KEY BENEFICIAL USES AND KEY AREAS

Focusing on What is Most Important

California Regional Water Quality Control Board, San Diego Region

Staff Report

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Focusing on what is most important is fundamental to the effectiveness of the San Diego Water Board. The challenge for the Board is not simply to do good things, but to do what is most important; not simply to help bring about environmental outcomes, but to help bring about meaningful environmental outcomes – and to do so with available resources. To help the Board determine and focus on what is most important, Chapter 1 of the "Practical Vision"[1] endorsed by the Board in November 2013 introduced the concept of key beneficial uses and key areas. This report outlines the key beneficial uses / key areas concept, identifies key beneficial uses and many key areas, and suggests how this concept can help the Board focus on what is most important.

"Waters with chemical, physical, and biological integrity" is one way of expressing the desired outcome of the Board's work. Accordingly, the Board's work involves both protecting and restoring the integrity, or health, of waters in the San Diego Region. The reason for doing so is to ensure that beneficial uses of those waters are not adversely affected by anthropogenic influences on water body conditions. Because beneficial uses are at the core of the Board's work, they are also at the core of determining what is most important for the Board.

As set forth in the Practical Vision, key beneficial uses are the individual beneficial uses and beneficial use categories "that are most critical to protecting human and environmental health." Accordingly, key beneficial uses are the beneficial uses for which protection and restoration of the integrity, or health, of waters is most important. Key beneficial uses of waters in the San Diego Region are:

- Drinking water supply;
- Fish and shellfish consumption;
- Recreation; and
- Habitats and ecosystems.

Key areas are the waters and places where protection and restoration of the integrity, or health, of waters is most important for a key beneficial use. For example, waters and places with a high intensity of recreational use are key areas for the key beneficial use of recreation. Key areas can be identified in terms of key water bodies (key water body *types* and key *individual* water bodies) and in terms of areas of special importance (*types* of areas of special importance and *specific* areas of special importance). It may be useful to identify key areas at larger scales or with less specificity for some purposes and at smaller scales or with more specificity for other purposes. Table 1 identifies key areas (in terms of key water body types) for key beneficial uses of waters in the San Diego Region.

In simple terms, what is most important for the Board is the work that contributes most to protection and restoration of the integrity, or health, of waters in key areas for key beneficial uses. Applying the key beneficial uses / key areas concept to the Board's work, and to the work the Board directs other entities to undertake, can help the Board and those other entities focus on what is most important. Table 2 lists some potential applications of this concept to the Board's work. A potential application that could be particularly useful in helping the Board be more strategic and more proactive and, therefore, more effective, is development and implementation of key beneficial use / key area-based management strategies. Although the Board may need to consider a variety of factors in decisions about how to prioritize its work and how to allocate and use its resources, key beneficial uses and key areas should always be among the factors considered in doing so.

[1] The Practical Vision is on the San Diego Water Board website at: http://www.waterboards.ca.gov/sandiego/water_issues/Practical_Vision/index.shtml.

Table 1
Key Areas for Key Beneficial Uses in the San Diego Region:
Key Water Body Types

		SAN DIEGO REGION key areas (key water body types) for the key beneficial use of:			
		DRINKING WATER SUPPLY (DW)	**FISH & SHELLFISH CONSUMPTION**	**RECREATION**	**HABITATS & ECOSYSTEMS**
key water body types for the key beneficial use	**first (highest) rank**	**DW reservoirs**	**ocean**	**ocean bays**	**ocean bays lagoons & estuaries stream systems**
	second rank	groundwater	bays	harbors	stream mouths
	third rank	*xx*	*harbors lagoons & estuaries*	*lagoons & estuaries stream systems stream mouths*	*ponds harbors*

Table 2 (sheet 1 of 2)
Some Potential Applications of the Key Beneficial Uses / Key Areas Concept to the Work of the San Diego Water Board

application category	potential applications of the key beneficial uses / key areas concept
Practical Vision (PV) implementation, operational plans & program workplans	▪ inform implementation of San Diego Water Board Resolution R9-2013-0153 (supporting San Diego Water Board Practical Vision) ▪ inform implementation of San Diego Water Board Resolution No. R9-2015-0020 (supporting funding of projects that further Practical Vision priorities with consideration to environmental justice and disadvantaged communities and recovery of streams, wetlands and riparian systems) ▪ inform implementation of San Diego Water Board Resolution No. R9-2015-0085 (supporting allocation of resources to implement the Practical Vision and Operational Plan) ▪ inform development of "project" concepts (e.g., in operational plans) ▪ inform decisions about priorities for & allocations of program resources
monitoring, assessment & research	▪ inform implementation of San Diego Water Board Resolution R9-2012-0069 (supporting a regional monitoring framework) ▪ inform decisions about priorities for & allocations of Surface Water Ambient Monitoring Program (SWAMP) resources ▪ inform decisions about priorities for development of new & improved monitoring & assessment tools ▪ inform decisions about priorities for development of "fact sheets," "status sheets" & "report cards" ▪ inform decisions about which beneficial uses, places & parameters to focus on in monitoring & assessment of the status & trends of water body conditions
identification & restoration of degraded waters	▪ inform decisions about which beneficial uses, places & parameters to focus on in preparation of Clean Water Act §303(d) list of surface water "impairments" ▪ inform decisions about which beneficial uses, places & parameters to focus on in efforts to restore degraded waters (reducing pollutant loadings, remediating contaminated groundwater, removing or containing contaminated sediment, restoring habitats & ecosystems, etc.)
water quality control plans & policies	▪ inform decisions about priorities for development of new & improved water quality standards ▪ inform decisions about priorities for development of new & improved polices & regulatory directives ▪ inform decisions about priorities for Basin Plan improvements, updates & corrections ▪ inform decisions about priorities for policy implementation efforts
permitting	▪ inform decisions about allocations of resources to various permit applications & similar submittals ▪ inform decisions about allocations of resources to reissuance & revision of various permits & similar regulatory documents ▪ inform decisions about which permitting tools to use (e.g., individual v. general permits, waste discharge requirements v. conditional waivers of waste discharge requirements, etc.) ▪ inform decisions about which beneficial uses, places, parameters & requirements warrant greater attention in various permits & similar regulatory documents ▪ inform decisions about which places warrant greater attention & more stringent limits for discharges to groundwater that could adversely affect surface waters

Table 2 (sheet 2 of 2)
Some Potential Applications of the Key Beneficial Uses / Key Areas Concept to the Work of the San Diego Water Board

application category	potential applications of the key beneficial uses / key areas concept
municipal separate storm sewer systems	▪ inform decisions about selection, development, implementation & oversight of water quality improvement plans (WQIPs)
compliance oversight	▪ inform decisions about allocation of resources to inspections of various sites ▪ inform decisions about allocation of resources to reviewing various monitoring reports & other required submittals
enforcement	▪ inform decisions about which violations & enforcement actions to pursue ▪ inform decisions about dollar amounts of administrative civil liabilities (ACLs) ▪ inform decisions about supplemental environmental projects (SEPs)
board meetings	▪ inform decisions about topics & content of Board meeting information items & other reports to Board members ▪ inform decisions about background & context information to include in Board meeting agenda item materials (e.g., executive officer summary reports [EOSRs])
community engagement	▪ inform decisions about website format, content, language, etc. ▪ inform decisions about topics & content of engagement & communication with various communities, including environmental justice & disadvantaged communities
staff development & recognition	▪ inform staff development (setting expectations, conducting performance appraisals, preparing individual development plans, selecting training courses, etc.) ▪ inform decisions about basis for & focus of special recognitions & rewards
agency effectiveness	▪ inform decisions about how to measure effectiveness, progress & success
organizational structure	▪ inform decisions about how to organize & identify branches, units & assignments
strategic planning, decision-making & action	▪ inform decisions about priorities & goals ▪ inform decisions about how to prioritize protection & restoration efforts ▪ inform decisions about how to allocate & use staff & other resources ▪ inform decisions about which grant proposals to support ▪ inform implementation of San Diego Water Board Resolution No. R9-2015-0041 (supporting restoration of aquatic ecosystems in the San Diego Region) ▪ inform implementation of San Diego Water Board Resolution No. R9-2015-0086 (supporting implementation of "Strategy for a Healthy San Diego Bay") ▪ inform development & implementation of management strategies for protection & restoration of the integrity, or health, of waters in the San Diego Region

I. Introduction and Background

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board or Board) works to implement California and federal water quality statutes in the San Diego Region. One way of expressing the desired outcome of those statutes and the Board's work is "waters with chemical, physical, and biological integrity." Accordingly, the Board's work involves both protecting and restoring the integrity, or health, of waters in the San Diego Region. Although the desired outcome is clear, the Board has limited resources with which to do its work, so there are limits on how much the Board can do, and decisions must be made about how to prioritize the Board's work and how to allocate and use the Board's resources. The challenge for the Board is not simply to do good things, but to do what is most important; not simply to help bring about environmental outcomes, but to help bring about meaningful environmental outcomes – and to do so with limited resources. The starting point for this report is the idea that not everything that the Board might work on is of equal importance; if that is the case, it behooves the Board to focus as much as possible of its work on what is most important.

Chapter 1 of the "Practical Vision" ("Healthy Waters, Healthy People")[2] endorsed by the Board in November 2013 is about ensuring that the resources of the Board are put to the best possible use for the purpose of protecting and restoring the integrity, or health, of waters in the San Diego Region. To help the Board determine and focus on what is most important, that chapter, "Focusing on What is *Most* Important: Strategizing for Healthy Waters," introduced the concept of key beneficial uses and key areas. This concept is based on the idea that protecting and restoring the integrity, or health, of waters is more important (a) for some beneficial uses than for others and (b) in some places than in others.

In keeping with Chapter 1 of the Practical Vision, identifying key beneficial uses and key areas should be seen as an essential first step in helping determine what is most important for the Board and helping the Board focus on what is most important – but not the only step. The next steps could be taken as part of development and implementation of key beneficial use / key area-based management strategies for protection and restoration of the integrity, or health, of waters in the San Diego Region, as discussed further in Section IV. These steps might include the following, among others:

- Identifying needs and opportunities for protection and restoration;
- Establishing protection and restoration goals;
- Determining the actions needed to achieve protection and restoration goals;
- Establishing meaningful measures of effectiveness, progress, and success;
- Determining, producing, and compiling information needed for protection and restoration work;
- Identifying and collaborating with other public health, natural resources, and regulatory agencies with responsibilities related to various key beneficial uses;[3]
- Identifying other entities to be involved and their roles in taking the actions needed to achieve protection and restoration goals; and
- Taking the actions needed to achieve goals and evaluating effectiveness, progress, and success.

Clearly then, identifying key beneficial uses and key areas is the beginning, not the end, of determining what is most important for the Board and helping the Board focus on what is most important.

This report outlines the key beneficial uses / key areas concept, identifies key beneficial uses and many key areas, and suggests how this concept can help the Board focus on what is most important.

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[2] The Practical Vision is on the San Diego Water Board website at: http://www.waterboards.ca.gov/sandiego/water_issues/Practical_Vision/index.shtml.
Chapter 1 of the Practical Vision is on the San Diego Water Board website at: http://www.waterboards.ca.gov/sandiego/water_issues/Practical_Vision/docs/PV_1_Strategizing_for_Healthy_Waters_Dec2013.pdf.

[3] Some of these agencies are identified in the Appendix and Attachment 1.

II. Key Beneficial Uses

Beneficial uses are at the core of the San Diego Water Board's work; the reason for protecting and restoring the integrity, or health, of waters in the San Diego Region is to ensure that beneficial uses of those waters are not adversely affected by anthropogenic influences on water body conditions. Because they are at the core of the Board's work, beneficial uses are also at the core of determining what is most important for the Board.

Beneficial uses of various waters in the San Diego Region are identified in water quality control plans that apply to the Region. Beneficial uses include extractive as well as *in situ* uses, direct human uses as well as habitat and ecosystem uses. Two or more individual beneficial uses that have similarities or common elements can be considered to be parts of a beneficial use category; for example, the individual beneficial uses of contact water recreation (REC-1) and non-contact water recreation (REC-2) can be considered to be parts of the beneficial use category of "recreation." The tables in Attachments 1 and 2 identify, categorize, and briefly characterize beneficial uses of waters in the San Diego Region.

As set forth in the Practical Vision, key beneficial uses are the individual beneficial uses and beneficial use categories "that are most critical to protecting human and environmental health." Accordingly, key beneficial uses are the beneficial uses for which protection and restoration of the integrity, or health, of waters is most important. Key beneficial uses generally have several of the following characteristics:

- The public has a high level of interest in the beneficial use;
- Adverse effects on the beneficial use from anthropogenic influences on water body conditions could include increased risks to human health;
- Adverse effects on the beneficial use from anthropogenic influences on water body conditions (rather than other factors, such as the cost or availability of water) are a primary concern with regard to the beneficial use;
- If water body conditions are suitable for the beneficial use, conditions are likely to be suitable for one or more other beneficial uses as well; and/or
- The beneficial use is adversely affected by or is vulnerable to being adversely affected by anthropogenic influences on water body conditions from past, ongoing, and/or future actions or activities.

Identifying Key Beneficial Uses

Staff used professional judgment to identify the following as key beneficial uses of waters in the San Diego Region:

- Drinking water supply
- Fish and shellfish consumption
- Recreation
- Habitats and ecosystems.

These key beneficial uses, which are tabulated in Attachment 1 and discussed further in the Appendix, roughly correspond to the four beneficial use-based questions on the "My Water Quality" web portal:[4]

- Is our water safe to drink?
- Is it safe to eat fish and shellfish from our waters?
- Is it safe to swim in our waters?
- Are our aquatic ecosystems healthy?

[4] The My Water Quality web portal, which is referenced in Chapter 1 of the Practical Vision, is on the website of the California Water Quality Monitoring Council at: http://www.mywaterquality.ca.gov/.

III. Key Areas

Although water quality control plans might indicate that a key beneficial use occurs in many individual water bodies and in several types of water bodies, some individual water bodies or certain types of water bodies might be much more important than others for that key beneficial use. Similarly, and as discussed further in the Appendix, certain locations or types of places might be much more important for a key beneficial use than other places or locations in the same water body or the same type of water body. Such differences are important to consider in decisions about how to prioritize work and how to allocate and use resources, for example in decisions about where to conduct monitoring and assessment pertinent to various key beneficial uses.

Key areas are the waters and places where protection and restoration of the integrity, or health, of waters is most important for a key beneficial use. For key beneficial uses that are direct human uses (drinking water supply, fish and shellfish consumption, and recreation), key areas are generally waters and places where the intensity of the key beneficial use is high (such as water bodies that are used to supply drinking water to many people, water bodies where many people catch fish for human consumption, or parts of water bodies that many people use for recreation) – or would be high in the absence of adverse effects on the key beneficial use caused by anthropogenic influences on water body conditions. For the key beneficial use of habitats and ecosystems, key areas are generally waters and places where habitat value is high (such as relatively pristine parts of natural water bodies) – or would be high in the absence of adverse effects on the key beneficial use caused by anthropogenic influences on water body conditions.

Key areas are not to be confused with areas of influence. Because water moves between different parts of water bodies, between different water bodies, and between different types of water bodies, conditions and activities in one place can affect conditions in other places. Similarly, conditions and activities on land can affect conditions in water bodies. Areas of influence are places, including land areas, that have a significant effect on water body conditions in other places. For example, many people use Mission Bay for swimming and other contact water recreation activities, so it is a key area for the key beneficial use of contact water recreation (REC-1). A stream that flows into Mission Bay and that has high levels of human pathogens might have a significant effect on water body conditions for REC-1 in the bay; if so, that stream would be an area of influence on Mission Bay, but it would not be a key area for REC-1 unless many people use the stream itself for REC-1 or would do so if levels of human pathogens were not high.

Key areas are specific to a key beneficial use. In other words, a key area for one key beneficial use is not necessarily a key area for another key beneficial use. For example, drinking water supply reservoirs and the ocean are key areas for different key beneficial uses. Drinking water supply reservoirs are key areas for the key beneficial use of drinking water supply; the ocean is a key area for the key beneficial uses of fish and shellfish consumption, recreation, and habitats and ecosystems. Key areas for different beneficial uses might overlap. For example, some water bodies or parts thereof might be key areas for fish and shellfish consumption and also be key areas for habitats and ecosystems. Even if a water body has several beneficial uses, including one or more key beneficial uses, it might not be a key area for any key beneficial use. For example a reservoir that is not a drinking water supply reservoir might have multiple beneficial uses, including one or more key beneficial uses, yet not be a key area for any of those key beneficial uses.

Identifying Key Areas

Key areas can be identified in different ways, at different scales, and with different degrees of specificity. For some purposes, it may be useful to identify key areas at larger scales or with less specificity; for other purposes, it may be useful to identify key areas at smaller scales or with more specificity. One way of identifying key areas is in terms of key water bodies. Key areas for a key beneficial use can be identified in terms of key water bodies as:

- Key water body *types* for the key beneficial use; and
- Key *individual* water bodies for the key beneficial use.

Another way of identifying key areas is in terms of areas of special importance. Key areas for a key beneficial use can be identified in terms of areas of special importance as:

- *Types* of areas of special importance for the key beneficial use, which are found in one or more individual water bodies or types of water bodies; and
- *Specific* areas of special importance for the key beneficial use in individual water bodies.

Staff used professional judgment to identify key areas at various scales and with various degrees of specificity, in terms of both water bodies and areas of special importance. For example, key areas for the key beneficial use of recreation include the following key water bodies:

- Bays (a key water body *type* for the key beneficial use of recreation); and
- Mission Bay (a key *individual* water body for the key beneficial use of recreation).

Key areas for the key beneficial use of recreation also include the following areas of special importance:

- Coastal waters that are close to shore and open to the public for REC-1, especially those near sandy beaches (a *type* of area of special importance for the key beneficial use of recreation, which is found in one or more individual water bodies or types of water bodies); and
- San Diego Bay waters close to shore near the sandy beach at Coronado Landing Park (a *specific* area of special importance for the key beneficial use of recreation in an individual water body).

The tables in Attachments 3 and 4 provide a brief overview of water body types in the San Diego Region. Table 1 identifies key areas (in terms of key water body types) for key beneficial uses of waters in the San Diego Region. Key areas for each key beneficial use are discussed further in the Appendix and identified with greater specificity in Tables 3, 5, 6, 8, 9, 11, and 12.

IV. Applications

Focusing on what is most important is fundamental to the effectiveness of the San Diego Water Board. As suggested in Section I, identifying key beneficial uses and key areas should be seen as an essential first step, but not the only step, in determining what is most important for the Board and helping the Board focus on what is most important. In simple terms, however, what is most important for the Board is the work that contributes most to protection and restoration of the chemical, physical, and biological integrity, or health, of waters in the San Diego Region in key areas for key beneficial uses. Ideally, decisions about how to prioritize the Board's work and how to allocate and use the Board's resources would be based solely on what is most important for the Board. In reality, however, many of the programs and funding sources that provide those resources also establish various constraints and obligations, so the Board has limited flexibility in how it can use its resources. Consequently, the Board may need to consider a variety of factors in decisions about how to prioritize its work and how to allocate and use its resources; nevertheless, key beneficial uses and key areas should always be among the factors considered in making such decisions.

As the ones who make strategic decisions and set examples for the entire organization, those at the highest levels of the Board have a special responsibility to ensure that the Board's work is focused on what is most important. As discussed below, the key beneficial uses / key areas concept can help them do so. Those at the Board's highest levels also have the opportunity to involve others throughout the organization in applying the key beneficial uses / key areas concept to the work of various programs, units, and individuals. Indeed, the key beneficial uses / key areas concept is most likely to help the Board focus on what is most important if it is embraced at all levels of and in all parts of the organization and if it is applied to the Board's work at various scales, from small, short-term tasks for individual staff to large, long-term initiatives for the entire organization.

Applying the key beneficial uses / key areas concept to the Board's work, and to the work the Board directs other entities to undertake, can help the Board and those other entities focus on what is most important. Table 2 lists some potential applications, but that list is not intended to be exhaustive; additional potential applications could be identified. Application of the key beneficial uses / key areas concept to the Board's work is discussed briefly below, first specifically with regard to monitoring and assessment, then generally with regard to other functions and programs, and finally with regard to organizational structure and management strategies.

Monitoring and Assessment

The key beneficial uses / key areas concept can help the Board focus on what is most important in implementing "A Framework for Monitoring and Assessment in the San Diego Region"[5] (Framework) which was endorsed by the Board in December 2012 and which is referred to in Chapter 2 ("Monitoring and Assessment") of the Practical Vision.[6] The Framework emphasizes the importance of water body-oriented, beneficial use-based, question-driven monitoring and assessment. It also outlines a monitoring and assessment cycle, which consists of several distinct but related types of monitoring and assessment that produce different types of information needed to guide and evaluate the effectiveness of protection and restoration work.

The Board and other entities have limited resources with which to conduct monitoring and assessment, so decisions must be made about how to use those limited resources. The key beneficial uses / key areas concept can help inform decisions about which beneficial uses, places, and parameters to focus on in developing and implementing monitoring and assessment programs. Applying the key beneficial uses / key areas concept would suggest that the Board ensure that monitoring and assessment, as outlined in the Framework, is conducted so as to produce the information needed to guide and evaluate the effectiveness of work to protect and restore the integrity, or health, of waters in key areas for key beneficial uses.

[5] The Framework is on the San Diego Water Board website at: http://www.waterboards.ca.gov/sandiego/water_issues/programs/swamp/docs/MonitoringFrameworkForSDR-final.pdf.

[6] Chapter 2 of the Practical Vision is on the San Diego Water Board website at: http://www.waterboards.ca.gov/sandiego/water_issues/Practical_Vision/docs/PV_2_Monitoring_and_Assessment_Dec2013.pdf.

Other Functions and Programs

The key beneficial uses / key areas concept can help the Board focus on what is most important in conducting its various functions and programs. Where the Board has greater flexibility in deciding how to use its resources, such as in deciding which beneficial uses, places, and parameters to focus on in efforts to restore degraded waters (reducing pollutant loadings, remediating contaminated groundwater, removing or containing contaminated sediment, and restoring habitats and ecosystems, for example), the key beneficial uses / key areas concept can help the Board decide which work to undertake. For example, assuming all other factors are equal, applying the key beneficial uses / key areas concept would suggest that the Board pursue the efforts that would contribute most to restoration of the integrity, or health, of waters in key areas for key beneficial uses.

Where the Board has less flexibility in deciding how to use its resources, such as in permitting and similar work, the key beneficial uses / key areas concept can help the Board decide which aspects of that work warrant greater attention. For example, assuming all other factors are equal, applying the key beneficial uses / key areas concept would suggest that the Board give greater attention to (a) permitting activities and facilities with greater potential to influence water body conditions in ways that have adverse effects on key beneficial uses in key areas, and (b) establishing permit conditions to address the characteristics of activities and facilities that could have such effects.

Much of the Board's work is accomplished by or through other entities, notably by entities regulated by the Board, so the effectiveness of the Board depends, to a large degree, on actions taken by those entities. In order for the Board to be effective, those entities need to focus on what is most important. Like the Board, those entities have limited resources, so they might give higher priority to taking the actions necessary to comply with the Board's regulatory directives than to taking other actions to protect and restore water bodies. The key beneficial uses / key areas concept can help the Board help the entities it regulates to focus on what is most important. For example, applying the key beneficial uses / key areas concept would suggest that the Board ensure that its regulatory directives are crafted so as to encourage, and, where possible, require the entities it regulates to take the actions that would contribute most to protection and restoration of the integrity, or health, of waters in key areas for key beneficial uses.

Organizational Structure and Management Strategies

Currently, the Board is organized largely along functional and programmatic lines. Although this organizational structure does not preclude focusing on what is most important, it tends to place an emphasis on producing functional and programmatic outputs rather than on helping to bring about meaningful environmental outcomes. Applying the key beneficial uses / key areas concept to the Board's organizational structure could result in creation of units with an explicit focus on protection and restoration of the integrity, or health, of waters in key areas for key beneficial uses, which could help the Board focus on what is most important and be more effective. Among other possibilities, such units might include the following:

- Drinking Water Supply Unit;
- Fish and Shellfish Consumption Unit;
- Recreational Waters Unit;

- Inland Waters Habitats and Ecosystems Unit;
- Coastal Embayments Habitats and Ecosystems Unit; and
- Ocean Waters Habitats and Ecosystems Unit.

Such an organizational structure could also help facilitate implementation of other applications of the key beneficial uses / key areas concept discussed previously and/or listed in Table 2.

A potential application of the key beneficial uses / key areas concept that could be particularly useful in helping the Board be more strategic and more proactive and, therefore, more effective, is development and implementation of key beneficial use / key area-based management strategies for protection and restoration of the integrity, or health, of waters in the San Diego Region. Such key beneficial use / key area-based management strategies could help the Board take the next steps needed to determine and focus on what is most important.

Additional steps, beyond identification of key beneficial uses and key areas, to help determine what is most important for the Board and help the Board focus on what is most important might include the following (which are also listed in a slightly abbreviated form in Section I), among others:

- Identifying needs and opportunities for protection and restoration related to various key beneficial uses in corresponding key areas;
- Establishing protection and restoration goals, expressed in terms of meaningful environmental outcomes, for key beneficial uses in corresponding key areas;
- Determining the actions needed to achieve protection and restoration goals, such as:
    - Determining the actions needed to address key anthropogenic influences and limiting factors for various key beneficial uses in corresponding key areas;
- Establishing meaningful measures of the effectiveness, progress, and success of protection and restoration work; and
- Determining, producing, and compiling information needed for protection and restoration work, such as:
    - Assessing the status and trends of water body conditions as they pertain to various key beneficial uses in corresponding key areas;
    - Determining the key anthropogenic influences and limiting factors for various key beneficial uses in corresponding key areas; and
    - Identifying and assessing the threats to and evaluating the vulnerability of various key beneficial uses in corresponding key areas;
- Identifying and collaborating with other public health, natural resources, and regulatory agencies with responsibilities related to various key beneficial uses in corresponding key areas;[7]
- Identifying other entities to be involved and their roles in taking the actions needed to achieve protection and restoration goals;
- Taking the actions needed to achieve protection and restoration goals and evaluating effectiveness, progress, and success.

All of these steps could be taken as part of development and implementation of key beneficial use / key area-based management strategies. These steps could be taken in a different sequence than listed above, but regardless of the sequence in which they are taken, later steps can be informed by earlier steps, and earlier steps can be revisited and refined based on what is determined, done, and learned in later steps. In other words, taking these steps should be seen as an ongoing process with feedback loops, not as a one-time-only unidirectional project. It should be noted that, for any particular key beneficial use, the specifics of some or all of these steps could be different for different key areas.

[7] Some of these agencies are identified in the Appendix and Attachment 1.

Developing key beneficial use / key area-based management strategies could help the Board determine which work would contribute most to such protection and restoration; implementing such management strategies could help the Board focus on that work. Such management strategies could incorporate and go beyond other applications of the key beneficial uses / key areas concept discussed previously and/or listed in Table 2. The combination of a key beneficial use / key area-based organizational structure, as outlined above, with key beneficial use / key area-based management strategies could help the Board be even more effective.

Ideally, key beneficial use / key area-based management strategies would eventually be developed for all key beneficial uses and corresponding key areas in the San Diego Region. Among other possibilities, the result could be the following set of region-wide management strategies:

- Strategy for Protection and Restoration of San Diego Region Drinking Water Supply Source Waters;
- Strategy for Protection and Restoration of San Diego Region Waters for Fish and Shellfish Consumption;
- Strategy for Protection and Restoration of San Diego Region Recreational Waters;
- Strategy for Protection and Restoration of Habitats and Ecosystems in San Diego Region Inland Waters;
- Strategy for Protection and Restoration of Habitats and Ecosystems in San Diego Region Coastal Embayments; and
- Strategy for Protection and Restoration of Habitats and Ecosystems in San Diego Region Ocean Waters.

Development of detailed management strategies for the entire San Diego Region would not be a trivial undertaking, but key beneficial use / key area-based management strategies would not have to be extremely detailed to be useful. General management strategies, with relatively little detail, could be developed with a relatively modest investment of resources and in a relatively short period of time. Development of such general management strategies could enable some of the steps and actions needed for protection and restoration to be identified sooner, and, therefore, enable work on taking those steps and actions to be initiated sooner. Such general management strategies also could provide the foundation for development of more detailed management strategies to address specifics that are important in general or in certain places. The work of developing region-wide management strategies also could be broken into smaller tasks by using a modular approach. For example, a region-wide management strategy could consist of the combined management strategies developed for individual watersheds or other geographic areas. Key beneficial use / key area-based management strategies need not be formal or rigid; indeed they are likely to be more useful and more effective if their development and implementation is ongoing, iterative, evolving, dynamic, and nimble.

Focusing on what is most important is likely to involve making changes, some of which might be difficult. Nevertheless, as a public agency steward, the Board has a responsibility to see to it that its limited resources, and those of the entities subject to its directives, are used to do what is most important, to do the work that contributes most to protection and restoration of the chemical, physical, and biological integrity, or health, of waters in the San Diego Region in key areas for key beneficial uses.

Appendix

Overview: Key Beneficial Uses

The table in Attachment 1 identifies, categorizes, and briefly characterizes key beneficial uses of waters in the San Diego Region. The tables in Attachments 3 and 4 provide a brief overview of water body types in the San Diego Region. Table 1 identifies key areas (in terms of key water body types) for key beneficial uses of waters in the San Diego Region. Tables 3, 5, 8, and 11 each identify key areas (key water bodies and areas of special importance) for a key beneficial use in the San Diego Region. Because the San Diego Water Board is involved in a number of efforts to protect and restore San Diego Bay, and because San Diego Bay is a key individual water body for several key beneficial uses, staff selected San Diego Bay to illustrate how key areas in an individual water body can be identified with greater specificity. Accordingly, Tables 6, 9, and 12 each identify key areas (areas of special importance) for a key beneficial use in San Diego Bay. Key areas in other water bodies or other geographic areas (such as watersheds) can be identified with similar degrees of specificity. Identification of key areas with even greater specificity, for example by mapping areas of special importance, might be useful for some purposes. For example, this could be done to show the locations of areas of special importance, such as:

- Drinking water supply source waters in places without access to imported water (areas of special importance for the key beneficial use of drinking water supply);
- Coastal waters that are close to shore, open to the public for contact water recreation (REC-1), and near sandy beaches (areas of special importance for the key beneficial use of recreation);
- Areas intensively used for subsistence fishing and/or shellfish harvesting, or with potential for such use (areas of special importance for the key beneficial use of fish and shellfish consumption);
- Designated areas with extra protection for habitats and ecosystems (areas of special importance for the key beneficial use of habitats and ecosystems).

Tables 4, 7, 10, and 13 each provide links to sources of additional information about locations of key areas for a key beneficial use in the San Diego Region.

Although all of the tables are intended to be correct, they are not intended to be exhaustive. For example, additional areas of special importance could be identified for various key beneficial uses in the San Diego Region. Likewise, other sources of additional information about locations of key areas for various key beneficial uses can be found with internet searches.

Each of the following sections provides a brief overview of a key beneficial use with regard to:

- Characteristics of the key beneficial use, concerns with regard to the key beneficial use, key parameters for the key beneficial use, and influences on water body conditions as they pertain to the key beneficial use (under the heading “Characteristics, Concerns, Parameters, and Influences”);
- Key areas for the key beneficial use (under the heading “Key Areas”);
- Regulatory, public health, and natural resources agencies with responsibilities related to the key beneficial use (under the heading “Agencies”).

Key Beneficial Use: Drinking Water Supply

Characteristics, Concerns, Parameters, and Influences

The key beneficial use of drinking water supply, i.e., the supply of water for human consumption,[8] is the defining use of the beneficial use of municipal and domestic supply. It is the key beneficial use that is most critical to protecting human life and health and the key beneficial use with which most people are most familiar. Human consumption typically involves removal of water from drinking water supply reservoirs, groundwater basins, or other water bodies, so drinking water supply is an extractive use.

Human health is the primary concern with regard to the key beneficial use of drinking water supply. Accordingly, key parameters for this key beneficial use have to do with human health risks associated with consumption of water. Adverse effects on human health can result from consumption of water containing harmful substances or pathogenic microorganisms. Primary drinking water standards establish thresholds for a number of these parameters. Guidance has been issued for a number of other parameters of concern that are not currently addressed by primary drinking water standards; these include cyanotoxins, biotoxins produced by cyanobacteria. Over time, the number of parameters of concern with regard to drinking water supplies has grown; additional parameters of concern could be identified in the future.

Aesthetic and cosmetic effects are secondary concerns with regard to the key beneficial use of drinking water supply. Undesirable aesthetic effects in drinking water can include unpleasant taste and odor; undesirable cosmetic effects can include discoloration of teeth. Secondary drinking water standards establish thresholds for a several parameters that could have aesthetic or cosmetic effects.

A variety of natural and anthropogenic influences can result in contaminants entering drinking water supply source waters. Natural influences include natural erosion of soil and rock. Anthropogenic influences include including discharges of contaminants from various residential, agricultural, and industrial facilities and activities. Although most drinking water in the San Diego Region is treated prior to human consumption, even where water is treated, conditions in source waters can affect the water quality characteristics of drinking water. Contaminants in drinking water supply source waters also can affect the types and costs of treatment needed.

The table in Attachment 1 includes a brief overview of the key beneficial use of drinking water supply.

Key Areas

Most drinking water in the San Diego Region comes from drinking water supply reservoirs, so those reservoirs are key water bodies for the key beneficial use of drinking water supply. Such reservoirs with a direct connection to a water treatment plant and drinking water distribution system are areas of special importance because of the crucial role of those reservoirs in the drinking water supply chain; water from drinking water supply reservoirs *without* such a connection is typically transferred to a drinking water supply reservoir *with* such a connection before treatment and distribution to consumers. In drinking water supply reservoirs with such a connection, the parts of such reservoirs from which water is withdrawn for treatment and distribution are especially important because water quality characteristics in those areas can affect treatment needs and costs as well as the water quality characteristics of drinking water delivered to consumers.

[8] As defined in Section 116275 of the California Safe Drinking Water Act, which is contained in Part 12, Chapter 4 of the California Health and Safety Code, human consumption of water includes the use of water for drinking, bathing, showering, handwashing, oral hygiene, or cooking,

Groundwater is an important source of drinking water in some parts of the San Diego Region, so groundwater basins are also key water bodies for the key beneficial use of drinking water supply. Basins that are intensively used for drinking water supply are areas special importance because of the high intensity of use. The parts of such basins from which drinking water supply wells extract water are especially important because water quality characteristics in the vicinity of such wells can affect water treatment needs and costs as well as the water quality characteristics of drinking water delivered to consumers.

Drinking water supply source waters in places where water is not treated prior to human consumption (for example, where individual homes obtain water from their own private wells and that water is used for human consumption without treatment), especially the parts of such source waters from which water is withdrawn for human consumption, are also areas of special importance. In the absence of treatment, the water quality characteristics of drinking water are likely to be similar to those of the source waters. Drinking water supply source waters in places without access to imported water, especially the parts of such source waters from which water is withdrawn for human consumption, are also areas of special importance. In the absence of imported water, those who live or work in such places depend on local drinking water supply source waters.

Water reuse appears likely to become an increasingly important part of water supply, possibly including drinking water supply, in the San Diego Region in the future. Indirect potable reuse would involve the discharge of treated wastewater to and storage of that treated wastewater in waters of the State, such as drinking water supply reservoirs and groundwater basins. Water bodies used for storage as part of indirect potable reuse systems would be key areas for the key beneficial use of drinking water supply. (In some and perhaps many cases, the same water bodies would be key areas for the key beneficial use of drinking water supply even in the absence of indirect potable reuse.) Direct potable reuse would not involve the discharge of treated wastewater to waters of the State; treated wastewater would enter drinking water distribution systems directly, without first being discharged to waters of the State.

Table 3 identifies key areas (key water bodies and areas of special importance) for the key beneficial use of drinking water supply in the San Diego Region. Table 4 provides links to sources of additional information about locations of key areas for the key beneficial use of drinking water supply in the San Diego Region.

Agencies

The San Diego Water Board and other agencies, including the State Water Resources Control Board (State Water Board) and US Environmental Protection Agency (USEPA), have responsibilities for protecting water bodies for the key beneficial use of drinking water supply. Entities other than the San Diego Water Board, including the State Water Board Division of Drinking Water and USEPA, have responsibilities for ensuring that water delivered to consumers by drinking water distribution systems is suitable for human consumption. Water supply entities, such as water districts and city water departments, are subject to regulatory requirements for protecting water bodies for the key beneficial use of drinking water supply and/or for ensuring that water delivered to consumers by drinking water distribution systems is suitable for human consumption.

Because indirect potable reuse would involve the discharge of treated wastewater to waters of the State, the San Diego Water Board would have responsibilities related to such reuse. Because direct potable reuse would not involve the discharge of treated wastewater to waters of the State, the San Diego Water Board would appear to have limited responsibilities, if any, related to such reuse.

Table 3
Key Areas for the Key Beneficial Use of Drinking Water Supply in the San Diego Region

<table>
<tr><td colspan="2"></td><td colspan="4">SAN DIEGO REGION
key areas
(key water bodies & areas of special importance)
for the key beneficial use of
DRINKING WATER SUPPLY</td></tr>
<tr><td rowspan="3">key water bodies
for the
key beneficial use
of
DRINKING WATER
SUPPLY</td><td>first
(highest)
rank</td><td colspan="3">drinking water supply reservoirs</td><td></td></tr>
<tr><td>second
rank</td><td></td><td colspan="3">groundwater basins</td></tr>
<tr><td>third
rank</td><td colspan="4">xx</td></tr>
<tr><td colspan="2" rowspan="4">areas of special importance
for the
key beneficial use
of
DRINKING WATER
SUPPLY</td><td>drinking water supply
reservoirs
<u>directly</u> connected
to a
water treatment plant
& drinking water
distribution system</td><td>drinking water supply
source waters
in places
where water
is not treated
prior to
human consumption</td><td>drinking water supply
source waters
in places
without access to
imported water</td><td>groundwater basins
intensively used for
drinking water supply</td></tr>
<tr><td>especially parts of
such reservoirs
from which
water is withdrawn
for human consumption</td><td>especially parts of
such waters
from which
water is withdrawn
for human consumption</td><td>especially parts of
such waters
from which
water is withdrawn
for human consumption</td><td>especially parts of
such basins
from which
water is withdrawn
for human consumption</td></tr>
<tr><td>e.g., near intake
structures of:
▪ Skinner Reservoir
▪ Miramar Reservoir
▪ Murray Reservoir
▪ Sweetwater Reservoir
▪ Lower Otay Reservoir</td><td>e.g., near
latitude/longitude &
depth of drinking water
supply wells for individual
homes that do not treat
water prior to human
consumption</td><td rowspan="2">e.g., near
latitude/longitude &
depth of drinking water
supply wells in:
▪ Marine Corps Base Camp Pendleton
▪ other parts of the San Diego Region in San Diego County but outside the service area of San Diego County Water Authority</td><td>e.g., near
latitude/longitude &
depth of drinking water
supply wells in:
▪ Temecula Valley Basin
▪ San Juan Valley Basin
▪ Warner Valley Basin
▪ Santa Margarita Valley Basin</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>

Table 4
Links to Sources of Additional Information about Locations of Key Areas for the Key Beneficial Use of Drinking Water Supply in the San Diego Region

drinking water supply reservoirs	
source	*link*
Metropolitan Water District of Southern California	http://www.mwdh2o.com/AboutYourWater/Storage-And-Delivery/Reservoirs/Pages/default.aspx
San Diego County Water Authority	http://www.sdcwa.org/reservoirs
City of San Diego	https://www.sandiego.gov/water/gen-info/overview/factsfigures
City of San Diego	https://www.sandiego.gov/water/recreation/reservoirs
drinking water supply reservoirs directly connected to a water treatment plant & drinking water distribution system	
source	*link*
Metropolitan Water District of Southern California	http://www.mwdh2o.com/AboutYourWater/Water-Quality/Pages/default.aspx
San Diego County Water Authority	http://www.sdcwa.org/water-quality
City of San Diego	https://www.sandiego.gov/water/quality/watersources/treatmentprocess/treatmentplants
drinking water supply source waters in places without access to imported water	
Metropolitan Water District of Southern California	http://www.mwdh2o.com/PDF_NewsRoom/6.4.2_Maps_MemberAgencies.pdf
San Diego County Water Authority	http://www.sdcwa.org/member-agencies
Marine Corps Base Camp Pendleton	http://www.pendleton.marines.mil/Portals/98/Docs/Environmental/CCR/2015%20CCR_Final.pdf?ver=2016-06-14-164840-343
groundwater basins	
source	*link*
California Department of Water Resources	http://water.ca.gov/groundwater/bulletin118.cfm
Metropolitan Water District of Southern California	http://edmsidm.mwdh2o.com/idmweb/cache/MWD%20EDMS/003697466-1.pdf
San Diego County Water Authority	http://www.sdcwa.org/groundwater
City of San Diego	https://www.sandiego.gov/sites/default/files/legacy/water/pdf/supply/pilotwells.pdf
Rancho California Water District	http://www.ranchowater.com/index.aspx?nid=152

Key Beneficial Use: Fish and Shellfish Consumption

Characteristics, Concerns, Parameters, and Influences

The key beneficial use of fish and shellfish[9] consumption is a beneficial use category that includes the key individual beneficial uses of fishing,[10] shellfish harvesting, and aquaculture, all of which involve capturing or gathering aquatic organisms to provide food for human consumption, among other purposes.[11] Fish and shellfish consumption is an *in situ* use in one sense and an extractive use in another sense; the fish and shellfish consumed by humans live and grow in water bodies before they are consumed, but human consumption involves removing those organisms from water bodies.

Human health is the primary concern with regard to the key beneficial use of fish and shellfish consumption.[12] Accordingly, key parameters for this key beneficial use have to do with health risks associated with human consumption of fish and shellfish. Adverse effects on human health can result from consumption of fish or shellfish containing harmful substances. Harmful substances that could have adverse effects on human health as a result of consumption of fish and shellfish include persistent bioaccumulative toxic substances (such as PCBs and mercury) and biotoxins (such as paralytic shellfish poisoning toxins and domoic acid, which are produced by certain phytoplankton).

Adverse effects on human health also can result from consumption of fish and shellfish, particularly consumption of filter-feeding bivalve shellfish, containing pathogenic microorganisms. In routine monitoring, fecal indicator bacteria (FIB), rather than actual human pathogens, have been used to assess water body sanitation conditions with regard to human consumption of filter-feeding bivalve shellfish.

The safety of fish and shellfish for human consumption is related to water body conditions. Where persistent bioaccumulative toxic substances, biotoxins, or pathogenic microorganisms are present in water bodies, they also could be present in fish and/or shellfish at levels that pose an elevated risk to the health of people who eat fish or shellfish from those water bodies. Although certain substances of concern, such as PCBs, are strictly of anthropogenic origin, both natural and anthropogenic influences can affect water body conditions as they pertain to fish and shellfish consumption. For example, both natural and anthropogenic sources can result in elevated levels of mercury. Biotoxins, which occur naturally, might be present at higher levels, in larger areas, for longer intervals, more frequently, and/or in additional water bodies because of anthropogenic influences. Pathogenic microorganisms can enter water bodies from human and non-human sources. Non-human sources could include natural sources (such as native wildlife) and unnatural sources (such as livestock). Human sources of human pathogens are of particular concern, however.

[9] In this context "fish and shellfish" refers to any and all kinds of aquatic organisms taken from local waters for human consumption.

[10] The definition of the beneficial use of fishing ("commercial and sport fishing") in the water quality control plan for the San Diego Region (Basin Plan) explicitly refers to commercial and recreational fishing but not to subsistence fishing. The Basin Plan does not identify a separate beneficial use of "subsistence fishing," so it seems appropriate to consider subsistence fishing to be part of "commercial and sport fishing."

[11] In some cases, recreational fishing and shellfish harvesting are undertaken, at least in part, for purposes other than providing food for human consumption.

[12] It should be noted, however, that the fish and shellfish upon which this key beneficial use is based depend on the key beneficial use of habitats and ecosystems. While the primary concern with regard to the key beneficial use of fish and shellfish consumption has to do with whether fish and shellfish are safe for people to eat, the primary concern with regard to the key beneficial use of habitats and ecosystems has to do with whether the habitats and ecosystems in which fish, shellfish, and other organisms occur are healthy. In habitats and ecosystems that are less healthy, certain species of fish and shellfish might be less abundant or otherwise diminished; among other consequences, this could mean that certain species of fish and shellfish considered desirable for human consumption would be less readily available or unavailable.

Depuration is a form of treatment sometimes used to reduce the levels of certain contaminants in filter-feeding bivalve shellfish prior to human consumption. In general, however, fish and shellfish are eaten without treatment, other than cooking (which does not necessarily ensure that organisms are safe for human consumption) and/or separation of the parts of an organism to be eaten from those that are not to be eaten. In some cases, fish and shellfish are eaten raw and/or entire organisms, or entire organisms except the shell(s), are eaten.

The table in Attachment 1 includes a brief overview of the key beneficial use of fish and shellfish consumption.

Key Areas

San Diego Region ocean waters, San Diego Bay, Mission Bay, Dana Point Harbor, Oceanside Harbor, and certain lagoons and estuaries, or parts thereof, are intensively used for fishing and/or shellfish harvesting, and many of the fish and shellfish taken are subsequently consumed by humans. Agua Hedionda Lagoon is the location of the only existing commercial shellfish growing operation in the San Diego Region. Accordingly, those individual water bodies and the corresponding water body types are key water bodies for the key beneficial use of fish and shellfish consumption in the San Diego Region. It should be noted, however, that the take of many or all species is prohibited or highly restricted in certain parts of some of those water bodies, such as in State marine reserves and certain State marine conservation areas. Accordingly, those areas are generally not key areas for the key beneficial use of fish and shellfish consumption. It also should be noted that certain parts of water bodies that are key areas for fish and shellfish consumption, such as some areas within or adjacent to military facilities, are not accessible to the public for fishing or shellfish harvesting. Accordingly, those areas are generally not key areas for the key beneficial use of fish and shellfish consumption.

Areas that are intensively used for *subsistence* fishing and/or shellfish harvesting are areas of special importance for the key beneficial use of fish and shellfish consumption. People who rely on subsistence fishing and/or shellfish harvesting for a substantial portion of their food might consume relatively large quantities of local fish and shellfish and, as a result, could be at elevated risk from any contaminants present in those organisms.

Areas for which OEHHA has issued fish and/or shellfish consumption advisories because of persistent bioaccumulative toxic substances are also areas of special importance for the key beneficial use of fish and shellfish consumption. Such advisories are essentially official long-term recommendations for people to not use or to make less use of those areas as a food source. Areas for which such advisories have been issued and that also are intensively used for subsistence fishing and/or shellfish harvesting, or that might be so used in the absence of such advisories, can be considered areas of special concern with regard to the key beneficial use of fish and shellfish consumption. If people who might otherwise engage in fishing and/or shellfish harvesting in an area do not do so, or do so to a lesser degree, because of such advisories or because of a perception that fish and/or shellfish in that area would not be safe to eat, the result is the loss or diminishment of that area as a food source for those people, in other words, the loss or diminishment of a beneficial use. This could be particularly problematic for people who might otherwise use that area for subsistence fishing and/or shellfish harvesting.

Table 5 identifies key areas (key water bodies and areas of special importance) for the key beneficial use of fish and shellfish consumption in the San Diego Region. Table 6 identifies key areas (areas of special importance) for the key beneficial use of fish and shellfish consumption in San Diego Bay. Table 7 provides links to sources of additional information about locations of key areas for the key beneficial use of fish and shellfish consumption in the San Diego Region.

Agencies

The San Diego Water Board and other California and federal government agencies, including the State Water Resources Control Board, California Office of Environmental Health Hazard Assessment (OEHHA), California Department of Public Health (CDPH), and US Environmental Protection Agency, have responsibilities for protecting water bodies for the key beneficial use of fish and shellfish consumption and/or for protecting the health of people who might eat local fish or shellfish. OEHHA issues consumption advisories based on levels of persistent bioaccumulative toxic substances in fish and shellfish. CDPH establishes quarantines (including annual mussel quarantines) and issues health advisories and warnings with regard to biotoxins in coastal fish and shellfish.

Table 5
Key Areas for the Key Beneficial Use of Fish and Shellfish Consumption in the San Diego Region

<table>
<tr><td colspan="2"></td><td colspan="2">SAN DIEGO REGION
key areas
(key water bodies & areas of special importance)
for the key beneficial use of
FISH & SHELLFISH CONSUMPTION</td></tr>
<tr><td rowspan="3">key water bodies
for the
key beneficial use
of
FISH & SHELLFISH
CONSUMPTION</td><td>first
(highest)
rank</td><td colspan="2">ocean</td></tr>
<tr><td>second
rank</td><td colspan="2">San Diego Bay
Mission Bay</td></tr>
<tr><td>third
rank</td><td colspan="2">Dana Point Harbor
Oceanside Harbor
lagoons & estuaries</td></tr>
<tr><td colspan="2" rowspan="4">areas of special importance
for the
key beneficial use of
FISH & SHELLFISH
CONSUMPTION</td><td>areas intensively used for
subsistence fishing &/or shellfish harvesting
(or with potential for such use)</td><td rowspan="2">areas for which
fish &/or shellfish
consumption advisories
have been issued
because of
persistent
bioaccumulative
toxic substances</td></tr>
<tr><td>such as shoreline areas
& structures
(piers, wharfs, docks, jetties, breakwaters, etc.)
accessible to the public
for fishing & shellfish harvesting</td></tr>
<tr><td>e.g., near
▪ Dana Point Harbor breakwater & jetty
▪ Dana Point Pier (Dana Point Harbor)
▪ San Clemente Pier
▪ Oceanside Harbor fishing pier
▪ Oceanside Harbor south jetty
▪ Oceanside Pier
▪ Agua Hedionda Lagoon jetties
▪ Agua Hedionda Lagoon shoreline
▪ Batiquitos Lagoon jetties
▪ Crystal Pier (Pacific Beach)
▪ Mission Bay shoreline
▪ Mission Bay jetties
▪ San Diego River jetty
▪ Ocean Beach Pier
▪ Imperial Beach Pier</td><td>▪ south Orange County coastal ocean waters
▪ Dana Point Harbor
▪ Mission Bay
▪ San Diego Bay</td></tr>
<tr><td></td></tr>
</table>

Table 6
Key Areas for the Key Beneficial Use of Fish and Shellfish Consumption in San Diego Bay

SAN DIEGO BAY **key areas** **(areas of special importance)** **for the key beneficial use of** **FISH & SHELLFISH CONSUMPTION**	
areas intensively used for subsistence fishing &/or shellfish harvesting (or with potential for such use) ***such as shoreline areas & structures (piers, wharfs, docks, jetties, breakwaters, etc.) accessible to the public for fishing & shellfish harvesting***	**areas for which fish &/or shellfish consumption advisories have been issued because of persistent bioaccumulative toxic substances**
e.g., near: ▪ Shelter Island Shoreline Park shoreline & pier ▪ "NTC boat channel" shoreline ▪ Spanish Landing Park shoreline ▪ Harbor Island Park shoreline ▪ Embarcadero Marina Park South shoreline & pier ▪ Pepper Park shoreline & pier ▪ Chula Vista Bayside Park shoreline & pier ▪ Chula Vista Bayfront Park shoreline & jetty ▪ Chula Vista Marina View Park shoreline ▪ Silver Strand State Beach shoreline ▪ Coronado Tidelands Park shoreline ▪ Coronado Landing Park shoreline & pier	▪ entire bay

Table 7
Links to Sources of Additional Information about Locations of Key Areas
for the Key Beneficial Use of Fish and Shellfish Consumption in the San Diego Region

areas intensively used for subsistence fishing &/or shellfish harvesting (or with potential for such use)	
such as shoreline areas & structures (piers, wharfs, docks, jetties, breakwaters, etc.) accessible to the public for fishing & shellfish harvesting	
source	*link*
"pierfishing.com" "SeeCalifornia.com" "SoCaloceanfishing.com"	http://www.pierfishing.com/resources/?id=california_fishing_piers http://www.seecalifornia.com/piers/california-fishing-piers-list.html http://www.socaloceanfishing.com/hp_shor.html
areas for which fish &/or shellfish consumption advisories have been issued because of persistent bioaccumulative toxic substances	
source	*link*
CA Office of Environmental Health Hazard Assessment	http://oehha.ca.gov/fish/advisories

Key Beneficial Use: Recreation

Characteristics, Concerns, Parameters, and Influences

The key beneficial use of recreation is a beneficial use category that includes the key individual beneficial uses of contact water recreation (REC-1), such as swimming, and non-contact water recreation (REC-2), such as aesthetic enjoyment. Recreation is an *in situ* use; both REC-1 and REC-2 are beneficial uses of water that is in water bodies, not water that has been removed from water bodies.

REC-1 is a popular, widespread, and iconic use of coastal waters in the San Diego Region and throughout southern California. As popular and widespread as REC-1 is, even more people participate in REC-2 activities, and REC-2 is even more widespread than REC-1. It is through the key beneficial use of recreation, particularly REC-2, that many people are exposed to, experience, and learn about water bodies and characteristics of and conditions in water bodies (in contrast to water that comes out of a faucet, shower head, or hose, for example).

The primary concerns and key parameters with regard to REC-1 are different than those for REC-2. Human health is the primary concern with regard to REC-1. Although there are several ways in which water quality characteristics can have adverse effects on the health of people who participate in REC-1 activities, concern has focused largely on incidental ingestion of water containing pathogenic microorganisms. In routine monitoring, fecal indicator bacteria (FIB), rather than actual human pathogens, have been used to determine if water quality is suitable for REC-1. Exposure to cyanotoxins (biotoxins produced by cyanobacteria) also can have adverse effects on the health of people who participate in REC-1 activities.

In general, water quality characteristics are unlikely to pose an elevated risk to the health of people participating in REC-2 activities. The aesthetic condition of water bodies is the primary concern with regard to REC-2. Visible anthropogenic trash commonly has adverse effects on the aesthetic condition of water bodies. Oil slicks, odors, and unsightly algal growth and scum, among other parameters, can also adversely affect the aesthetic condition of water bodies.

Both natural and anthropogenic influences can result in water body conditions that pose an elevated risk to the health of people who participate in REC-1 activities. Pathogenic microorganisms can enter water bodies from human and non-human sources. Non-human sources could include natural sources (such as native wildlife) and unnatural sources (such as livestock). Human sources of human pathogens are of particular concern, however. Cyanotoxins, which occur naturally, might be present at higher levels, in larger areas, for longer intervals, more frequently, and/or in additional water bodies because of anthropogenic influences.

Both natural and anthropogenic influences can result in water body conditions that could adversely affect the aesthetic condition of water bodies for people who participate in REC-2 activities. The anthropogenic influence of littering, both intentional and accidental, can result in the presence of visible anthropogenic trash in and near water bodies. In the San Diego Region, oil slicks are almost always a result of anthropogenic spills or leaks of petroleum products. Both natural and anthropogenic influences can result in odors and unsightly algal growth and scum. Although natural influences can affect water bodies and surrounding areas in ways that some people might find aesthetically undesirable, those influences and the resulting aesthetic characteristics are inherent both to water bodies and to REC-2 activities.

The table in Attachment 1 includes a brief overview of the key beneficial use of recreation.

Key Areas

The key areas for REC-1 and REC-2 overlap but are not identical. Waters or places that are key areas for REC-1 are almost certainly key areas for REC-2, because people participating in REC-1 activities are also likely to be participating in REC-2 activities and/or to be joined by other people participating in REC-2 activities. On the other hand, not all waters or places that are key areas for REC-2 are key areas for REC-1, because some areas that are open to the public for REC-2 are not open to the public for REC-1 or are not well suited for or intensively used for REC-1 for other reasons.

San Diego Region ocean waters, Mission Bay, San Diego Bay, and Dana Point Harbor, or parts thereof, are intensively used for swimming and other contact water recreation activities, so those individual water bodies and the corresponding water body types are key water bodies for the key beneficial use of REC-1 in the San Diego Region. Coastal waters that are close to shore and open to the public for REC-1, especially such waters near sandy beaches, are areas of special importance for REC-1 because the intensity of REC-1 use in such areas is particularly high.

San Diego Region ocean waters, Mission Bay, San Diego Bay, Dana Point Harbor, Oceanside Harbor, lagoons and estuaries, and certain stream mouths and stream systems, or parts thereof are intensively used for aesthetic enjoyment and other non-contact water recreation activities, so those individual water bodies and the corresponding water body types are key water bodies for the key beneficial use of REC-2 in the San Diego Region. Coastal waters that are close to shore and open to the public for REC-1, especially such waters near sandy beaches, are areas of special importance for REC-2, as well as REC-1, because the intensity of REC-2 use, as well as REC-1 use, in such areas is particularly high. Waters close to and visible from parks and other designated recreation areas and other areas and structures (such as piers, wharfs, docks, and bridges) that are open to the public are also areas of special importance for REC-2 because of the high intensity of REC-2 use in such areas. Needless to say, there is considerable overlap between coastal waters that are close to shore and open to the public for REC-1 and waters close to and visible from parks and other designated recreation areas and other areas and structures that are open to the public.

As suggested in Section III, certain locations or types of places might be much more important for a key beneficial use than other locations or types of places in the same water body or the same type of water body; this is especially true for the key beneficial use of recreation, REC-1 in particular. For example, ocean waters that are close to shore, open to the public for REC-1, and near sandy beaches are perhaps the most intensively used, and hence the most important, areas for REC-1 in the San Diego Region. Such waters are much more important for REC-1 than otherwise similar waters that are *not* open to the public, such as those within military bases, where the intensity of REC-1 use is typically low. Ocean waters that are close to shore, open to the public for REC-1, and near sandy beaches are also much more important for REC-1 than ocean waters relatively far from shore, where the intensity of REC-1 use is typically low at the ocean surface and still lower at depth below the ocean surface. As suggested in Section III, such differences are important to consider in decisions about how to prioritize work and how to allocate and use resources, for example in decisions about where to conduct ongoing monitoring and assessment pertinent to the key beneficial use of REC-1.

Table 8 identifies key areas (key water bodies and areas of special importance) for the key beneficial use of recreation in the San Diego Region. Table 9 identifies key areas (areas of special importance) for the key beneficial use of recreation in San Diego Bay. Both tables distinguish between the two key individual beneficial uses of REC-1 and REC-2, which together constitute the key beneficial use category of recreation. Table 10 provides links to sources of additional information about locations of key areas for the key beneficial use of recreation in the San Diego Region.

Agencies

The San Diego Water Board, and other government agencies, including the State Water Resources Control Board (State Water Board), county health departments, and US Environmental Protection Agency (USEPA) have responsibilities for protecting water bodies for the key beneficial use of REC-1 and/or for protecting the health of people who participate in REC-1 activities. The San Diego Water Board and other government agencies, including the State Water Board, California Coastal Commission, National Oceanic and Atmospheric Administration, US Coast Guard, and USEPA have responsibilities for protecting water bodies for the key beneficial use of REC-2 and/or for addressing anthropogenic influences, such as littering and petroleum spills and leaks, that could adversely affect REC-2 activities.

Table 8
Key Areas for the Key Beneficial Use of Recreation in the San Diego Region

<table>
<tr><td colspan="2"></td><td colspan="4">SAN DIEGO REGION
key areas
(key water bodies & areas of special importance)
for the key beneficial use of
RECREATION</td></tr>
<tr><td colspan="2"></td><td>CONTACT
WATER RECREATION
(REC-1)</td><td colspan="3">NON-CONTACT
WATER RECREATION
(REC-2)</td></tr>
<tr><td rowspan="3">key water bodies
for the
key beneficial use
of
RECREATION</td><td>first
(highest)
rank</td><td>ocean</td><td colspan="3">ocean
Mission Bay
San Diego Bay</td></tr>
<tr><td>second
rank</td><td>Mission Bay</td><td colspan="3">Dana Point Harbor
Oceanside Harbor
lagoons & estuaries</td></tr>
<tr><td>third
rank</td><td>San Diego Bay
Dana Point Harbor</td><td colspan="3">stream mouths
stream systems</td></tr>
<tr><td colspan="2" rowspan="6">areas of special importance
for the
key beneficial use of
RECREATION</td><td>coastal waters
close to shore &
open to the public
for REC-1</td><td>coastal waters
close to shore &
open to the public
for REC-1</td><td colspan="2" rowspan="2">waters close to & visible from
parks & other designated recreation areas
& other areas & structures
(piers, wharfs, docks, bridges, etc.)
open to the public</td></tr>
<tr><td>especially near
sandy beaches</td><td>especially near
sandy beaches</td></tr>
<tr><td>e.g., at:</td><td>e.g., at:</td><td colspan="2">e.g., at:</td></tr>
<tr><td>● State beaches &
State parks
e.g.,
▪ San Clemente State Beach
▪ Leucadia State Beach
▪ Cardiff State Beach
▪ Torrey Pines State Beach
▪ Border Field State Park</td><td>● State beaches &
State parks
e.g.,
▪ Crystal Cove State Park
▪ Doheny State Beach
▪ Carlsbad State Beach
▪ Moonlight State Beach
▪ San Elijo State Beach
▪ Silver Strand State Beach</td><td>● State beaches &
State parks
e.g.,
▪ San Onofre State Beach
▪ South Carlsbad State Beach
▪ Palomar Mountain State Park
▪ Cuyamaca Rancho State Park</td><td>● national monuments
▪ California Coastal National Monument
▪ Cabrillo National Monument
● national forests
▪ Cleveland National Forest
● other areas &
structures open to the
public
e.g.,
▪ Dana Point Harbor shoreline pathways & Island Way bridge
▪ Oceanside Harbor shoreline pathways
▪ San Luis Rey River mouth pathways & North Pacific St bridge
▪ San Dieguito Lagoon shoreline pathways & Grand Ave bridge stub
▪ Crystal Pier (Pacific Beach)
▪ San Diego River levee pathways & road crossings
▪ Imperial Beach Pier</td></tr>
<tr><td>● county, JPA, special
district & city beaches &
parks
e.g.,
▪ Main Beach (Laguna Beach)
▪ Baby Beach (Dana Point Harbor)
▪ Capistrano Beach Park
▪ North Beach (San Clemente)
▪ Central Beach (Coronado)</td><td>● county, JPA, special
district & city beaches &
parks
e.g.,
▪ Aliso Beach Park
▪ Salt Creek Beach Park
▪ Swami's Beach (Encinitas)
▪ Tide Beach Park (Solana Beach)
▪ North Beach (Del Mar)
▪ Mission Bay Park (San Diego)</td><td>● county, JPA, special
district & city beaches &
parks
e.g.,
▪ Heisler Park (Laguna Beach)
▪ Guajome Regional Park
▪ Buccaneer Beach Park (Oceanside)
▪ San Dieguito River Park
▪ Tecolote Canyon Natural Park (SD)
▪ Otay Valley Regional Park
▪ Tijuana River Valley Regional Park</td><td></td></tr>
<tr><td>● other sandy beach
areas
e.g.,
▪ Shelter Island Yacht Basin beaches</td><td>● other sandy beach
areas
e.g.,
▪ Shelter Island Yacht Basin beaches</td><td colspan="2"></td></tr>
</table>

Table 9
Key Areas for the Key Beneficial Use of Recreation in San Diego Bay

<table>
<tr><th colspan="4">SAN DIEGO BAY
key areas
(areas of special importance)
for the key beneficial use of
RECREATION</th></tr>
<tr><th>CONTACT
WATER RECREATION
(REC-1)</th><th colspan="3">NON-CONTACT
WATER RECREATION
(REC-2)</th></tr>
<tr><th>coastal waters
close to shore &
open to the public
for REC-1

especially near
sandy beaches</th><th>coastal waters
close to shore &
open to the public
for REC-1

especially near
sandy beaches</th><th colspan="2">waters close to & visible from
parks & other designated recreation areas
& other areas & structures
(piers, wharfs, docks, bridges, etc.)
open to the public</th></tr>
<tr><td>e.g., at:</td><td>e.g., at:</td><td colspan="2">e.g., at:</td></tr>
<tr><td>● State beaches
▪ Silver Strand State Beach</td><td>● State beaches
▪ Silver Strand State Beach</td><td>● State beaches
▪ Silver Strand State Beach</td><td>● national monuments
▪ Cabrillo National Monument</td></tr>
<tr><td>● county, JPA, special district & city beaches & parks
e.g.,
▪ Shelter Island Shoreline Park
▪ Liberty Station Park
▪ Spanish Landing Park
▪ Glorietta Bay Park
▪ Coronado Muni Golf Course beach
▪ Centennial Park
▪ Chula Vista Bayside Park
▪ Grand Caribe Shoreline Park
▪ Coronado Tidelands Park
▪ Coronado Landing Park</td><td>● county, JPA, special district & city beaches & parks
e.g.,
▪ Shelter Island Shoreline Park
▪ Liberty Station Park
▪ Spanish Landing Park
▪ Glorietta Bay Park
▪ Coronado Muni Golf Course beach
▪ Centennial Park
▪ Chula Vista Bayside Park
▪ Grand Caribe Shoreline Park
▪ Coronado Tidelands Park
▪ Coronado Landing Park</td><td rowspan="3">● county, JPA, special district & city beaches & parks
e.g.,
▪ Shelter Island Shoreline Park, incl. pier
▪ Point Loma Marina Park
▪ Liberty Station Park
▪ Spanish Landing Park
▪ Harbor Island Park
▪ Lane Field Park
▪ Tuna Harbor Park
▪ Ruocco Park
▪ Embarcadero Marina Park North
▪ Embarcadero Marina Park South, incl. pier
▪ Fifth Avenue Landing Park
▪ San Diego Bayfront Park
▪ Cesar Chavez Park, incl. pier
▪ Pepper Park, incl. pier
▪ Chula Vista Bayside Park, incl. pier
▪ Chula Vista Bayfront Park
▪ Chula Vista Marina View Park
▪ Grand Caribe Shoreline Park
▪ Glorietta Bay Park
▪ Glorietta Bay Promenade
▪ Coronado Muni Golf Course beach
▪ Coronado Tidelands Park
▪ Coronado Landing Park, incl. pier
▪ Centennial Park
▪ Harborview Park
▪ Bayview Park</td><td rowspan="2">● other areas & structures open to the public
e.g.,
▪ South Bay Biological Study Area
▪ shoreline areas from Coast Guard Station to 10th Avenue Marine Terminal
▪ Broadway Pier
▪ shoreline pathways in marina areas, such as:
▪ Shelter Island marinas
▪ Harbor Island marinas
▪ Downtown Marina
▪ National City Marina
▪ Chula Vista Harbor
▪ Glorietta Bay Marina
▪ Bayshore Bikeway</td></tr>
<tr><td>● other sandy beach areas
e.g.,
▪ Shelter Island Yacht Basin beaches</td><td>● other sandy beach areas
e.g.,
▪ Shelter Island Yacht Basin beaches</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
</table>

Table 10 (sheet 1 of 2)
Links to Sources of Additional Information about Locations of Key Areas
for the Key Beneficial Use of Recreation in the San Diego Region

coastal waters close to shore & open to the public for REC-1	
especially near sandy beaches	
● ***State beaches & State parks***	
source	*link*
California Department of Parks & Recreation	https://www.parks.ca.gov/parkindex
● ***county, JPA & special district & city beaches & parks***	
source	link
County of Orange San Diego Unified Port District "CaliforniaBeaches.com" *(also see websites of individual coastal cities)*	http://ocparks.com/beaches/ https://www.portofsandiego.org/recreation/get-park-info.html http://www.californiabeaches.com/beaches/
● ***other sandy beach areas***	
source	*link*
City of San Diego	https://www.sandiego.gov/sites/default/files/legacy/redevelopment-agency/pdf/northbay/shelterislandplansdport.pdf

Table 10 (sheet 2 of 2)
Links to Sources of Additional Information about Locations of Key Areas
for the Key Beneficial Use of Recreation in the San Diego Region

waters close to & visible from parks & other designated recreation areas & other areas & structures (piers, wharfs, docks, bridges, etc.) open to the public	
● ***State beaches & State parks***	
source	*link*
California Department of Parks & Recreation	https://www.parks.ca.gov/parkindex
● ***county, JPA, special district & city beaches & parks***	
source	*link*
County of Orange	http://ocparks.com/beaches/
County of Orange	http://ocparks.com/parks
Riverside County Regional Park & Open Space District	http://www.rivcoparks.org/natural-resources/
County of San Diego	http://www.sdparks.org/content/sdparks/en/FindAParkDirectory.html
San Dieguito River Park	http://www.sdrp.org/wordpress/
San Diego Unified Port District	https://www.portofsandiego.org/recreation/get-park-info.html
"CaliforniaBeaches.com"	http://www.californiabeaches.com/beaches/
(also see websites of individual cities)	
● ***national monuments***	
source	*link*
National Park Service	https://www.nps.gov/cabr/index.htm
US Bureau of Land Management	http://www.blm.gov/publish/content/ca/en/prog/nlcs/California_Coastal_NM.html
Wikipedia	https://en.wikipedia.org/wiki/List_of_National_Monuments_of_the_United_States
● ***national forests***	
source	*link*
US Forest Service	http://www.fs.usda.gov/cleveland
● ***other areas & structures open to the public***	
source	*link*
"SeeCalifornia.com" (piers)	http://www.seecalifornia.com/piers/piers-list.html
San Diego Association of Governments (Bayshore Bikeway)	http://www.sandag.org/index.asp?projectid=63&fuseaction=projects.detail
"TrailLink.com" (trails)	http://www.traillink.com/trailsearch.aspx?state=CA
"SoCalHiker.net" (trails)	https://socalhiker.net/trails/orange-county-hiking-trails/#10/33.5723/-117.6938
"AllTrails.com" (trails)	http://www.alltrails.com/us/california/san-diego
"SanDiegoMagazine.com" (trails)	http://www.sandiegomagazine.com/San-Diego-Magazine/April-2015/San-Diegos-Top-50-Trails/
"HikingSDCounty.com" (trails)	http://hikingsdcounty.com/hiking-trails-in-san-diego-county-map-view/
US Bureau of Land Management (public lands)	http://www.blm.gov/ca/st/en/info/iac/maps_pubroom.html

Key Beneficial Use: Habitats and Ecosystems

Characteristics, Concerns, Parameters, and Influences

The key beneficial use of habitats and ecosystems is a beneficial use category that includes a suite of key individual beneficial uses, all of which have to do with the habitats and ecosystems in which natural biological communities and populations of native species occur and on which they depend. Some of these key individual beneficial uses are specific to habitats and ecosystems in certain water body types with certain salinity and/or temperature regimes and/or located in certain positions in the landscape, i.e.:

- Warm freshwater habitat;
- Cold freshwater habitat;
- Inland saline water habitat;
- Estuarine habitat; and
- Marine habitat.

Others in this suite of key individual beneficial uses have to do with habitats and ecosystems that could be present in various water body types with various salinity and/or temperature regimes and located in various positions in the landscape, i.e.:

- Wildlife habitat;
- Rare, threatened, or endangered species;
- Preservation of biological habitats of special significance;
- Migration of aquatic organisms; and
- Spawning, reproduction, and/or early development.

All of these key individual beneficial uses are uses of water that is in water bodies, not water that has been removed from water bodies, so the key beneficial use of habitats and ecosystems is an *in situ* use.

The health of habitats and ecosystems is the primary concern with regard to this key beneficial use. Accordingly, key parameters for this key beneficial use have to do with the distribution, extent, diversity, and condition of various habitats and various elements of various ecosystems, such as natural biological communities, and populations of native species.

Both natural and anthropogenic influences can affect habitats and ecosystems, and both can do so directly and/or indirectly, through various pathways and mechanisms, and at various scales. In general, habitats and ecosystems can be considered healthy to the degree that they are natural, i.e., affected only by natural influences. Because natural influences on habitats and ecosystems vary over time, it is natural for the characteristics of habitats and ecosystems to vary over time as well. Distinguishing between the effects of natural and anthropogenic influences can be difficult. For example, natural processes, such as wildfire, flooding, erosion, and sedimentation, can affect water body conditions in ways that affect habitats and ecosystems, but such natural processes also can be affected by anthropogenic influences. In some cases, it might not be readily apparent whether or to what extent water body conditions, and the resulting characteristics of habitats and ecosystems, are different than those that would have occurred in the absence of anthropogenic influences on natural processes.

The health of habitats and ecosystems can be adversely affected by a variety of anthropogenic influences, including but not limited to releases of various pollutants (such as nutrients, organic matter, sediment, heat, brine, metals, pesticides, and trash); entrainment and impingement of organisms in cooling water, desalination, and other systems that remove water from water bodies; dredging, filling, channelization, and other physical modification or destruction of water bodies or portions thereof; fragmentation of habitats; creation of barriers to the movement of fish and other organisms; modification of hydrological, tidal exchange, or salinity regimes; introductions of invasive non-native species of plants and animals; fishing; hunting; climate change; and ocean acidification.

The adverse effects of anthropogenic influences on habitats and ecosystems can be cumulative and long-lasting. In some cases, such as degradation or destruction of wetland habitat resulting from dredging, filling, channelization, and/or modification of hydrological regimes, those adverse effects can be essentially permanent in the absence of active restoration. In other cases, such as extinction of a native species resulting from habitat degradation or destruction, those adverse effects are absolutely permanent.

The key beneficial use of habitats and ecosystems is the key beneficial use for which protection and restoration of the integrity, or health, of waters is most complicated and difficult. This is in part because habitats and ecosystems have many interrelated components, in part because many different influences can directly and/or indirectly affect one or more of those components and do so through various pathways and mechanisms, and in part because chemical ***and*** physical ***and*** biological integrity of waters are all necessary in order for habitats and ecosystems to be healthy. Accordingly, it can be difficult to ascertain cause-and-effect relationships; to determine which factors are most limiting for various habitats, various elements of various ecosystems, and various species; and to determine which actions would contribute most to protection and restoration of the health of habitats and ecosystems. The difficulty of bringing about meaningful restoration of habitats and ecosystems can be further compounded to the degree that infrastructure, land uses, land ownership, costs, other water uses, and/or other factors are not conducive to restoration. The difficulty of bringing about meaningful *restoration* of habitats and ecosystems underscores the importance of *protection* of habitats and ecosystems.

The key beneficial use of habitats and ecosystems is arguably the key beneficial use that is most vulnerable to and certainly the key beneficial use that is most severely affected by anthropogenic influences. Recovery of stream, wetland, and riparian systems is the subject of Chapter 3 of the Practical Vision[13] endorsed by the San Diego Water Board in November 2013 and, in part, of Board Resolution No. R9-2015-0020,[14] which was adopted by the Board in February 2015. The importance of, the vulnerability of, and the damage done to habitats and ecosystems, as well as the need for, the importance of, and the difficulty of restoring habitats and ecosystems are recognized by Board Resolution No. R9-2015-0041, "Resolution to Support Restoration of Aquatic Ecosystems in the San Diego Region,"[15] which was adopted by the Board in June 2015.

The table in Attachment 1 includes a brief overview of the key beneficial use of habitats and ecosystems.

[13] Chapter 3 of the Practical Vision is on the San Diego Water Board website at: http://www.waterboards.ca.gov/sandiego/water_issues/Practical_Vision/docs/PV_3_Recovery_of_Stream,_Wetlands,_and_Riparian_Systems_Dec2013.pdf.
[14] San Diego Water Board Resolution No. R9-2015-0020 is on the San Diego Water Board website at: http://www.waterboards.ca.gov/sandiego/board_decisions/adopted_orders/2015/R9-2015-0020.pdf.
[15] San Diego Water Board Resolution No. R9-2015-0041 is on the San Diego Water Board website at: http://www.waterboards.ca.gov/sandiego/board_decisions/adopted_orders/2015/R9-2015-0041.pdf.

Key Areas

A number of water body types with a variety of characteristics are key areas for the key beneficial use of habitats and ecosystems in the San Diego Region; this is to be expected because different natural biological communities and different native species make use of and depend on different types of habitats associated with different types of water bodies and different parts of water bodies of those types. Some native species, such as southern California steelhead trout, use, depend on, and move between different types of water bodies and/or different types of habitats for different purposes and/or at different life stages. Such species can be particularly vulnerable, because unsuitable characteristics or conditions in just one of those types of water bodies or habitats – or barriers to movement between them – can result in extirpation. For the same reason, other native species that use, depend on, and move between aquatic and terrestrial habitats, such as certain species of amphibians, reptiles, and birds, also can be particularly vulnerable.

Three related and partially overlapping types of areas are areas of special importance for the key beneficial use of habitats and ecosystems:

- Areas with habitats or ecosystems of special importance or value (or where such habitats or ecosystems could be restored);
- Areas used (or potentially used) by a special status or vulnerable native species; and
- Designated areas with extra protection for habitats and ecosystems.

Some areas of one of these types are also areas of one or both of the other types. For example, wetlands and eelgrass beds, both of which are habitats of special importance and value, are found in San Diego Bay National Wildlife Refuge (NWR), a designated area with extra protection for habitats and ecosystems. Salt marsh bird's-beak and light-footed Ridgway's rail, both of which are special status native species, occur in wetlands, including those in San Diego Bay NWR. Similarly, the green sea turtle, also a special status native species, uses eelgrass beds, including those in San Diego Bay NWR.

Some habitats and ecosystems (and types thereof) that are particularly important or valuable would be so even if their extent, distribution, and/or condition had not been substantially diminished by anthropogenic influences. However, because the extent, distribution, and/or condition of certain habitats and ecosystems (and types thereof) have been substantially diminished by anthropogenic influences, areas where such habitats and ecosystems remain or could be restored are particularly important and valuable. Similarly, some native species that are uncommon and vulnerable would be so even if their distribution and/or abundance had not been substantially diminished by anthropogenic influences. However, because the distribution and/or abundance of certain native species have been substantially diminished by anthropogenic influences, areas where such species continue to occur or could occur in the future are particularly important and valuable.

There are a number of categories of designated areas with extra protection for habitats and ecosystems and a number of different entities and different kinds of entities that designate, own, and/or have responsibility for management of such areas. Some areas of this type overlap with or are adjacent to other areas of this type. For example, Heisler Park Area of Special Biological Significance is located within Laguna Beach State Marine Reserve, which is located immediately adjacent to Laguna Beach State Marine Conservation Area.

Assuming all other characteristics are the same, waters and places that are more pristine are generally more important and valuable for the key beneficial use of habitats and ecosystems than those that are less so. Nevertheless, even though anthropogenic influences have had adverse effects – in some cases, severe adverse effects – on the key beneficial use of habitats and ecosystems in many waters and places, some of those waters and places continue to support habitats and ecosystems to some degree, and some of those waters and places are key areas for the key beneficial use of habitats and ecosystems. For example, although the San Diego River estuary is now a small, channelized remnant of what was once a much larger expanse of wetlands, that remnant is a key area for the key beneficial use of habitats and ecosystems.

The importance or value of various waters and places for the key beneficial use of habitats and ecosystems is determined by the intrinsic characteristics of those waters and places, not by official designations, public access, jurisdictional boundaries, or ownership. Although some areas with habitats and ecosystems of special importance or value have official designations that provide extra protection, others do not. In contrast to some other key beneficial uses, key areas for the key beneficial use of habitats and ecosystems include waters and places that are not open to or readily accessible by the public. For example, waters within military bases might not be key areas for the key beneficial use of recreation because of restrictions on public access, but such restrictions do not diminish the importance of those waters for the key beneficial use of habitats and ecosystems.

Table 11 identifies key areas (key water bodies and areas of special importance) for the key beneficial use of habitats and ecosystems in the San Diego Region. Table 12 identifies key areas (areas of special importance) for the key beneficial use of habitats and ecosystems in San Diego Bay. Table 13 provides links to sources of additional information about locations of key areas for the key beneficial use of habitats and ecosystems in the San Diego Region.

Agencies

The San Diego Water Board is one of a number of California and federal government agencies with responsibilities for protecting and restoring habitats and ecosystems. Those agencies include the California Department of Fish and Wildlife, California Wildlife Conservation Board, California Coastal Commission, State Coastal Conservancy, State Lands Commission, California Department of Parks and Recreation, California Natural Resources Agency, State Water Resources Control Board, California Environmental Protection Agency, US Fish and Wildlife Service, National Oceanic and Atmospheric Administration, US Army Corps of Engineers, US Forest Service, National Park Service, US Natural Resources Conservation Service, US Bureau of Land Management, and US Environmental Protection Agency.

Table 11
Key Areas for the Key Beneficial Use of Habitats and Ecosystems in the San Diego Region

		SAN DIEGO REGION key areas (key water bodies & areas of special importance) for the key beneficial use of HABITATS & ECOSYSTEMS		
key water bodies for the key beneficial use of HABITATS & ECOSYSTEMS	**first (highest) rank**	**ocean San Diego Bay lagoons & estuaries stream systems**		
	second rank	Mission Bay stream mouths		
	third rank	*ponds harbors*		
areas of special importance for the key beneficial use of HABITATS & ECOSYSTEMS		**areas with habitats or ecosystems of special importance or value (or where such habitats or ecosystems could be restored)**	**areas used (or potentially used) by a special status or vulnerable native species**	**designated areas with extra protection for habitats & ecosystems**
		e.g., areas with:	*e.g., areas used by:*	*e.g.,*
		● ***vernal pools*** *e.g.,* ▪ on Santa Rosa Plateau ▪ in Ramona	● ***endangered, threatened, rare, or special concern species (federal or State; incl. proposed, candidate, under review & "watch list" species, etc.)*** *e.g.,* ▪ Riverside fairy shrimp ▪ San Diego fairy shrimp ▪ white abalone ▪ arroyo chub ▪ tidewater goby ▪ southern California steelhead trout ▪ arroyo toad ▪ western (aka Pacific) pond turtle ▪ southwestern willow flycatcher ▪ least Bell's vireo	● ***national wildlife refuges*** ▪ e.g., San Diego National Wildlife Refuge
		● ***wetlands*** *e.g.,* ▪ Laguna Lakes (Or Co) ▪ along San Onofre Creek ▪ Santa Margarita River Estuary ▪ San Luis Rey River mouth ▪ Guajome Lake & Marsh ▪ Los Peñasquitos Lagoon ▪ San Diego River Estuary ▪ Famosa Slough		● ***national monuments*** ▪ e.g., California Coastal National Monument
		● ***seagrass beds*** *e.g.,* ▪ eelgrass beds in: ◦ Agua Hedionda Lagoon ◦ Mission Bay ▪ surfgrass beds at: ◦ Dana Point ◦ La Jolla ◦ Sunset Cliffs / Point Loma		● ***national estuarine research reserves (NERRs)*** ▪ Tijuana River NERR
		● ***rocky intertidal*** *e.g.,* ▪ along Laguna Beach ▪ at La Jolla ▪ at Sunset Cliffs / Point Loma	● ***bird species protected under federal Migratory Bird Treaty Act*** *e.g.,* ▪ red-winged blackbird ▪ common yellowthroat ▪ killdeer ▪ cinnamon teal ▪ white-winged scoter ▪ snowy egret ▪ great egret ▪ green heron ▪ little blue heron ▪ great blue heron ▪ pied-billed grebe ▪ black oystercatcher ▪ Pacific loon ▪ California least tern ▪ Forster's tern ▪ brown pelican ▪ American white pelican	● ***critical habitat areas pursuant to federal Endangered Species Act (designated or proposed)*** ▪ e.g., for southern California steelhead trout in San Mateo Creek
		● ***subtidal rocky reefs, including kelp forests*** *e.g.,* ▪ off Laguna Beach ▪ off San Mateo Point ▪ off Camp Pendleton ▪ off Carlsbad, Encinitas & Solana Beach ▪ off La Jolla ▪ off Sunset Cliffs / Point Loma		● ***national forests*** ▪ Cleveland National Forest
				● ***wilderness areas pursuant to federal Wilderness Act*** ▪ e.g., Pine Creek Wilderness
				● ***State marine reserves*** ▪ e.g., Laguna Beach State Marine Reserve
				● ***State marine conservation areas (SMCAs)*** ▪ e.g., San Diego - Scripps Coastal SMCA
				● ***State ecological reserves*** ▪ e.g., Agua Hedionda Lagoon Ecological Reserve
				● ***State wildlife areas*** ▪ e.g., Hollenbeck Canyon Wildlife Area
				● ***State natural preserves & State natural reserves*** ▪ e.g., Trestles Wetland Natural Preserve ▪ e.g., Torrey Pines State Natural Reserve
				● ***State beaches & State parks*** ▪ e.g., San Onofre State Beach ▪ e.g., Crystal Cove State Park
				● ***State water quality protection areas*** ▪ e.g., La Jolla Area of Special Biological Significance
				● ***university protected areas*** ▪ e.g., Kendall - Frost Mission Bay Marsh Preserve
				● ***county, JPA, special district & city protected areas*** ▪ e.g., Northern Wildlife Preserve (Mission Bay)
				● ***natural community & habitat conservation plan areas*** ▪ e.g., San Diego County Multiple Habitat Conservation Program area
				● ***non-governmental organization protected areas*** ▪ e.g., Starr Ranch Sanctuary
				● ***restoration & mitigation areas*** ▪ e.g., at San Dieguito Lagoon
				● ***conservation easements***

Table 12
Key Areas for the Key Beneficial Use of Habitats and Ecosystems in San Diego Bay

SAN DIEGO BAY key areas (areas of special importance) for the key beneficial use of HABITATS & ECOSYSTEMS			
areas with habitats or ecosystems of special importance or value (or where such habitats or ecosystems could be restored)	**areas used (or potentially used) by a special status or vulnerable native species**		**designated areas with extra protection for habitats & ecosystems**
e.g., areas with:	*e.g., areas used by:*		*e.g.,*
● ***wetlands*** *e.g.,* ▪ coastal salt marsh at the mouths of Sweetwater River & Telegraph Canyon ▪ intertidal flats & shallow subtidal in the south bay & along the bay side of Silver	● ***endangered, threatened, rare, or special concern species (federal or State; incl. proposed, candidate, under review & "watch list" species, etc.)*** *e.g.,* ▪ salt marsh bird's-beak ▪ green sea turtle ▪ Belding's savannah sparrow ▪ light-footed Ridgway's rail ▪ western snowy plover ▪ California least tern	● ***bird species protected under federal Migratory Bird Treaty Act*** *e.g.,* ▪ marbled godwit ▪ whimbrel ▪ long-billed curlew ▪ American avocet ▪ black-necked stilt ▪ black-crowned night heron ▪ brant ▪ bufflehead ▪ surf scoter ▪ red-breasted merganser ▪ western grebe ▪ common loon ▪ double-crested cormorant ▪ belted kingfisher ▪ black skimmer ▪ elegant tern ▪ Caspian tern ▪ gull-billed tern ▪ osprey ▪ peregrine falcon	● ***national wildlife refuges (NWRs)*** ▪ San Diego Bay NWR ● ***national monuments*** ▪ Cabrillo National Monument ● ***critical habitat areas pursuant to federal Endangered Species Act (designated or proposed)*** ▪ e.g., for western snowy plover in San Diego Bay NWR ● ***State beaches*** ▪ Silver Strand State Beach ● ***county, JPA, special district & city protected areas*** ▪ e.g., South Bay Biological Study Area ● ***restoration & mitigation areas*** ▪ e.g., Chula Vista Wildlife Reserve
● ***eelgrass beds*** *e.g.,* ▪ along outside of Shelter Island ▪ in "NTC boat channel" ▪ in south bay ▪ along shoreline of Naval Amphibious Base Coronado ▪ off Coronado Tidelands Park			
● ***unarmored shorelines*** *e.g., at* ▪ Chula Vista Bayside Park ▪ Grand Caribe Shoreline Park			

Table 13 (sheet 1 of 4)
Links to Sources of Additional Information about Locations of Key Areas for the Key Beneficial Use of Habitats and Ecosystems in the San Diego Region

areas with habitats or ecosystems of special importance or value (or where such habitats or ecosystems could be restored) *e.g., areas with:*	
● *vernal pools*	
source	*link*
California Department of Fish & Wildlife	https://www.wildlife.ca.gov/Conservation/Plants/Vernal-Pools
US Fish & Wildlife Service	https://www.fws.gov/carlsbad/SpeciesStatusList/RP/19980903_RP_Vernal%20Pools%20of%20Southern%20CA.pdf
Riverside County Regional Park & Open Space District	http://www.rivcoparks.org/education/santa-rosa-plateau/santa-rosa-plateau/
California Vernal Pools	http://www.vernalpools.org/proceedings/bauder.pdf
California Chaparral Institute	http://www.californiachaparral.com/vernalpools.html
● *wetlands*	
source	*link*
EcoAtlas	http://www.ecoatlas.org/
Southern California Wetlands Recovery Project	http://scwrp.org/
Southern California Coastal Water Research Project	http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/826_WetlandsHistory.pdf
Southern California Coastal Water Research Project	http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/589_SoCalTsheetAtlas.pdf
US Coast Survey Maps of California (1851-1889)	http://www.caltsheets.org/socal/
San Francisco Estuary Institute	http://www.sfei.org/sites/default/files/biblio_files/SanDiegoLagoons_HistoricalEcologyStudy_SFEI_2014_lowres.pdf
Southern California Wetlands Inventory	http://resources.ca.gov/wetlands/geo_info/so_cal.html
US Geological Survey	http://water.usgs.gov/nwsum/WSP2425/mapping.html
California Natural Resources Agency	http://resources.ca.gov/docs/SOSW_report_with_cover_memo_10182010.pdf
● *seagrass beds*	
source	*link*
Southern California Coastal Water Research Project	ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/632_EelgrassRMP.pdf
EcoAtlas	http://www.ecoatlas.org/data/#eelgrass
Sea Grant California	https://caseagrant.ucsd.edu/news/seagrass-in-the-spotlight
UC Santa Cruz	http://www.eeb.ucsc.edu/pacificrockyintertidal/target/target-species-phyllospadix.html
● *rocky intertidal*	
source	*link*
Multi-Agency Rocky Intertidal Network	http://www.marine.gov/About/StudyArea.html
UC Santa Cruz	http://www.eeb.ucsc.edu/pacificrockyintertidal/sites/sites-region/sites-region-ca-south.html
● *subtidal rocky reefs, including kelp forests*	
source	*link*
Southern California Coastal Water Research Project	http://ftp.sccwrp.org/pub/download/DOCUMENTS/TechnicalReports/685_B08RockyReef.pdf
Southern California Academy of Sciences	http://scholar.oxy.edu/cgi/viewcontent.cgi?article=2193&context=scas
Southern California Bight Regional Kelp Aerial Surveys	http://kelp.sccwrp.org/home.html
● *unarmored shorelines*	
source	*link*
California State Coastal Conservancy	http://scc.ca.gov/webmaster/ftp/pdf/san_diego_bay_native_oyster_restoration_plan_final_reduced (see Figure 7)
Surfrider Foundation	http://www.beachapedia.org/State_of_the_Beach/State_Reports/CA/Shoreline_Structures

Table 13 (sheet 2 of 4)
Links to Sources of Additional Information about Locations of Key Areas for the Key Beneficial Use of Habitats and Ecosystems in the San Diego Region

areas used (or potentially used) by a special status or vulnerable native species *e.g., areas used by:*	
● endangered, threatened, rare, or special concern species (federal or State; incl. proposed, candidate, under review & "watch list" species, etc.)	
source	*link*
California Department of Fish & Wildlife	http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/
California Department of Fish & Wildlife	http://www.dfg.ca.gov/wildlife/nongame/list.html
California Department of Fish & Wildlife	https://www.wildlife.ca.gov/Conservation/SSC
California Department of Fish & Wildlife	https://www.wildlife.ca.gov/Conservation/SSC/Birds
US Fish & Wildlife Service	https://www.fws.gov/endangered/
UC Irvine	http://nathistoc.bio.uci.edu/birds/
County of Riverside	http://rctlma.org/Portals/0/mshcp/volume2/birds.html
San Diego Natural History Museum	http://www.sdplantatlas.org/BirdAtlas/BirdPages.aspx
San Diego Natural History Museum	http://www.sdnhm.org/science/birds-and-mammals/projects/san-diego-county-bird-atlas/bird-atlas-google-earth-presentation/
● bird species protected under federal Migratory Bird Treaty Act	
source	*link*
US Fish & Wildlife Service	https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php
UC Irvine	http://nathistoc.bio.uci.edu/birds/
County of Riverside	http://rctlma.org/Portals/0/mshcp/volume2/birds.html
San Diego Natural History Museum	http://www.sdplantatlas.org/BirdAtlas/BirdPages.aspx
San Diego Natural History Museum	http://www.sdnhm.org/science/birds-and-mammals/projects/san-diego-county-bird-atlas/bird-atlas-google-earth-presentation/

Table 13 (sheet 3 of 4)
Links to Sources of Additional Information about Locations of Key Areas for the Key Beneficial Use of Habitats and Ecosystems in the San Diego Region

designated areas with extra protection for habitats & ecosystems *e.g.,*	
● ***national wildlife refuges***	
source	*link*
US Fish & Wildlife Service	https://www.fws.gov/refuges/
● ***national monuments***	
source	*link*
National Park Service US Bureau of Land Management Wikipedia	https://www.nps.gov/cabr/index.htm http://www.blm.gov/publish/content/ca/en/prog/nlcs/California_Coastal_NM.html https://en.wikipedia.org/wiki/List_of_National_Monuments_of_the_United_States
● ***national estuarine research reserves***	
source	*link*
National Oceanic & Atmospheric Administration	https://coast.noaa.gov/nerrs/
● ***national forests***	
source	*link*
US Forest Service	http://www.fs.usda.gov/cleveland
● ***wilderness areas pursuant to federal Wilderness Act***	
source	*link*
"Wilderness.net" (University of Montana)	http://www.wilderness.net/map.cfm?xmin=-13847325.1057&ymin=3833847.5679&xmax=-12704362.5444&ymax=5161307.7659
● ***critical habitat areas pursuant to federal Endangered Species Act (designated or proposed)***	
source	*link*
US Fish & Wildlife Service US Fish & Wildlife Service	https://ecos.fws.gov/ecp/report/table/critical-habitat.html http://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77
● ***State marine reserves & State marine conservation areas***	
source	*link*
California Department of Fish & Wildlife	https://www.wildlife.ca.gov/Conservation/Marine/MPAs/Network/Southern-California
● ***State ecological reserves & State wildlife areas***	
source	*link*
California Department of Fish & Wildlife	https://www.wildlife.ca.gov/lands/places-to-visit
● ***State natural preserves, State natural reserves, State beaches & State parks***	
source	*link*
California Department of Parks & Recreation	https://www.parks.ca.gov/parkindex
● ***State water quality protection areas***	
source	*link*
State Water Resources Control Board	http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs_areas.shtml
● ***university protected areas***	
source	*link*
University of California San Diego State University	http://www.ucnrs.org/reserves.html http://fs.sdsu.edu/our-reserves/

Table 13 (sheet 4 of 4)
Links to Sources of Additional Information about Locations of Key Areas for the Key Beneficial Use of Habitats and Ecosystems in the San Diego Region

designated areas with special protections for habitats & ecosystems (continued) *e.g.,*	
● city, county, special district & JPA protected areas	
source	*link*
County of Orange	http://ocparks.com/beaches/
County of Orange	http://ocparks.com/parks
Riverside County Regional Park & Open Space District	http://www.rivcoparks.org/natural-resources/
County of San Diego	http://www.sandiegocounty.gov/content/sdc/parks/parklist.html#Preserves
San Dieguito River Park	http://www.sdrp.org/wordpress/
City of San Diego	https://www.sandiego.gov/park-and-recreation/parks/regional/missionbay/mbtour
● natural community & habitat conservation plan areas	
source	*link*
California Department of Fish & Wildlife	https://www.wildlife.ca.gov/Conservation/Planning/NCCP
US Fish & Wildlife Service	http://ecos.fws.gov/ecp0/conservationPlan/
California Native Plant Society	http://www.cnps.org/cnps/conservation/nccp-hcps.php
● non-governmental organization protected areas	
source	*link*
National Audubon Society	http://www.starrranch.org/
Buena Vista Audubon Society	http://bvaudubon.org/land-acquisition/
San Elijo Lagoon Conservancy	http://www.sanelijo.org/properties.html
San Diego Audubon Society	http://www.sandiegoaudubon.org/our-work/sanctuaries/silverwood-wildlife-sanctuary
● restoration & mitigation areas	
source	*link*
EcoAtlas	http://www.ecoatlas.org/
California Department of Fish & Wildlife	https://www.wildlife.ca.gov/Conservation/Planning/Banking/Approved-Banks
US Fish & Wildlife Service	https://www.fws.gov/endangered/landowners/conservation-banking.html
US Army Corps of Engineers	https://ribits.usace.army.mil/ribits_apex/f?p=107:2
Southern California Wetlands Recovery Project	http://scwrp.org/
UC Santa Barbara	http://marinemitigation.msi.ucsb.edu/mitigation_projects/
● conservation easements	
source	*link*
California Natural Resources Agency	https://easements.resources.ca.gov/

Attachment 1 (sheet 1 of 2)
Beneficial Uses of Waters in the San Diego Region: Key Beneficial Uses

beneficial use category	beneficial use	beneficial use abbreviation	is this beneficial use in the:			type of use (extractive or *in situ*)	defining use	primary concern	basic question	key parameters	public health, natural resources & regulatory agencies (other than San Diego Water Board) with responsibilities related to this beneficial use	notes
			Basin Plan?	Ocean Plan?	Enclosed Bays & Estuaries Plan?							
drinking water supply	municipal & domestic supply	MUN	yes	no	no	extractive	drinking water supply	human health	is the water safe for human consumption?	parameters addressed by primary drinking water standards	● State Water Resources Control Board ● US Environmental Protection Agency	guidance has been issued for other parameters not addressed by primary drinking water standards
fish & shellfish consumption	commercial & sport fishing	COMM	yes	yes	yes	*in situ* & extractive (fish & shellfish that live in the water are taken out of the water for human consumption)	human consumption of fish &/or shellfish	human health	are fish & shellfish safe for human consumption?	persistent bioaccumulative toxic substances (e.g., PCBs & Hg), biotoxins & human pathogens	● State Water Resources Control Board ● CA Office of Environmental Health Hazard Assessment ● CA Department of Public Health ● US Environmental Protection Agency	fecal indicator bacteria (FIB), rather than pathogens *per se*, are used in routine monitoring
	aquaculture	AQUA	yes	yes (mari-culture)	yes							
	shellfish harvesting	SHELL	yes	yes	yes							
recreation	contact water recreation	REC-1	yes	yes	no	*in situ*	swimming	human health	is water quality suitable for swimming?	human pathogens	● State Water Resources Control Board ● county health departments ● US Environmental Protection Agency	fecal indicator bacteria (FIB), rather than pathogens *per se*, are used in routine monitoring
	non-contact water recreation	REC-2	yes	yes	no		aesthetic enjoyment	aesthetic condition of water bodies	is the water body aesthetically pleasing?	visible anthropogenic trash	● State Water Resources Control Board ● CA Coastal Commission ● CA Department of Fish & Wildlife ● National Oceanic & Atmospheric Administration ● US Coast Guard ● US Environmental Protection Agency	other parameters pertinent to the aesthetic condtion of water bodies include oil slicks, odors & unsightly scum & algal growth

Attachment 1 (sheet 2 of 2)
Beneficial Uses of Waters in the San Diego Region: Key Beneficial Uses

beneficial use category	beneficial use	beneficial use abbreviation	is this beneficial use in the:			type of use (extractive or *in situ*)	defining use	primary concern	basic question	key parameters	public health, natural resources & regulatory agencies (other than San Diego Water Board) with responsibilities related to this beneficial use	notes
			Basin Plan?	Ocean Plan?	Enclosed Bays & Estuaries Plan?							
habitats & ecosystems	warm freshwater habitat	WARM	yes	no	no	*in situ*	habitats for native fish & wildlife	health of habitats & ecosystems	are habitats & ecosystems healthy?	distribution, extent, diversity & condition of habitats, natural biological communities , populations of native species & other elements of ecosystems	● CA Department of Fish & Wildlife ● CA Wildlife Conservation Board ● CA Coastal Commission ● State Coastal Conservancy ● State Lands Commission ● CA Department of Parks & Recreation ● CA Natural Resources Agency ● State Water Resources Control Board ● CA Environmental Protection Agency ● US Fish & Wildlife Service ● National Oceanic & Atmospheric Administration ● US Army Corps of Engineers ● US Forest Service ● National Park Service ● US Natural Resources Conservation Service ● US Bureau of Land Management ● US Environmental Protection Agency	chemical, physical & biological integrity of waters are all necessary in order for habitats & ecosystems to be healthy
	cold freshwater habitat	COLD	yes	no	no							
	inland saline water habitat	SAL	yes	no	no							
	estuarine habitat	EST	yes	no	yes							
	marine habitat	MAR	yes	yes	yes							
	wildlife habitat	WILD	yes	no	no							
	preservation of biological habitats of special significance	BIOL	yes	yes (ASBS only)	no							
	rare, threatened, or endangered species	RARE	yes	yes	no							
	migration of aquatic organisms	MIGR	yes	yes	no							
	spawning, reproduction &/or early development	SPWN	yes	yes	no							

Attachment 2
Beneficial Uses of Waters in the San Diego Region: Other than Key Beneficial Uses

beneficial use category	beneficial use	beneficial use abbreviation	is this beneficial use in the:			type of use (extractive or *in situ*)	defining use	primary concern	basic question	key parameters	notes
			Basin Plan?	Ocean Plan?	Enclosed Bays & Estuaries Plan?						
water supply other than for drinking water	agricultural supply	AGR	yes	no	no	extractive	agricultural supply	effects on crops & livestock	is water quality suitable for irrigation and other ag uses?	TDS, sodium, boron, etc.	some of these BUs are not water quality-dependent and/or the ***availability*** of water for these BUs may be of much greater concern than the ***quality*** of water; water quality that is suitable for drinking water supply is typically suitable for BUs in this category
	industrial process supply	PROC	yes	no	no	extractive	industrial process supply	effects on industrial processes	is water quality suitable for industrial uses that are water quality-dependent?	depends on the industrial processes for which water is to be used	
	industrial service supply	IND	yes	yes	no	extractive	industrial service supply	availability of water	is water available for industrial uses that are *not* water quality-dependent?	volume / flowrate	
	groundwater recharge	GWR	yes	no	no	*in situ* & extractive	groundwater recharge	effects on beneficial uses of the groundwater basin to be recharged	is water quality suitable for recharging groundwater?	depends on beneficial uses of the groundwater basin to be recharged	
	freshwater replenishment	FRSH	yes	no	no	*in situ* & extractive	freshwater replenishment	effects on beneficial uses of the surface water body to be replenished	is water quality suitable for replenishing surface water?	depends on beneficial uses of the surface water body to be replenished	
navigation	navigation	NAV	yes	yes	no	*in situ*	navigation	safety of navigation	is water quality suitable for vessels to navigate safely?	floating objects (e.g., logs)	no known water quality problems or threats for this BU
hydropower	hydropower generation	POW	yes	no	no	*in situ* & extractive	hydropower generation	effects on hydroelectric power generation facilities	is water quality suitable for hydroelectric power generation?	floating objects (e.g., logs)	no known water quality problems or threats for this BU

Attachment 3
Water Body Types in the San Diego Region: Coastal Waters

water body type	characteristics	examples	Basin Plan category	water body group	salinity	landscape position
ocean	marine waters outside of harbors, bays, lagoons & estuaries, etc.	open coast ocean waters *(no others in the San Diego Region)*	coastal waters	ocean	marine	coastal
harbors	constructed navigable enclosed coastal small craft harbors; open to the ocean & tidal exchange	Dana Point Harbor, Del Mar Boat Basin & Oceanside Harbor *(no others in the San Diego Region)*		coastal embayments		
bays	natural (albeit modified) navigable enclosed coastal waters, at the bottom of watersheds & immediately adjacent to the ocean, including associated wetlands & tidally-influenced portions of tributary streams; open to the ocean & tidal exchange	Mission Bay & San Diego Bay *(no others in the San Diego Region)*			marine to brackish	
lagoons & estuaries	natural (albeit modified) shallow enclosed coastal waters, at the bottom of watersheds & immediately adjacent to the ocean, including associated wetlands & tidally-influenced portions of tributary streams; some intermittently <u>*not*</u> open to the ocean; open to tidal exchange when open to the ocean	Santa Margarita River Estuary, Agua Hedionda Lagoon, Batiquitos Lagoon, San Elijo Lagoon, San Dieguito Lagoon, Los Peñasquitos Lagoon, San Diego River Estuary, Famosa Slough & Tijuana River Estuary *(no others in the San Diego Region)*	coastal waters: coastal lagoons			
stream mouths	natural (perhaps modified) shallow enclosed coastal waters, at the bottom of watersheds & immediately adjacent to the ocean, including associated wetlands & tidally-influenced portions of tributary streams; some usually <u>*not*</u> open to the ocean; tidal exchange typically limited even when open to the ocean; some occasionally have little or no surface water	Aliso Creek mouth, Salt Creek mouth,* San Juan Creek mouth, San Mateo Creek mouth, San Onofre Creek mouth, Las Flores/Las Pulgas Creek mouth,* Hidden Creek mouth,* Aliso Canyon mouth,* French Canyon mouth,* Cockleburr Canyon mouth,* other San Juan Hydrologic Unit creek & canyon mouths,* San Luis Rey River mouth, Loma Alta Slough & Buena Vista Lagoon <u>**not listed in Basin Plan tables of water bodies & beneficial uses*</u>			brackish to fresh	

Attachment 4
Water Body Types in the San Diego Region: Inland Waters

water body type	characteristics	examples	Basin Plan category	water body group	salinity	landscape position
stream systems	flowing surface waters, including associated pools, wetlands, forests, floodplains, and riparian areas, draining from & passing through watersheds in natural (perhaps modified) and/or constructed channels; some reaches sometimes dry or with only pools & little or no surface water flow	San Juan Creek, Santa Margarita River, San Luis Rey River, Escondido Creek, San Dieguito River, Rose Creek, San Diego River, Chollas Creek, Sweetwater River, Otay River & Tijuana River, including tributaries	inland surface waters	stream systems	fresh	inland
drinking water supply reservoirs	constructed impoundments used to store water for drinking water supply prior to treatment	Diamond Valley Reservoir, Henshaw Reservoir, Wohlford Reservoir, Olivenhain Reservoir, Miramar Reservoir, Sweetwater Reservoir	reservoirs & lakes	reservoirs		
other reservoirs	constructed impoundments used to store water for uses other than drinking water supply	Upper Oso Reservoir, Laguna Niguel Lake & Chollas Heights Reservoir (aka Chollas Lake)	*not listed in Basin Plan tables of water bodies & beneficial uses*			
ponds	natural (perhaps modified) or constructed small and shallow standing waters, including associated wetlands; some sometimes dry or with little or no surface water	Laguna Lakes (Orange County), Whalen Lake, Guajome Lake, Lindo Lake, Laguna Lakes (San Diego County) & vernal pools	*not listed in Basin Plan tables of water bodies & beneficial uses*	ponds		
groundwater basins	subterranean water	Temecula Valley Basin, San Juan Valley Basin, Warner Valley Basin & Santa Margarita Valley Basin	ground waters	groundwater basins	fresh to brackish	