State of California
North Coast Regional Water Quality Control Board

PUBLIC COMMENTS & RESPONSES

FOR THE

DESIRED SALMONID FRESHWATER HABITAT CONDITIONS FOR SEDIMENT-RELATED INDICES

July 26, 2006

State of California
North Coast Regional Water Quality Control Board
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INTRODUCTION

In October 2004, the North Coast Regional Water Quality Control Board (Regional Water Board) released the *Draft Total Maximum Daily Load Implementation Policy for Sediment Impaired Receiving Waters in the North Coast Region* (Sediment TMDL Implementation Policy) for public comment. Attached to the Draft Sediment TMDL Implementation Policy was the *Draft Salmonid Freshwater Habitat Targets for Sediment-Related Parameters* (Targets Report), dated October 2004. The public comment period on these two documents ran from October 20, 2004 to November 12, 2004.

This document contains a summary of the comments related to the Draft Targets Report that were received during the public comment period and the response by Regional Water Board staff to these comments.[1]

The comments are grouped into categories. Within these categories, comments made by more than one individual are listed first. The remaining comments are organized alphabetically by the commentor's surname.

Since the release of the draft, the Targets Report has been renamed. It is now titled the *Desired Salmonid Freshwater Habitat Conditions for Sediment-Related Indices* (Desired Conditions Report). The Desired Conditions Report incorporates several changes from the Draft Targets Report that were suggested through public comments or peer review.

[1] All other comments, such as those received orally at the workshops and written comments received after November 12, 2004, will be inserted into the record and considered by the Regional Water Board and staff.

GENERAL COMMENTS OF SUPPORT OR NON-SUPPORT

(1) Comment(s)

- Concurs with the proposed desired conditions.
- Agrees that the suite of parameters should be looked at as a whole to indicate if conditions in the water body seem to be recovering.

Commentor(s)

- Steve Edmondson, NOAA Fisheries

Response

Regional Water Board staff concur.

(2) Comment(s)

- The document is an excellent documentation of current standards of healthy streams.

Commentor(s)

- Denver Nelson

Response

Comment noted.

COMMENTS RELATING TO THE USE OF STANDARDS vs. DESIRED CONDITIONS

(3) Comment(s)

- Concerned about the wholesale replacement of existing water quality standards with the desired conditions.
- The Desired Conditions Report establishes minimum standards for benthic macroinvertebrate assemblage and large woody debris loading.
- The desired conditions are clearly proposed as water quality objectives within the meaning of the Water Code.
- Concerned with the notion that the Regional Water Board would develop and utilize the desired conditions as "numeric surrogates" for the narrative water quality objectives established in the Basin Plan. Concerned that the desired conditions would be used in various regulatory processes instead of existing Basin Plan standards. The use of the desired conditions as regulatory surrogates in TMDL implementation would greatly exceed the Regional Water Board's authority.
- The desired conditions effectively serve as numeric water quality objectives in the Basin Plan. But Basin Plan objectives can be added and revised only through amendments to the Basin Plan.

Commentor(s)

- David A. Bischel, California Forestry Association
- Christopher J. Carr, Stoel Rives LLP

- Anthony L. François, California Farm Bureau Federation
- Peter F. Ribar, Campbell Timberland Management

Response
The desired conditions are not water quality objectives. Nor do they establish, jettison, discard, redefine, add to, detract from, or change any water quality standard or objective. Instead, the desired conditions are numeric, quantifiable, and measurable indices that can provide a means of gauging attainment with the narrative objectives for suspended material, settleable material, and sediment. They are intended to be used to assess and monitor sediment impacts to water quality, particularly salmonid freshwater habitat.

COMMENTS RELATING TO REGULATION

(4) Comment(s)
- The intention is to compare monitoring data to the indices to determine overall effectiveness of the Sediment TMDL Implementation Policy.
- It appears that as long as the indices are not met, the Regional Water Board will continue to consider water bodies impaired, regardless of how the waters compare to established water quality objectives.
- Use of the desired conditions discards the narrative standards that the U.S. EPA or the Regional Water Board found were not being met when they listed the water bodies as impaired and substitutes new numeric water quality standards but without public participation and State Water Board approval that the regular basin planning process requires.

Commentor(s)
- Bernie Bush, Green Diamond Resource Company
- Anthony L. François, California Farm Bureau Federation

Response
Regional Water Board staff agree that comparing monitoring data to the desired conditions will likely help determine the effectiveness of the Sediment TMDL Implementation Policy. The desired conditions will be used to help evaluate trends and the effectiveness of sediment control efforts. However, the desired conditions cannot and will not act as new water quality standards or objectives. See the response to comment number 3. Furthermore, decisions to list or delist a water body on the Clean Water Act Section 303(d) List must and will be done in accordance with the State Water Board's *Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List*, which was adopted in September 2004. Additionally, the desired conditions are not enforceable through the publication of the Desired Conditions Report. The desired conditions would only be enforceable if they are incorporated into a permit, which would be subject to the Regional Water Board's hearing process, or if they are incorporated into the Basin Plan through the basin plan amendment process, which would also be subject to a hearing process. Both of these processes include public participation requirements.

(5) Comment(s)

- The Desired Conditions Report states that regulatory conditions related to the desired conditions will be imposed on landowners by the Regional Water Board.

Commentor(s)

- David A. Bischel, California Forestry Association

Response

The Desired Condition Report does not contain this statement.

(6) Comment(s)

- It needs to be made clear whether or not the desired conditions are intended to be enforceable standards. If so, who will assume responsibility for monitoring and enforcement?

Commentor(s)

- Dale T. Geldert, California Department of Forestry and Fire Protection

Response

The desired conditions are not enforceable standards.

(7) Comment(s)

- The Regional Water Board should be clear and explicit as to how the desired conditions will be used, how they will be applied to landowners of all sizes, and the amount of monitoring that will be required of landowners.

Commentor(s)

- Kathleen Morgan, Gualala River Watershed Council

Response

As stated in the document, the desired conditions are intended to describe salmonid freshwater habitat conditions that are expected to result in water quality that is free of sediment impairment and supports the beneficial uses associated with the cold water fishery. The Desired Conditions Report in no way established an obligation on any landowner or agency, including the Regional Water Board, to monitor the parameters. However, all stakeholders are encouraged to compare monitoring data to the desired conditions as appropriate.

(8) Comment(s)

- Does not support use of the desired conditions as proposed. Cooperative monitoring should focus on improving the state of knowledge, not as a regulatory tool.

Commentor(s)

- Peter F. Ribar, Campbell Timberland Management

Response
The desired conditions are not a regulatory tool. As stated in the response to comment number 3, the desired conditions are intended to be used by the Regional Water Board and other agencies, organizations, or interested individuals to assess and monitor sediment impacts to water quality, particularly salmonid freshwater habitat. The purpose of the Desired Conditions Report is to aid in analyzing monitoring data and comparing data to desired salmonid freshwater habitat conditions.

GENERAL COMMENTS ON THE DESIRED CONDITIONS

(9) Comment(s)
- The desired conditions should be expressed as "fully suitable," "suitable," and "unsuitable."
- The use of ranges (e.g., distributions) is more appropriate.

Commentor(s)
- Kathleen Morgan, Gualala River Watershed Council
- Peter F. Ribar, Campbell Timberland Management

Response
Regional Water Board staff have determined expressing the values in terms of desired conditions is appropriate. Although staff concur that it would be helpful to express the values for each index in ranges of properly functioning, functioning, and not functioning or fully suitable, suitable, and unstable, there is not enough information at this point to establish such ranges.

(10) Comment(s)
- The Regional Water Board has failed to demonstrate by substantial evidence that the desired conditions are necessary for adequate salmonid habitat.

Commentor(s)
- David A. Bischel, California Forestry Association

Response
Regional Water Board staff do not concur. Staff have determined that adequate evidence exists to support the desired conditions. This evidence is presented in the Desired Condition Report.

(11) Comment(s)
- There is no direct biological linkage to the beneficial uses of water.

Commentor(s)
- Bernie Bush, Green Diamond Resource Company

Response
Regional Water Board staff do not concur. The Desired Conditions Report states that excessive sediment impacts several beneficial uses, including uses associated with the migration, spawning,

reproduction, and early development of salmonids. The Desired Condition Report also describes how each parameter (e.g., embeddedness, pool distribution, sediment substrate composition) impacts the life cycle of salmonids and the effects of excessive sedimentation.

(12) Comment(s)

- It's implied that if the desired conditions are achieved, the requirements of the beneficial uses (e.g., fish) will be met.
- The Desired Conditions Report seems to follow the old mentality of "if we build it, they will come."

Commentor(s)

- Bernie Bush, Green Diamond Resource Company

Response

The Desired Conditions Report does focus on freshwater salmonid habitat as it relates to sediment impacts. Regional Water Board staff recognize that other factors affect salmonid populations beyond the parameters included in the document, such as temperature conditions, dissolved oxygen levels, and ocean conditions just to name a few. The Desired Conditions Report is focused only on sediment impacts.

(13) Comment(s)

- Question whether many of the desired conditions can ever be physically achieved (even in unmanaged watersheds).

Commentor(s)

- Bernie Bush, Green Diamond Resource Company

Response

Regional Water Board staff do not concur. According to the research described in the Desired Conditions Report, each desired conditions is based off reference conditions and/or laboratory research. Staff do recognize, however, that it may take a considerable amount of time, perhaps years to decades, before we are able to detect statistically significant changes in conditions in response to changes in upslope practices.

(14) Comment(s)

- The desired conditions are not valid as minimum or other indicators of protection of beneficial uses since waters that do not meet the indices are nonetheless supporting a far healthier fishery than implied in the Regional Water Board's documentation.

Commentor(s)

- Anthony L. François, California Farm Bureau Federation

Response
Regional Water Board staff do not concur, but have determined that the desired conditions are valid. The desired conditions are based on conditions in reference streams and rivers and on laboratory experiments that show the freshwater habitat conditions that are desirable for salmonids. The Desired Conditions Report does not state that salmonids will only be found in streams that meet these conditions.

(15) Comment(s)

- The technical problems with the draft document need to be addressed. These problems are described by Mr. Thomas E. Spittler of the California Geological Survey.

Commentor(s)

- Dale T. Geldert, California Department of Forestry and Fire Protection

Response
Mr. Spittler's comments have been addressed.

(16) Comment(s)

- A possible consideration for a desired condition may be that the suite of streams and rivers include values, including geologic and climatic conditions, that are similar in range to a suite of reference streams.

Commentor(s)

- Thomas E. Spittler, California Geological Survey

Response
Many of the desired conditions are based off reference streams with representative geologic and climatic conditions. Regional Water Board staff intend to update and improve the desired conditions as more information, data, and knowledge become available.

(17) Comment(s)

- The Desired Conditions Report should recognize that there are other non-sediment related factors that may contribute to the survivability of salmonids, including passage barriers, historic wood removal, reduced stream flows, ocean and climatic conditions, and biological factors.
- The document should also acknowledge the historical damage inflicted on northern California Coast Ranges streams and rivers prior to the implementation of the Forest Practice Rules and other environmental regulations during the 1970s.

Commentor(s)

- Thomas E. Spittler, California Geological Survey

Response

The purpose of the Desired Condition Report is to describe the salmonid freshwater habitat conditions that are expected to result in water quality that is free of sediment impairment and supports the beneficial uses associated with the cold water fishery. The document is intended to describe the desired conditions. It is not intended to account for past damage to watersheds, ocean conditions, or the other variables that have affected and will continue to affect salmonid populations.

(18) Comment(s)

- A possible alternative is provided by Montgomery and MacDonald (2002, as cited in Thomas E. Spittler's comment letter of November 12, 2004), who describe a diagnostic approach to stream channel assessment and monitoring that incorporates at least three phases (1) defining the system of interest and the controlling variables; (2) using qualitative and quantitative observations to characterize the current state of the system; and (3) evaluating the controlling variables and current symptoms to infer both relative condition and the causal mechanism producing the conditions.

Commentor(s)

- Thomas E. Spittler, California Geological Survey

Response

The suggested type of monitoring may be very appropriate on a more refined scale or for more regulatory purposes than for establishing desired conditions. Please see the response to comment number 17 for more information.

(19) Comment(s)

- Other states have moved away from watershed assessments and instream targets to more implementable targets associated with hillslope activities.
- Recommends the California Department of Forestry and Fire Protection work with the Regional Water Board to develop a system of best management practices to address sediment on commercial timberlands.
- Recommends the Regional Water Board work on developing best management practices for other land uses.

Commentor(s)

- Thomas E. Spittler, California Geological Survey

Response

Regional Water Board staff recognize the importance of hillslope targets and the improvement of management activities throughout the watershed. These are necessary components of a water quality improvement action plan. Staff looks forward to working with the California Geological Survey and other sister agencies in developing and implementing these plans. However, action plans and implementation strategies are not the focus of the Desired Conditions Report.

(20) Comment(s)

- Generally agrees with the weight-of-evidence approach.
- Suggests clarification to state that the desired conditions will not be found in all places at all times; even in the best of watershed conditions.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

Regional Water Board staff concur and have added the following language to the document: "Attainment of all the indices in all locations is highly unlikely, even in the best of watershed conditions."

(21) Comment(s)

- The majority of watersheds in the North Coast Region have been disturbed (natural and anthropogenic sources). Knowing whether or not a watershed or ecosystem has be "disturbed" does not contribute any relevant information or direction for management, given the fact that every un-managed and managed watershed has been disturbed at some point in time.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

The use of the term "disturbed" in the Desired Conditions Report refers to anthropogenic activity in a watershed. Bibly and Ward (1989) refer to an undisturbed, old-growth area of land. Knopp (1993) refers to an area with no human disturbance. The desired conditions values are useful for monitoring in both disturbed and un-disturbed watersheds. In un-disturbed watersheds, the desired conditions should already be met or be close to being attained. In disturbed watersheds, conditions should improve over time as land management improves, with eventual attainment of desired conditions.

COMMENTS RELATING TO GEOGRAPHIC EXTENT AND USE

(22) Comment(s)

- The one-size-fits-all approach included in the document is wholly improper.
- It is seriously flawed to establish one-size-fits-all standards for all North Coast Region watercourses, regardless of significant variations in climate, soils, geology, and land uses within the region, and even within individual contiguous ownerships.
- The document makes no attempt to integrate variability into the desired conditions.
- ". . .the only situation where it is appropriate to develop a numeric surrogate for a narrative standard is on a site-specific basis. It is not proper to adopt a one-size-fits-all numeric surrogate, because such an approach does not provide a sufficient bridge between the narrative

requirement duly-adopted and included in the Basin Plan and the numeric limit, which must take account of site-specific conditions."

- The indices cannot be met in all places at all times given the variability in watershed conditions and responses.
- Use of specific desired conditions should be avoided. One-size-fits-all metrics (i.e., single values) do not consider natural variability in space and time.
- The extreme range in both natural (geologic) and anthropogenic variability in the northern California Coast Ranges makes it unlikely that simple specific desired condition values that are meant to encompass the entire northern California Coast Ranges are achievable for most instream parameters.
- The desired condition values are primarily based upon field studies in areas with harder and stronger bedrock units supplemented by laboratory research.
- The Desired Conditions Report assumes that all streams within the Northern California Coast Ranges will have the same conditions. However, the Northern California Coast Ranges are complex and spatially and temporally variable.
- The natural range of instream sediment-related parameters are unlikely to be successfully represented by a one-size-fits-all set of universal parameters.

Commentor(s)

- David A. Bischel, California Forestry Association
- Bernie Bush, Green Diamond Resource Company
- Christopher J. Carr, Stoel Rives LLP
- Peter F. Ribar, Campbell Timberland Management
- Thomas E. Spittler, California Geological Survey

Response

Regional Water Board staff concur that site-specific conditions must be considered when monitoring and comparing data, and that variability exists in time and space. Staff do not concur that the Desired Conditions Report contains a one-size-fits-all approach, but have determined that the indices do represent desired freshwater habitat conditions for salmonids in many areas of the North Coast Region. As stated in the Introduction of the Desired Conditions Report, "no single parameter can adequately describe water quality related to sediment in all reaches and gradients of all water bodies. Because of the inherent variability associated with stream channel conditions, and because no single parameter applies in all situations, attainment of desired conditions should be evaluated using a weight-of-evidence approach." The desired conditions also have limited applicability. For example, several desired conditions are applicable only to small streams, others to streams that are flat. Several desired conditions are also limited to certain geologic conditions. Additionally, the Desired Conditions Reports states that monitoring data should be compared to reference conditions when possible. It is also important to note that staff intend to update the document as more specific data and information become available to further refine the desired conditions. In regards to the issue of numeric surrogates, please see the response to comment number 3.

(23) Comment(s)

- Concerned that the desired conditions are being set for such a large geographic area.
- Concerned that having one set of stream desired conditions over-simplifies the expectations of stream habitat response to lower sediment yield.
- The desired conditions should either attempt to separate some of the physical and geographical controls on stream habitat response to sediment or allow separation of the desired conditions to occur at some later time as better information becomes available.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

In order to address the variability associated with stream channel conditions across the North Coast Region, the Desired Conditions Report includes a suite of parameters which Regional Water Board staff have determined to be comprehensive enough to show responses in a stream to changes in sediment yield. The desired conditions are based on the conditions that salmonids need for desirable habitat. They are not based on the past, present, or future condition of a stream or the land use in a watershed. Therefore, staff do not concur that further separation of physical and geographical control is necessary at this point. However, staff fully intend to update and revise the Desired Conditions Report should applicable data and research become available.

(24) Comment(s)

- The desired conditions cannot be addressed in a rigorous quantitative manner due to difficulty in accurately predicting the timing and level of response to change in stream environments. Past habitat conditions, time lags for sediment transport, sediment stored in the system, and stochastic hydrologic events all create a dynamic environment.
- Quantifying the change and putting it into a timeframe is difficult and will be inaccurate.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

As stated in the response to comment number 3, the desired conditions are intended to be help assess and monitor sediment impacts to salmonid freshwater habitat. Monitoring of freshwater salmonid habitat conditions should show trends (hopefully improving conditions). The indices can be used in this process as an aid in analyzing monitoring data and comparing data to desired conditions. Additionally, in order to address the variability in climatic conditions and storm-flow characteristics, the Desired Conditions Report recommends that monitoring data for the desired condition values be compared to reference conditions during the same time period.

COMMENTS RELATING TO BENTHIC MACROINVERTEBRATE ASSEMBLAGE

(25) Comment(s)

- The benthic macroinvertebrate assemblage desired condition will be difficult if not impossible to achieve in many North Coast watersheds because they have been highly managed for many years.

Commentor(s)

- David A. Bischel, California Forestry Association
- Christopher J. Carr, Stoel Rives LLP

Response

The purpose of the document is to describe the desired conditions of freshwater salmonid habitat. The ability of a watershed to attain these conditions is the focus of other efforts.

(26) Comment(s)

- Counting benthic Macroinvertebrate numbers is not a substitute for counting fish numbers.

Commentor(s)

- Denver Nelson

Response

Regional Water Board staff concur that monitoring benthic macroinvertebrates does not substitute for monitoring fish populations. Staff are aware of the necessity for fish population monitoring and have expressed this opinion to the California Department of Fish and Game. However, benthic macroinvertebrate monitoring data does provide a window into the water quality world and is helpful in determining fine sediment pollution.

(27) Comment(s)

- In regards to the benthic macroinvertebrate assemblage parameter, there is little guidance regarding the details needed to conduct sampling.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

Guidance on how to monitor and calculate the details of the parameter is found in the *California Stream Bioassessment Procedure* by the California Department of Fish and Game, which was revised in December 2003.

(28) Comment(s)

- Does not believe the benthic macroinvertebrate assemblage parameter would contribute meaningful guidance for land management decisions and suggests the parameter be removed.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

Regional Water Board staff do not concur. Benthic macroinvertebrates allow for the use of biological information to determine whether a body of water has been affected by excessive sedimentation. It is the only parameter which directly focuses on biological factors.

(29) Comment(s)

- Regarding benthic macroinvertebrate assemblage, there is no data, rationale, or justification presented in support of using the biological integrity ratings of "good" to "excellent."

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

According to Harrington & Born (1999), the six metrics ". . .were integrated into a single scoring criteria [sic] by producing a histograms [sic] of the values for each of the biological metrics and visually determining breaks in their distribution. The approach of determining scoring criteria was more intuitive and probably most appropriate given the data came from streams that could have been moderately impaired and not actually representative of pristine reference conditions." Regional Water Board staff proposed a conservative target for benthic macroinvertebrate assemblage of 18, which corresponds to a biological integrity rating of good or excellent, in order to err on the side that is the most protective of the beneficial uses associated with the cold water salmonid fishery. Text similar to this response has been added to the Desired Conditions Report.

(30) Comment(s)

- Using indices focused on smaller (1^{st} – 3^{rd} order) streams will not capture the spatial distribution needed to sample all feeding guilds.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

The benthic macroinvertebrate assemblage desired condition is not intended to capture all feeding guilds, but should help identify the biologic health of first through third order streams. For example, if shredders and collectors are not present in first through third order streams, are found in low numbers, or if other guilds are found in high concentrations, it can be concluded that the stream is not at the desired conditions for salmonid habitat.

(31) Comment(s)

- Using the opinion of the author (Harrington) is not sufficient to assume the Russian River Index of Biological Integrity (IBI) is applicable to other watersheds, as this was not peer reviewed nor analyzed using scientific methods.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

The Desired Conditions Report, including the benthic macroinvertebrate assemblage desired condition, was peer reviewed. One of the peer reviewers felt that applying the Russian River IBI to other watersheds was "generally reasonable." The second reviewer recommended the development of a watershed-specific database of biological traits [body size, mobility, habit, propensity for drift] that could be developed specifically for local taxa, and be used to infer relative differences in prey availability between and within watersheds. Regional Water Board staff agree that it may be possible, and preferable, to develop a target or a suite of targets that is watershed-specific in the future. The use of benthic taxa and specific biological traits as target parameters would be considered at that point. Staff also look forward to the development and publishing of the North Coast IBI.

(32) Comment(s)

- The document suggests that samples be collected using California Department of Fish and Game methods (CDFG 2003) and the data should be analyzed using the Russian River IBI developed by Harrington and Born (1999). These methods are different and cannot be used as suggested.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

The Russian River IBI relies upon and incorporates the use of the California Department of Fish and Game method (CDFG 2003). The two methods are fully compatible.

(33) Comment(s)

- There is not sufficient detail included in regards to the use of the Russian River IBI. It is unclear if the indices are calculated "per site" or if the results of the entire watershed are combined.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

The indices are calculated per a 100m reach of stream. See the *California Stream Bioassessment Procedure* (CDFG 2003) for more information.

COMMENTS RELATING TO EMBEDDEDNESS

(34) Comment(s)

- The embeddedness desired condition is a qualitative measurement and is an unreliable indicator of habitat changes over time.
- Embeddedness is a qualitative tool relying on the interpretation of individuals viewing the substrate. Qualitative measures like this are unreliable indicators of changes over time.

Commentor(s)

- David A. Bischel, California Forestry Association
- Christopher J. Carr, Stoel Rives LLP
- Christopher G. Surfleet, Mendocino Redwood Company

Response

Regional Water Board staff do not concur, and have determined that embeddedness is a reliable indicator of habitat change over time when monitored according to the protocol found in the *California Salmonid Stream Habitat Restoration Manual, Third Edition* (Flosi et al. 2004) at locations in the stream where salmonids are likely to build a redd.

(35) Comment(s)

- The embeddedness monitoring protocol is not preferred and not acceptable for the monitoring of local conditions.

Commentor(s)

- Kathleen Morgan, Gualala River Watershed Council

Response

Regional Water Board staff do not concur and have determined that the recommended embeddedness monitoring protocol is adequate. Please see the response to comment number 61 for more information.

(36) Comment(s)

- In regards to embeddedness: to be comparable, all surveys must be conducted in the summer

Commentor(s)

- Peter F. Ribar, Campbell Timberland Management

Response

Regional Water Board staff concur that embeddedness should be monitored during the summer, low flow season. Text to this effect has been added to the Desired Conditions Report.

(37) Comment(s)

- While the goal of ≤ 25% embeddedness would be desirable, due to the underlying geology it is not achievable for all wadeable streams and rivers in the northern California Coast Ranges, nor is it likely to be continually maintained in any watercourse through time and space because of physical bedrock properties and variability of rainfall, runoff, and slope processes.
- The document would benefit by acknowledging there will be natural fluctuations in embeddedness and fine grain size component.

Commentor(s)

- Thomas E. Spittler, California Geological Survey

Response

Regional Water Board staff concur that there is inherent variability between watersheds and stream in both time and space. As stated in the document, "It is important to note that no single parameter can adequately describe water quality related to sediment in all reaches and gradients of all water bodies. Because of the inherent variability associated with stream channel conditions, and because no single parameter applies in all situations, attainment of desired conditions should be evaluated using a weight-of-evidence approach. Additionally, in order to address the variability in climatic conditions and storm-flow characteristics, monitoring data for the following desired condition values should be compared to reference conditions during the same time period, when possible. When considered together, the following suite of parameters and their desired condition values should provide a valuable assessment of instream sediment conditions on water quality."

COMMENTS RELATING TO LARGE WOODY DEBRIS

(38) Comment(s)

- The monitoring methodology for large woody debris (LWD) found in the *California Salmonid Stream Habitat Restoration Manual* by Flosi et al. (2004) is subjective and results in variable data.

Commentor(s)

- Kathleen Morgan, Gualala River Watershed Council

Response

Regional Water Board staff have revised the document so that the LWD monitoring recommendations only refers to the protocols found in the *Method Manual for the Large Woody Debris Survey* by Washington's Timber Fish and Wildlife Monitoring Program (Shuett-Hames et al. 1999b). Please see the response to comment number 61 for more information.

(39) Comment(s)

- LWD were not counted in the TMDLs.
- Using LWD as a determinate of sediment load does not follow logically and is not scientific.

Commentor(s)
- Denver Nelson

Response
Including a desired condition for LWD is appropriate for several reasons; LWD stores sediment and meters its release, it forms salmonid habitat such as pools, it provides cover to salmonids and other species, it increases hydrologic complexity, and it contributes to benthic macroinvertebrate populations. Regional Water Board staff do not intended to use LWD distribution or volume measurements as a surrogate for sediment load measurements. Additionally, the need for LWD in streams is included in several sediment TMDLs.

(40) Comment(s)
- Should Redwood National Park be required to fall trees into the stream in the Tall Trees Grove in order to meet the key piece volume criteria of Redwood Creek?

Commentor(s)
- Denver Nelson

Response
No. The LWD desired condition is not a requirement but a statement of the distribution and volume of LWD that should be in a stream for there to be desired salmonid habitat as it relates to LWD.

(41) Comment(s)
- As long as the variability associated with LWD is considered in the interpretation of the desired condition value, the LWD value is reasonable.

Commentor(s)
- Christopher G. Surfleet, Mendocino Redwood Company

Response
Regional Water Board staff concur. As stated in the response to comment number 22, variability will be considered.

COMMENTS RELATING TO POOL DISTRIBUTION

(42) Comment(s)
- The percent pools data compiled by Knopp (1993) indicates that managed streams have a higher number of pools than unmanaged streams.

Commentor(s)
- Kathleen Morgan, Gualala River Watershed Council

Response

In *Testing Indices of Cold Fish Habitat*, Knopp (1993) found that there was not a statistically significant difference between the number of pools in stream reaches that drained watersheds which had a history of management prior to 1953 (designated "Index Yes") and those which were moderately or highly managed as of 1993 (designated "Moderate" or "High"). However, there was a statistically significant difference between the number of pools in stream reaches that drained watersheds which lacked a history of human disturbance and the stream's habitat was considered of good quality and able to maintain viable populations of salmonids relative to geologic formation and channel type (designed "Index No"). Regional Water Board staff combined both of the Index categories and used the resulting mean value of 41.5% as partial justification for the primary pool desired condition value. The desired condition value was also based on information contained in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al. 2004). Staff have determined that the desired condition value is appropriate.

(43) Comment(s)

- We concur with the Regional Water Board's approach to the backwater pool and lateral scour pool distribution targets.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

Comment noted.

(44) Comment(s)

- The desired condition value of having at least 40% of habitat in pool habitat is reasonable and achievable. However, we do not concur on the use of primary pools to define this percentage.
- Data from the South Fork Noyo River and Caspar Creek show that maximum pool depth is limited by stream width – pools deeper than three feet do not occur even under the best circumstances for streams that are less than fifteen feet wide.
- A single basin wide standard for "deep" pools may not be achievable.
- We support a desired condition value that would target mean pool depths scaled by stream width or size (rather than stream order).
- A pool depth defining a primary pool should not be based on a stream class that is subjectively interpreted.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

Regional Water Board staff have determined that the use of primary pools as described and defined in by Flosi et al. (2004) is appropriate for the pools desired condition. The primary pool definition includes pool depths and widths and is based on stream size. However, staff concur that the use of the stream order classification can lead to inconsistencies when a stream becomes intermittent

during the summer and may not be considered perennial. In order to remedy this concern and limit the primary pool distribution desired condition to streams that are the most likely to provide salmonid habitat, the desired condition has been revised so that it no longer applies to first order streams. In regards to the data from the Noyo River and Caspar Creek, it is important to note that both watersheds have experienced historic and relatively recent anthropogenic disturbance, and are therefore not considered to reflect reference conditions. Staff also acknowledge that a better system may exist for measuring pools that does not rely on stream order (such as the Rosgen classification system, perhaps). Staff will consider revisions to the document as more research and data become available.

COMMENTS RELATING TO % FINES

(45) Comment(s)

- In regards to the % fines < 0.85 mm desired condition, it appears that measurements in northern California Coast Range rivers and streams were discounted because they were taken after a significant stressing storm, even though stressing storms are relatively common.
- Regional Water Board staff decided not to include data from a study by Burns (1970) in the desired condition because they felt the values were "probably too high" due to the natural flood events of the 1964 storms.

Commentor(s)

- Bernie Bush, Green Diamond Resource Company
- Thomas E. Spittler, California Geological Survey

Response

In his study, Burns (1970) found 17.3 – 17.8% fines < 0.8 mm in Godwood Creek. Godwood Creek is a reference stream in the Redwood Creek watershed. Regional Water Board staff based the desired condition value for % fines < 0.85 mm on this study and the results of six other studies. The desired condition value was chosen as it is roughly the midpoint between the results of these seven studies, as described in the document. As also stated in the document, the findings of Burns' study are likely higher than usual due to the timing of study, which was conducted a few years after the 1964 storms. Staff feel this is appropriate given current data and knowledge and in light of the seven studies used to select the desired condition value.

(46) Comment(s)

- The substrate composition/percent fine desired conditions suffer from flawed sampling methodologies, depending on whether analyses used dry or wet sieve techniques.

Commentor(s)

- David A. Bischel, California Forestry Association
- Christopher J. Carr, Stoel Rives LLP

Response

Regional Water Board staff concur that the research used to determine the percent fine desired conditions was performed using both wet volumetric and dry weight analysis methods. Several of the studies used just one type of method, while several used both methods. Unfortunately, the extent to which the different methodologies affect the data is unknown. Until more research and data become available to help determine the effect of the two methodologies, the desired condition value is based on research that, as mentioned, uses both methods. In order to reduce and hopefully eliminate future differences in substrate composition sampling methodologies, the Desired Conditions Report contains detailed monitoring recommendations for the percent fines indices. Additionally, staff will continue to example new research and data and shall revise the desired condition values accordingly.

(47) Comment(s)

- In regards to sediment substrate composition, the number of samples required to obtain a representative sample would be unduly time-consuming and costly, even if dry sieve methods are used.
- We caution against the use of collecting bulk gravel samples to assess stream habitat because it is labor intensive, expensive, requires a high number of samples to accurately predict results, and is highly intrusive and thus inappropriate during the spawning and incubation seasons.

Commentor(s)

- David A. Bischel, California Forestry Association
- Christopher J. Carr, Stoel Rives LLP
- Christopher G. Surfleet, Mendocino Redwood Company

Response

Regional Water Board staff are aware of the time- and effort-intensive nature of the dry sieve method. In part due to this, staff recommend the use of the wet volumetric method and encourage the use of both wet volumetric and dry gravimetric methods on just ten percent of the samples for quality control purposes. The monitoring guidance included in the document addresses the possible disturbance to salmonids by recommending that sampling occur soon after fry have emerged from the substrate or during the summer low flow period.

(48) Comment(s)

- In regards to sediment substrate composition, concerns include: not sampling where fish actually spawn, differences between wet and dry sieving, an unknown relationship between summer and winter fines, no consideration for fish winnowing the substrate, sampling bias and the number of sampling locations needed to characterize substrate conditions in each stream would be extremely costly.

Commentor(s)

- Peter F. Ribar, Campbell Timberland Management

Response
The Desired Conditions Report contains recommendations for monitoring the substrate composition parameters that should allay these concerns. The recommendations describe when and where sampling should occur, and how many samples should be taken. The Desired Conditions Report also includes a recommendation that the wet volumetric method be used and Regional Water Board staff encourage the use of both wet and dry methods on ten percent of the samples for quality control purposes.

(49) Comment(s)

- The percent fine sediment desired conditions are achievable as long as they are analyzed utilizing the dry sieve methods of the gravels.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response
Regional Water Board staff recognize that variability exists between the wet volumetric method and the dry gravimetric method. Therefore, staff encourage the use of both the wet volumetric and the dry gravimetric methods on ten percent of the samples for quality control purposes and to help quantify the variability.

COMMENTS RELATING TO D_{50}

(50) Comment(s)

- Concerned about using rigid numeric standards for the D_{50} desired condition value, which could be addressed by specifying a target range in order to account for variability.

Commentor(s)

- Christopher J. Carr, Stoel Rives LLP

Response
Regional Water Board staff concur that it is not appropriate to include a desired condition value for D_{50} at this point. The Desired Conditions Report reflects this change from the Draft Targets Report.

(51) Comment(s)

- In regards to the D_{50} desired condition, the values given by Knopp (1993) may only represent one of many possibilities.

Commentor(s)

- Thomas E. Spittler, California Geological Survey

Response
See the response to comment number 50.

(52) Comment(s)

- Suggests the D_{50} desired condition be modified to express a range of appropriate values of the D_{50} and not state a specific value.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

See the response to comment number 50.

COMMENTS RELATING TO THALWEG PROFILE

(53) Comment(s)

- Mary Ann Madej of Redwood Sciences Lab has developed a software program to analyze thalweg profile data called LongPro. The software produces a variation index. The thalweg profile desired condition should include information on how data will be analyzed.

Commentor(s)

- Kathleen Morgan, Gualala River Watershed Council

Response

Regional Water Board staff will research LongPro and the variation index as part of the quality assurance project plan development process, and will include it if appropriate. See the response to comment number 61 for more information.

(54) Comment(s)

- In regards to the thalweg profile desired condition, we agree with the desired condition value.

Commentor(s)

- Christopher G. Surfleet, Mendocino Redwood Company

Response

Comment noted.

COMMENTS RELATING TO TURBIDITY

(55) Comment(s)

- The document refers to the Water Quality Objective for turbidity in the Basin Plan which does not provide adequate direction to landowners as to how to comply with the turbidity requirements.
- What are naturally occurring background levels of turbidity?

- Turbidity is a measured value that varies in time and space, hence a naturally occurring background level is constantly changing from basin to basin and through time in a single location.
- Turbidity does not appear to be a value that can be effectively defined or measured due to its highly variable nature, and because of stream responses to hydrological influences such as large storms, flood, or droughts.

Commentor(s)
- Thomas E. Spittler, California Geological Survey
- Christopher G. Surfleet, Mendocino Redwood Company

Response
The document is not intended to support or explain the use of the current Water Quality Objective for turbidity. Regional Water Board staff, however, are aware of the difficulties in using the objective in the field. The term "background" is more understandable when used in upstream/downstream and before/after monitoring.

(56) Comment(s)
- Questions whether the turbidity water quality objective could properly form the basis for regulatory action.
- The turbidity objective ". . . is plagued with interpretive difficulties that would make its use as a basis for regulatory action problematic and, perhaps, illegal. Most obviously, there is the issue of what is meant by 'naturally occurring background levels.'"

Commentor(s)
- David A. Bischel, California Forestry Association

Response
The Desired Conditions Report does not include a desired conditions value for turbidity. The legality of the turbidity objective is not the subject of the document. However, Regional Water Board staff are aware that naturally occurring background turbidity levels can be difficult to determine. Hence staff are interested in on-going research that may allow for the consideration of a more user-friendly turbidity objective.

(57) Comment(s)
- Basing enforceable turbidity desired conditions on the data set from one winter would probably not be the best approach to the long-term monitoring that Mendocino Redwood Company is proposing in its Draft Habitat Conservation Plan.
- If it is required to collect turbidity data to comply with state and federal laws, than at very least some direction from the Regional Water Board and what level of effort will be required is needed.

Commentor(s)
- Christopher G. Surfleet, Mendocino Redwood Company

Response
The document does not contain a turbidity desired condition, but refers to the Water Quality Objective from turbidity found in the Basin Plan. Additionally, it is important to note that the desired conditions are not independently enforceable.

(58) Comment(s)
- It might be useful to consider using Mendocino Redwood Company's proposed turbidity monitoring stations as a component of the studies that the Regional Water Board plans to use to set future turbidity desired conditions.

Commentor(s)
- Christopher G. Surfleet, Mendocino Redwood Company

Response
Regional Water Board staff concur and thank the commentor for his suggestion.

(59) Comment(s)
- Concerned over the cost of turbidity monitoring.
- Many landowners will not be able to afford turbidity monitoring.
- Larger landowners will likely be able to afford some turbidity monitoring, but not on every stream or river.

Commentor(s)
- Christopher G. Surfleet, Mendocino Redwood Company

Response
Regional Water Board staff recognized the time and expense involved in turbidity monitoring. Please also be aware that this document does not include requirements to monitor.

COMMENTS RELATING TO V*

(60) Comment(s)
- The V* desired condition is within a range of an achievable target, but it is unlikely that this value can be achieved everywhere at all times.
- Suggest that a V* desired condition recognize the range and variability expressed by Knopp's (1993) data.

Commentor(s)
- Christopher G. Surfleet, Mendocino Redwood Company

Response
Regional Water Board staff concur that variability needs to be considered. Please see the responses to comment number 23 and 64.

COMMENTS RELATING TO MONITORING RECOMMENDATIONS

(61) Comment(s)

- Possible monitoring methodologies may be found in the Gualala River Watershed Council's *Quality Assurance Project Plan for Monitoring Sediment Reduction* (December 2002).
- The monitoring methodologies included in the document need to be described in more detail.

Commentor(s)

- Kathleen Morgan, Gualala River Watershed Council

Response

The Desired Conditions Report purposefully does not include detailed monitoring methodologies and data analysis protocols. The protocols which are included are recommendations. However, in recognition of the fact that consistent methodologies and protocols are necessary for data to be comparable to the desired conditions, several monitoring recommendations for each parameter are included in the document. Several of these recommendations are basic in nature or reference other sources. As more detail will likely be helpful for monitoring efforts, Regional Water Board staff intend to develop a quality assurance project plan, or other similar document, for the desired conditions as part of the monitoring effort required by the Sediment TMDL Implementation Policy. Staff will also utilize, as appropriate, the extensive work from the Gualala River Watershed Council when developing the quality assurance project plan, and will include it if appropriate.

COMMENTS RELATING TO THE *CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL* (FLOSI ET AL. 2004)

(62) Comment(s)

- The methodology found in the *California Salmonid Stream Habitat Restoration Manual* by Flosi et al. (2004) is useful for assessment, but is not appropriate for long-term monitoring.

Commentor(s)

- Kathleen Morgan, Gualala River Watershed Council

Response

Regional Water Board staff do not concur, but have determined that the monitoring methodology by Flosi et al. is useful for assessment and long-term monitoring. Long-term monitoring is simply assessment that is repeated over time. However, staff are aware that the monitoring recommendations included in the document are basic in nature and more detail would be helpful for monitoring efforts. Please see the response to comment number 61 for more information.

(63) Comment(s)

- The justification for some of the indices is stated to come from the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al. 2004). Do not believe the Manual was intended for any regulatory purposes but rather for quick assessments for stream restoration.

- Most of the parameters contained in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al. 2004) do not have repeatable metrics.
- Embeddedness is quite subjective and therefore not very repeatable.

Commentor(s)
- Peter F. Ribar, Campbell Timberland Management

Response
As stated in the response to comment number 8, the desired conditions are not regulatory. Regional Water Board staff do not concur that the parameters contained in the Manual are not repeatable. The desired conditions that are based on the Manual are embeddedness, backwater pools, lateral scour pools, and primary pool distribution. The Manual describes the methods for measuring these parameters in a manner that is repeatable.

COMMENTS RELATING TO THE *TESTING INDICES OF COLD WATER FISH HABITAT* (KNOPP 1993)

(64) Comment(s)
- The Regional Water Board is ignoring the range in habitat values observed in watersheds as documented in Knopp (1993) when it presents indices of single value (i.e., one measured number compared to a range of numbers).

Commentor(s)
- Christopher G. Surfleet, Mendocino Redwood Company

Response
The desired condition values that are based on the research by Knopp (1993) use his mean values for watersheds that are relatively undisturbed. A range of values was used to calculate the mean.

COMMENTS RELATING TO PEER REVIEW

(65) Comment(s)
- The desired conditions should be subjected to peer review and scientific critique.
- Not subjecting the Desired Conditions Report to peer review and scientific critique will create ongoing conflict.
- The Desired Condition Report should be peer reviewed by the Redwood Sciences Lab.

Commentor(s)
- David A. Bischel, California Forestry Association
- Christopher J. Carr, Stoel Rives LLP
- Denver Nelson

Response
The Desired Condition Report has been peer reviewed by independent reviewers of the University of California system. Pertinent comments by the peer reviewers have been incorporated.

(66) Comment(s)

- We have not had the benefit of reviewing the peer review suggestions.
- It is critical to allow the regulated public to submit the document to its own scientific critique.

Commentor(s)

- Bernie Bush, Green Diamond Resource Company

Response
The peer review comments and the responses to these comments by Regional Water Board staff are available. Staff welcome any further scientific critique the public would care to undertake on the document. It is important to note that staff intend to periodically update the document as new research, data, practices, and technology become available and as input is received from users.

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