permit the board to determine if the waste can be classified as an elevated temperature or thermal waste. All proposed dischargers of thermal wastes and those proposing to discharge significant quantities of elevated temperature waste will be required to submit a pre-discharge report containing results of a study which predicts the effect of the waste on beneficial uses. The results of these studies will be used by the regional boards to develop waste discharge requirements and monitoring studies. A post-discharge study will then be required to verify the predictions and determine if effects occur which were not anticipated in the pre-discharge study.

2. Definitions

- A. Beneficial Uses—"Beneficial uses" of the waters of the state that may be protected against quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural and industrial supply, power generation, recreation, esthetic enjoyment, navigation, and preservation and enhancement of fish, wildlife and other aquatic resources or preserves. Section 13050(f) Water Code.
- B. Elevated Temperature Waste—Liquid, solid, or gaseous material including thermal waste discharged at a temperature higher than the ambient temperature of receiving water. Irrigation return water is not considered elevated temperature waste for the purpose of the policy.
- C. Thermal Waste—Cooling water and industrial process water used for the purpose of transporting waste heat.

- D. Existing Discharge—Any discharge (a) which is presently taking place or (b) for which waste discharge requirements have been established and construction commenced prior to the adoption of the policy, or (c) any material change in an existing discharge for which construction has commenced prior to the adoption of the policy. Commencement of construction shall include execution of a contract for on-site construction or for major equipment which is related to the condenser cooling system.
- E. New Discharge—Any discharge (a) which is not presently taking place unless waste discharge requirements have been established and construction as defined in "Existing Discharge" has commenced prior to adoption of the policy and (b) which is presently taking place and for which a material change is proposed but no construction as defined in "Existing Discharge" has commenced prior to adoption of the policy.
- F. Ambient Receiving Water Temperature—The temperature of the receiving water at locations, depths, and times which represent conditions unaffected by any elevated temperature waste discharge.

3. Procedures Required for Existing Discharges

- A. Existing waste discharges into interstate and coastal waters shall be reviewed to determine if they can be classified as elevated temperature or thermal wastes.
- B. The discharger shall be informed of any prohibitions or other specific limitations which will be imposed on the discharge as a result of the temperature control policy.
- C. All dischargers of thermal wastes or significant quantities of elevated temperature waste shall be requested to furnish a technical report to the regional board within the meaning of Section 13267 of the Water Code at a time specified by the board. All reports must be submitted prior to January 1973.
- D. The scope of the technical report shall be specified by the regional board in sufficient detail to require the following information:
 - 1. A description of the discharge works and their location or relationship to the receiving water.

2. Temperature characteristics and volume of the waste, including daily, weekly, monthly or seasonal variations in terms of average, maximum and minimum values observed. Other statistical data of importance to the board may be specified.
 3. Sources of waste and treatment prior to discharge in sufficient detail to permit classification as either thermal waste or elevated temperature waste.
 4. Ambient temperature characteristics and physical description of the receiving water including important daily, weekly, monthly or seasonal variations reported in a statistical form acceptable to the board.
 5. Area of the receiving water influenced by the discharge of waste as determined by a difference in temperature of more than 1°F greater than the ambient temperature of the receiving water which can be attributed to the discharge. In estuaries, the area of influence must be related to the cross-sectional area of main river channels when applicable.
 6. Other water quality parameters or factors associated with the receiving water in the area of influence of the discharge which are of importance in evaluating the effect of the discharge on beneficial uses.
 7. Beneficial uses of the receiving water in the maximum area of influence of the discharge together with any important dependent or incidental factors which might reasonably be expected to influence the amount of use or effect of the discharge. Such factors may include season of the year, climate, water quality, currents, stream flow, public access or other features of the environment. Beneficial uses are intended to include maintenance of a healthy aquatic environment. Therefore, it will be necessary to describe important biological forms and associated ecological factors. Uses should be described in quantitative terms whenever possible. Trends in the quantity of use or predictions of changes in use in the near future may be important in some cases.
 8. Analysis of the effects of the waste discharge on the beneficial uses described in Item 7. Effects of the discharge on each use should be reported as beneficial, adverse, unknown, or no significant effect. Supporting information should be provided. An estimate of the change in use before and after the discharge may be helpful.
 9. A description of any methods used to maintain the discharge works and the frequency of use, together with a review of alternative methods available and a comparison of costs and effects on beneficial uses. Methods considered should particularly include use of heat or chemicals to control fouling organisms but may also include dredging of outfall channels or areas near the discharge, cleaning of intake screens and regular replacement of major components of the treatment works or outfall structures.
 10. Other information specifically necessary to permit the regional board to develop waste discharge requirements or monitoring studies for a particular discharge.
- E. Review of technical reports for existing discharges and revision of waste discharge requirements is required prior to July 1973. Waste discharge requirements for all elevated temperature wastes should contain numerical temperature limits for both the discharge and the receiving water at appropriate locations and in statistically significant terms. Temperature limits must provide a margin of safety for established beneficial uses. Limits related to the ambient temperature of the receiving water will require the establishment of locations and procedures for determining ambient temperature and comparison with temperatures within the area of influence of the discharge. Revised requirements must also contain any limitations or prohibitions imposed by the temperature control policy.
 - F. Revised waste discharge requirements shall include a time schedule which assures compliance at the earliest possible date but not later than January 1976.
- 4. Procedures Required for New Discharges**
- A. Reports of Waste Discharge submitted to a regional board will be considered incomplete until they contain sufficient information to permit the board to determine if the waste can be classified as an elevated temperature or thermal waste.
 - B. Dischargers of elevated temperature or thermal waste shall be informed by the regional board of any prohibitions or other specific limitations which will be imposed on the discharge as a result of the temperature control policy and the existence of designated areas of special biological significance prior to the request for a specific pre-discharge study.
 - C. All dischargers of thermal wastes or significant quantities of elevated temperature waste shall be requested to conduct a pre-discharge study defining the effect of the proposed discharge on beneficial uses and include the results of the study as a part of their Report of Waste Discharge. If a material change in an existing discharge is proposed, the study should define the effect of the total discharge before and after the material change.
 - D. The scope of the pre-discharge study shall be specified by the regional board in sufficient detail to require the same general type of information as described in 3(D) above, recognizing that it will be necessary for the discharger to predict the temperature characteristics of the

waste, area of influence of the discharge, post-discharge, beneficial uses and the effects of the waste on beneficial uses.

5. General Considerations

- A. The discharger should be informed that results of previous studies or monitoring reports by the discharger or others may be utilized in the conduct of required studies if the information is representative of conditions in the area of influence of the discharge and applicable to the time period under study. Acceptance of information from previous studies or conclusions reached as a result of using such information will rest with the regional board. Questions as to the acceptance of such information should be resolved early in the study whenever possible.
- B. Areas of special biological significance are to be designated by the State Board after review of

regional board recommendations. Such areas may be recommended by a regional board without reference to a particular discharge, or the need for such areas may become apparent when a particular discharge is proposed in the vicinity of such an area. The State Board assumed that such areas as marine preserves designated by the Department of Parks and Recreation or Department of Fish and Game, and large kelp beds designated by the Fish and Game Commission would be considered for this type of designation. However, the Board intended that this designation could be used for any area which contained forms of life which deserved special protection from increases in temperature. The designation of such an area is equivalent to stating that the area is so important that we cannot take the risk of allowing changes in the biological forms as a result of temperature increases.