



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
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HELENA, MONTANA 59626

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DEQ
Planning Division

AUG 31 2004

Ref: 8EPR-EP

Mr. Art Compton, Director
Planning, Prevention and Assistance Division
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Re: TMDL Approvals
Swan Lake TPA

Dear Mr. Compton:

We have completed our review of the total maximum daily loads (TMDLs) as submitted by your office for the Swan Lake TMDL Planning Area (TPA). The TMDLs are included in the document entitled Water Quality Protection Plan and TMDLs for the Swan Lake Watershed (Montana Department of Environmental Quality) transmitted to us for review and approval in correspondence dated June 9, 2004 and signed by you. In accordance with the Clean Water Act (33 U.S.C. 1251 *et. seq.*), we approve all aspects of the TMDLs as developed for the Swan Lake TPA. Enclosure 1 to this letter provides a summary of the elements of the TMDLs and Enclosure 2 provides details of our review of the TMDLs.

Based on our review, we feel the separate TMDL elements listed in Enclosure 2 adequately address the pollutants of concern, taking into consideration seasonal variation and a margin of safety. In approving these TMDLs, EPA affirms that the TMDLs have been established at a level necessary to attain and maintain the applicable water quality standards and has the necessary components of an approvable TMDL.

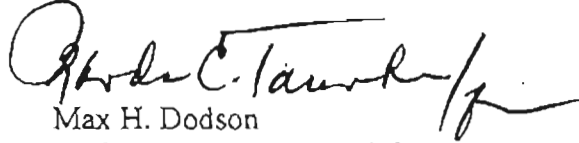
EPA has been in contact with the United States Fish and Wildlife Service (FWS) regarding whether and, if so, how EPA's approval of the Swan Lake TPA TMDLs may affect the continued existence of any endangered or threatened species listed under the Endangered Species Act (ESA) or the designated critical habitat of any such species. EPA has not determined that today's approval may have such an effect. Therefore, consistent with the terms of a consent decree in the lawsuit of Friends of the Wild Swan, et al., v. U.S. Environmental Protection Agency, et al., Civil Action No. CV99-87-M-LBE, United States District Court for the District of Montana, Missoula Division, EPA has decided to approve these TMDLs contingent upon the outcome of consultation with the FWS.



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Thank you for your submittal. If you have any questions concerning this approval, feel free to contact Ron Steg of my staff at (406) 457-5024.

Sincerely,

A handwritten signature in black ink, appearing to read "Max H. Dodson", with a stylized flourish at the end.

Max H. Dodson
Assistant Regional Administrator
Ecosystems Protection and Remediation

Enclosures

cc:

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Enclosure 1
Swan Lake TMDL Planning Area
Water Quality Plan and TMDL Summary Information

Impaired or Threatened Beneficial Uses	<ul style="list-style-type: none"> This document addresses 16 water quality limited segment/pollutant combinations by either providing documentation for full-support or by providing the necessary TMDLs. TMDLs have been prepared for three water bodies: <u>Swan Lake</u>: Threatened for Cold-Water Fish and Aquatic Life. <u>Goat Creek & Jim Creeks</u>: Impaired (partially supporting) for Cold-Water Fish and Aquatic Life.
Pollutants Leading to Impairment or Threatened Conditions	<ul style="list-style-type: none"> <u>Swan Lake</u>: Threatened by POC (Particulate Organic Carbon) and linkage of POC to dissolved oxygen conditions at the bottom of the lake; additional concerns about water quality impacts from development pressure in the watershed and associated increased loading of nutrients (phosphorous and nitrogen). <u>Goat Creek</u>: Impaired by elevated sediment (suspended) loading. <u>Jim Creek</u>: Impaired by elevated fine sediment in spawning gravels; also impaired due to degraded habitat in upper reaches.
Major Pollutant Source Categories	<ul style="list-style-type: none"> <u>Timber Harvest</u>: Includes forest roads, historical riparian harvest and slash disposal, ground disturbing activities and removal of canopy cover and trees. <u>Private Development</u>: Includes private roads, riparian disturbances, stream encroachment, septic systems and livestock.
Target Development Strategies	<ul style="list-style-type: none"> <u>Swan Lake</u>: DO trend in the bottom waters must not indicate decreasing water quality; other water quality indicators (chlorophyll <i>a</i>, secchi depth, nutrients, etc) must not indicate decreasing water quality; several secondary targets developed to help track TSS and nutrient loading, road sediment loading and riparian health indicators. <u>Jim Creek</u>: Acceptable levels of fine sediment in spawning gravels, improved habitat conditions via increased woody debris in upper reaches. <u>Goat Creek</u>: Acceptable levels of suspended solids during runoff. <u>Jim Creek & Goat Creek</u>: Macroinvertebrate communities at acceptable levels using standard analysis protocols.
TMDLs	<ul style="list-style-type: none"> <u>Swan Lake</u>: No increasing load of POC; no increasing nutrient loads. <u>Jim Creek</u>: 10% reduction of fine sediment loading to spawning gravels. <u>Goat Creek</u>: 33% reduction in fine suspended sediment loads during peak flow conditions based on 1997 loading data.
Allocation Strategies	<ul style="list-style-type: none"> <u>Swan Lake</u>: Reduction in pollutant loads from road erosion and riparian removals; no increased pollutant loading from timber harvest; septic and near shore nutrient load limits; pollutant loading reductions from airborne sources consistent with Flathead Lake allocations (once developed). <u>Jim Creek</u>: Limit on road sediment loading; no increased upland/hillslope loading from timber harvest; loading reductions and improved habitat associated with riparian recovery in upper reaches. <u>Goat Creek</u>: Reduction in road sediment loading; no sediment loading increases from other timber harvest activities.

Primary Restoration Strategies and Other Recommended Protection Measures	<ul style="list-style-type: none"> • Continued BMP application for timber harvest activities. • Application of road BMPs for forest roads, including roads associated with private home development. • Application of BMPs to address existing roads (for timber harvest and private homes) that are not up to standards, including culvert upgrades. • Protect riparian areas from existing and future private (non-timber harvest) development. Allow recovery in previously impacted areas. • Landowner education and assistance with efforts to limit septic and other private development impacts to water quality. • Stakeholder coordination and monitoring of natural and human impacts on water quality throughout the watershed. • Continued monitoring of fishery trends and additional monitoring along the Swan Lake shoreline and in streams where potential impairment conditions may exist. • Focus on protection of key spawning locations for bull trout. • Protect or restore fish passage where desirable.
Margin of Safety	<ul style="list-style-type: none"> • Impairment determinations based on assessment of multiple beneficial use support indicators and conservative assumptions for Swan Lake, Goat and Jim Creeks. • Additional biota targets for streams and application of secondary targets to Swan Lake. • Additional focus on nutrient loading via nutrient TMDL for Swan Lake. • Identification of land use indicators to help track potential loading sources of concern. • Reduction in loading from several sources incorporated into load allocations even though the TMDL for Swan Lake are for no increased loading. • Adaptive management applied to targets, TMDLs, and load allocations with a well developed monitoring strategy to help apply this approach.
Seasonal Considerations	<ul style="list-style-type: none"> • Identification of pollutant source pathways and pollutant source loading considered seasonal variations, with highest loads typically occurring during spring runoff. • All targets have specific seasonality considerations and monitoring requirements for eventual compliance determinations.
Pollutant Impairments No Longer Existing Based on the Information Presented in this Document	<ul style="list-style-type: none"> • <u>Goat Creek</u>: nutrients/organic enrichment/DO; flow alterations; fine sediment deposition; habitat alterations. • <u>Piper Creek</u>: Fine sediment deposition; habitat alterations. • <u>Elk Creek</u>: Fine sediment deposition; habitat alterations.

ENCLOSURE 2
SWAN LAKE TMDL PLANNING AREA
EPA REGION VIII MONTANA OFFICE TMDL REVIEW FORM

Document Name:	Water Quality Protection Plan and TMDLs for the Swan Lake Watershed
Submitted by:	MTDEQ
Date Received:	June 10, 2004
Review Date:	July 23, 2004
Reviewer:	Ron Steg
Formal or Informal Review?	FORMAL

This document provides a standard format for the EPA Montana Office to provide comments to the Montana Department of Environmental Quality on TMDL documents provided to the EPA for either official formal or informal review. All TMDL documents are measured against the following 12 review criteria:

1. Water Quality Impairment Status
2. Water Quality Standards
3. Water Quality Targets
4. Significant Sources
5. Total Maximum Daily Load
6. Allocation
7. Margin of Safety and Seasonality
8. Monitoring Strategy
9. Restoration Strategy
10. Public Participation
11. Endangered Species Act Compliance
12. Technical Analysis

Each of the 12 review criteria are described below to provide the rational for the review, followed by EPA's comments. This review is intended to ensure compliance with the Clean Water Act and also to ensure that the reviewed documents are technically sound and the conclusions are technically defensible.

1. Water Quality Impairment Status

Criterion Description – Water Quality Impairment Status

TMDL documents must include a description of the listed water quality impairments. While the 303(d) list identifies probable causes and sources of water quality impairments, the information contained in the 303(d) list is generally not sufficiently detailed to provide the reader with an adequate understanding of the impairments. TMDL documents should include a thorough description/summary of all available water quality data such that the water quality impairments are clearly defined and linked to the impaired beneficial uses and/or appropriate water quality standards.

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

A comprehensive, detailed understanding of the current water quality impairment status of the waters within the Swan Lake TPA is provided in Sections 4, 5, and 6. Six streams in the Swan Lake TPA and Swan Lake were listed as in need of TMDL development on the 1996 303(d) list (Table 2-1). These streams include: Goat Creek, Squeezer Creek, Jim Creek, Elk Creek, Lion Creek, and Piper Creek. All told, 16 water quality limited segment/pollutant combinations appeared on the 1996 303(d) list.

Squeezer, Lion, and the upper segment of Piper Creek down to Moore Creek were removed from the 303(d) list in 2000 due to full support conditions for cold-water fish and aquatic life. Because the above-identified streams/segments were removed from the 303(d) list, TMDL development is not necessary for these specific segments.

In addition, the 2002 303(d) list was refined for Elk and Jim Creeks. Although each stream was originally listed in its entirety, no indication of impairment was provided for the upper sections of each stream, and thus the 303(d) list was modified to reflect this fact.

The waters that remained on the 2002 303(d) list for TMDL development include the following:

- Swan Lake
- Goat Creek above Squeezer Creek
- Goat Creek below Squeezer Creek
- Piper Creek below Moore Creek
- Jim Creek below the west fork
- Elk Creek below Section 16

Based on updated impairment determinations summarized in Table 6-1, all of these waters have been found to be fully supporting beneficial uses except: Swan Lake, Jim Creek, and Goat Creek

above Squeezer Creek. Impairments no longer existing based on the information presented in this document include:

- Goat Creek: nutrients/organic enrichment/DO; flow alterations; fine sediment deposition; habitat alterations.
- Piper Creek: Fine sediment deposition; habitat alterations.
- Elk Creek: Fine sediment deposition; habitat alterations.

2. Water Quality Standards

Criterion Description – Water Quality Standards

The TMDL document must include a description of all applicable water quality standards for all pollutants and all affected jurisdictions. TMDLs result in maintaining and attaining water quality standards. Water quality standards are the basis from which TMDL's are established and the TMDL targets are derived, including the numeric, narrative, use classification, and antidegradation components of the standards.

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
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The listed pollutants of concern include sediment, nutrients, and organic enrichment/DO. Swan Lake is classified as A-1 and all of the tributaries are classified as B-1. The applicable standards for these classifications and the listed pollutants of concern are provided in Section 2.2 and Appendix A.

3. Water Quality Targets

Criterion Description – Water Quality Targets

Quantified targets or endpoints must be provided to address each listed pollutant/water body combination. Target values must represent achievement of applicable water quality standards and support of associated beneficial uses. For pollutants with numeric water quality standards, the numeric criteria are generally used as the TMDL target. For pollutants with narrative standards, the narrative standard must be translated into a measurable value. At a minimum, one target is required for each pollutant/water body combination. It is generally desirable, however, to include several targets that represent achievement of the standard and support of beneficial uses (e.g., for a sediment impairment issue it may be appropriate to include targets representing water column sediment such as TSS, embeddeness, stream morphology, up-slope conditions, and a measure of biota).

- ☐ Satisfies Criterion
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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Jim Creek – Targets for Jim Creek include: 1) less than 35% subsurface fines (<6.35mm) based on McNeil Cores, 2) pools and large woody debris comparable to reference, 3) macroinvertebrate indices associated with sediment indicative of full support.

Goat Creek – Targets for Goat Creek include: 1) TSS less than 30 mg/l during peak flow, 2) macroinvertebrate indices associated with sediment indicative of full support.

Swan Lake - Two types of targets are proposed for Swan Lake, primary and secondary. The primary targets relate to direct measures of beneficial use impairment and the secondary targets represent surrogates typically associated with pollutant loading. The primary targets include: 1) a stable or improving trend regarding DO, and 2) stable or improving trends regarding in-lake nutrient and chlorophyll a concentrations. The secondary targets include: 1) a stable or improving trend in nutrient and TSS loading, 2) application of road sediment BMPs at road crossings, and 3) a stable or improving trend regarding riparian and streambank health. Additional Swan Lake TPA targets specified include: 1) no human-caused near-shore algal blooms that would result in a beneficial use impairment, 2) fish passage improvements, 3) protection of bounded alluvial valley stream segments with documented bull trout spawning, and 4) less than 35% subsurface fines (<6.35mm) based on McNeil Cores (in consideration of natural variability and the potential of the water to achieve this target).

Although the following are appropriate measures for watershed and water quality protection, Swan Lake secondary target “2” (application of road sediment BMPs at road crossings) and additional targets “2” and “3” (fish passage improvements, and protection of bounded alluvial valley stream segments with documented bull trout spawning) are not truly “targets” in a classic TMDL “target” sense. Rather these are measures to be employed to achieve the other targets. These would have been better presented as part of the allocation and/or in the Water Quality Protection and Improvement Strategy presented in Section 9.

4. Significant Sources

Criterion Description – Significant Sources

TMDLs must consider all significant sources of the stressor of concern. All sources or causes of the stressor must be identified or accounted for in some manner. The detail provided in the source assessment step drives the rigor of the allocation step. In other words, it is only possible to specifically allocate quantifiable loads or load reductions to each significant source when the relative load contribution from each source has been estimated. Ideally, therefore, the pollutant load from each significant source should be quantified. This can be accomplished using site-specific monitoring data, modeling, or application of other assessment techniques. If insufficient time or resources are available to accomplish this step, a phased/adaptive management approach can be employed so long as the approach is clearly defined in the document.

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- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

A comprehensive evaluation of sources is provided in Section 5.0.

5. TMDL

Criterion Description – Total Maximum Daily Load

TMDLs include a quantified pollutant reduction target. According to EPA reg (see 40 C.F.R. 130.2(i)) TMDLs can be expressed as mass per unit of time, toxicity, % load reduction, or other measure. TMDLs must address, either singly or in combination, each listed pollutant/water body combination.

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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

In summary, the TMDLs are appropriate and are articulated as:

- Swan Lake: No increasing load of POC; no increasing nutrient loads.
- Jim Creek: 10% reduction of fine sediment loading to spawning gravels.
- Goat Creek: 33% reduction in fine suspended sediment loads during peak flow conditions based on 1997 loading data.

6. Allocation

Criterion Description – Allocation

TMDLs apportion responsibility for taking actions or allocate the available assimilative capacity among the various point, nonpoint, and natural pollutant sources. Allocations may be expressed in a variety of ways such as by individual discharger, by tributary watershed, by source or land use category, by land parcel, or other appropriate scale or dividing of responsibility. A performance based allocation approach, where a detailed strategy is articulated for the application of BMPs, may also be appropriate for non point sources.

In cases where there is substantial uncertainty regarding the linkage between the proposed allocations and achievement of water quality standards, it may be necessary to employ a phased or adaptive management approach (e.g., establish a monitoring plan to determine if the proposed allocations are, in fact, leading to the desired water quality improvements).

Allocating load reductions to specific sources is generally the most contentious and politically sensitive component of the TMDL process. It is also the step in the process where management direction is provided to actually achieve the desired load reductions. In many ways, it is a prioritization of restoration activities that need to occur to restore water quality. For these reasons, every effort should be made to be as detailed as possible and also, to base all conclusions on the best available scientific principles.

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
- ☐ Satisfies Criterion. Questions or comments provided below should be considered.
- ☐ Partially satisfies criterion. Questions or comments provided below need to be addressed.
- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

Based on my review the proposed allocations appear appropriate and include:

- Swan Lake: Reduction in pollutant loads from road erosion and riparian removals; no increased pollutant loading from timber harvest; septic and near shore nutrient load limits; pollutant loading reductions from airborne sources consistent with Flathead Lake allocations (once developed).
- Jim Creek: Limit on road sediment loading; no increased upland/hillslope loading from timber harvest; loading reductions and improved habitat associated with riparian recovery in upper reaches.
- Goat Creek: Reduction in road sediment loading; no sediment loading increases from other timber harvest activities.

7. Margin of Safety and Seasonality

Criterion Description – Margin of Safety/Seasonality

A margin of safety (MOS) is a required component of the TMDL that accounts for the uncertainty about the relationship between the pollutant loads and the quality of the receiving water body (303(d)(1)(c)). The MOS can be implicitly expressed by incorporating a margin of safety into conservative assumptions used to develop the TMDL. In other cases, the MOS can be built in as a separate component of the TMDL (in this case, quantitatively, a TMDL = WLA + LA + MOS). In all cases, specific documentation describing the rationale for the MOS is required.

Seasonal considerations, such as critical flow periods (high flow, low flow), also need to be considered when establishing TMDLs, targets, and allocations.

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Margin of safety and seasonality are adequately considered in this document. Based on the impairment analysis and source evaluations, none of the waters within the Swan TPA appear to be seriously impaired. Nevertheless, conservative assumptions were made and protective strategies are proposed to ensure beneficial use support. Also, the adaptive management approach evaluates target attainment and watershed conditions via a comprehensive monitoring strategy (Section 10.0) that can allow for refinement of load allocations, targets, and restoration strategies to ensure restoration of beneficial uses.

8. Monitoring Strategy

Criterion Description – Monitoring Strategy

Many TMDL's are likely to have significant uncertainty associated with selection of appropriate numeric targets and estimates of source loadings and assimilative capacity. In these cases, a phased TMDL approach may be necessary. For Phased TMDLs, it is EPA's expectation that a monitoring plan will be included as a component of the TMDL documents to articulate the means by which the TMDL will be evaluated in the field, and to provide supplemental data in the future to address any uncertainties that may exist when the document is prepared.

At a minimum, the monitoring strategy should:

- *Articulate the monitoring hypothesis and explain how the monitoring plan will test it.*
- *Address the relationships between the monitoring plan and the various components of the TMDL (targets, sources, allocations, etc.).*
- *Explain any assumptions used.*
- *Describe monitoring methods.*
- *Define monitoring locations and frequencies, and list the responsible parties.*

- ☒ Satisfies Criterion
- ☐ Satisfies Criterion with stipulations provided below that must be addressed.
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The proposed monitoring strategy is articulated in Section 10.0 and appears to be comprehensive and addresses both implementation monitoring as well as trend monitoring regarding most of the primary targets.

9. Restoration Strategy

Criterion Description – Restoration Strategy

At a minimum, sufficient information should be provided in the TMDL document to demonstrate that if the TMDL were implemented, water quality standards would be attained or maintained. Adding additional detail regarding the proposed approach for the restoration of water quality is not currently a regulatory requirement, but is considered a value added component of a TMDL document.

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A water quality protection and improvement strategy is presented in Section 9.0. Given the proposed adaptive management strategy, implementation of this, and the proposed TMDL, would likely result in attainment/maintenance of the applicable water quality standards.

10. Public Participation

Criterion Description – Public Participation

The fundamental requirement for public participation is that all stakeholders have an opportunity to be part of the process. Public participation should fit the needs of the particular TMDL.

- ☒ Satisfies Criterion
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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

An adequate level of public involvement has been provided for the Swan Lake TPA.

11. Technical/Linkage Analysis

Criterion Description – Technical/Linkage Analysis

TMDLs must be supported by an appropriate level of technical analysis. It applies to all of the components of a TMDL document. It is vitally important that the technical basis for all conclusions be articulated in a manner that is easily understandable and readily apparent to the reader. Of particular importance, the cause and effect relationship between the pollutant and impairment and between the selected targets, sources, TMDLs, and allocations needs to be supported by an appropriate level of technical analysis.

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- ☐ Criterion not satisfied. Questions or comments provided below need to be addressed.
- ☐ Not a required element in this case. Comments or questions provided for informational purposes.

This constitutes a very thorough and comprehensive evaluation of water quality issues in the Swan Lake TPA. To the extent possible, the cause and effect relationships between the pollutants and impairments and between the selected targets, sources, TMDLs, and allocations are adequately described.

12. Endangered Species Act Compliance

Criterion Description – Endangered Species Act Compliance

EPA's approval of a TMDL may constitute an action subject to the provisions of Section 7 of the Endangered Species Act ("ESA"). EPA will consult, as appropriate, with the US Fish and Wildlife Service (USFWS) to determine if there is an effect on listed endangered and threatened species pertaining to EPA's approval of the TMDL. The responsibility to consult with the USFWS lies with EPA and is not a requirement under the Clean Water Act for approving TMDLs. States are encouraged, however, to participate with FWS and EPA in the consultation process and, most importantly, to document in its TMDLs the potential effects (adverse or beneficial) the TMDL may have on listed as well as candidate and proposed species under the ESA.

The Swan Lake TMDLs addressed ESA-listed species by designing the in-stream targets, the proposed pollution controls, and post-implementation monitoring activities to be protective of these species. At this time, the EPA is consulting as directed under Section 7 of the ESA with the USFWS regarding the potential effects of EPA's approval of these TMDLs on listed species.

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