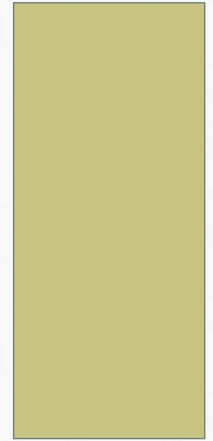


MIXING ZONES

DOCKET 58-0102-1401



OUTLINE

- Brief history of mixing zones in Idaho
- Purpose of this rule-making
- Review mixing zone characteristics
- Discuss sections 060.01 (b), (e), (f), and (h)
- Future topics and path forward

BRIEF HISTORY

- In Idaho's WQS since at least 1980
- 1994 change adding an exemption for certain narrative criteria
- Guidance development attempted, stemming from National Toxics Rule
 - Commenters identified several areas that needed clarification in rule
 - Applicable science and technology have changed since 1980
 - Stalled until rule changes can be implemented

PURPOSE OF RULE-MAKING

- Outgrowth of guidance development
- Add clarifying language
- Improve consistency with other sections of the WQS
- Address consultation concerns raised by NWEA N.O.I.

SCHEDULE FOR MEETINGS

- Today ~ Discuss Sections remaining generally the same
- Future meetings ~ Summary papers will be prepared and discussed
 - Bioaccumulation
 - Unreasonable interference
 - Lakes and reservoirs
 - Others as identified

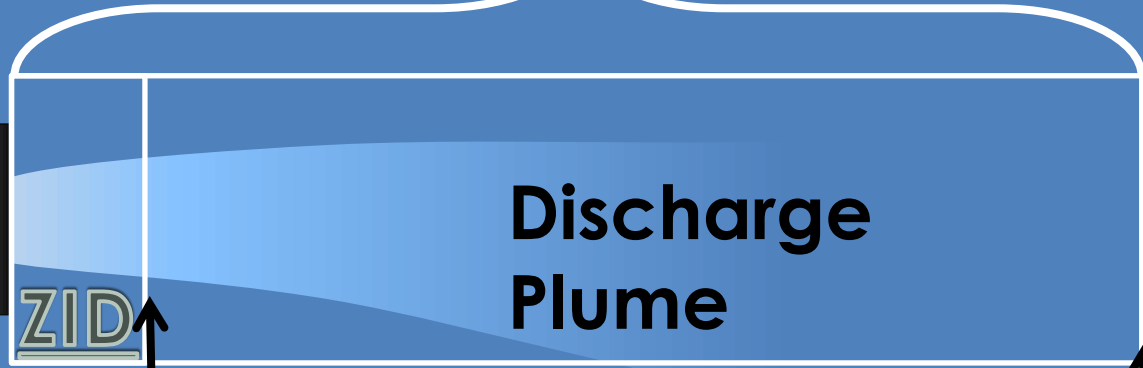
MIXING ZONES ARE

- Optional components of water quality standards (40 CFR 131.13)
 - Area where initial dilution of discharge takes place and where numeric criteria can be exceeded (WQS Handbook 1994)
 - An area or volume of the receiving water that may not meet all applicable water quality criteria (Idaho WQS)



OUTFALL

**Regulatory
Mixing Zone**



Acute
Criteria
Met

Chronic
Criteria
Met

MIXING ZONES SHOULD

- Protect the designated use of the water body as a whole
- Prevent lethality to passing organisms
- Prevent significant health risks
- Be no larger than necessary

MIXING ZONE POLICY

- Purpose:
 - Reduce need for excessive wastewater treatment
 - Identify areas where numeric criteria may be exceeded
- Contents:
 - Specify when and where mixing zones are allowed
 - Define location, size, shape, outfall design and in-zone water quality

HOW MIXING ZONES ARE USED

- Reasonable potential to exceed analysis
- Waste load allocations

WHAT REMAINS GENERALLY THE SAME

- Language in Draft 060.01 (b), (e), (f) and (h)
 - Exceeding criteria
 - Multiple discharge points
 - Multiple mixing zones
 - Mixing zone size restrictions

EXCEEDING CRITERIA

Draft – 060.01(b)

“Water quality within an **authorized** mixing zone **is allowed** to exceed water quality criteria. If approved by the Department, acute water quality criteria may be exceeded within the zone of initial dilution inside the mixing zone. Water quality criteria must be met at the boundary of any mixing zone **under its design conditions.**”

Current – 060.01(g)

“The water quality within a mixing zone may exceed chronic water quality criteria so long as chronic water quality criteria are met at the boundary of any approved mixing zone. Acute water quality criteria may be exceeded within a zone of initial dilution inside the mixing zone if approved by the Department.”

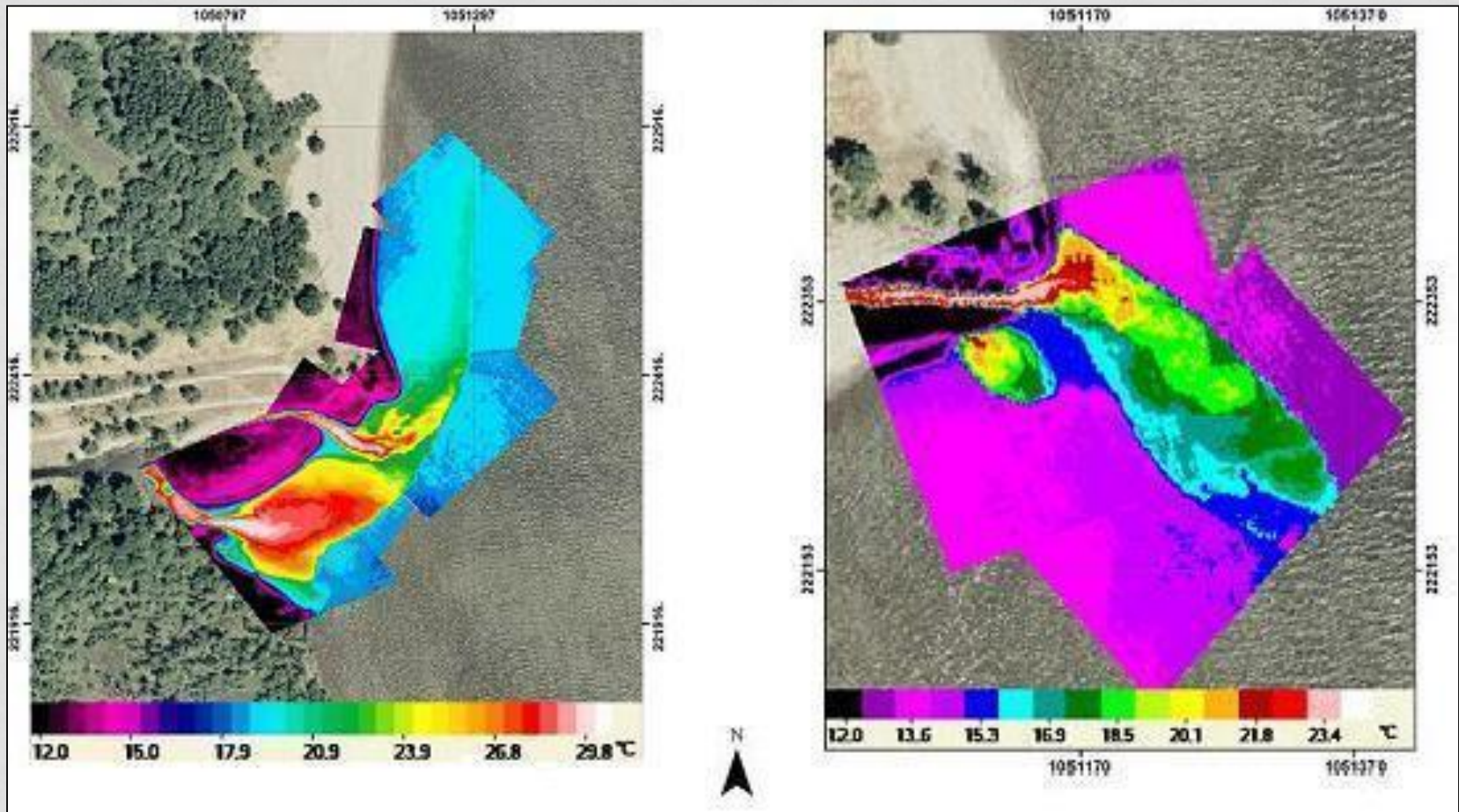
MULTIPLE DISCHARGE POINTS

Draft – 060.01(e)

“**Multiple** mixing zones can be established for a single activity with multiple points of discharge, but **their combined** area and volume shall not exceed that which would be allowed if there was a single **point of discharge.**”

Current – 060.01(c)

“When two (2) or more individual mixing zones are needed for a single activity, the sum of the areas and volumes of the several mixing zones is not to exceed the area and volume which would be allowed for a single zone;”



Example of multiple discharge points, from a single activity to the same water body, and their plumes.

Source: <http://www.mixzon.com/>

MULTIPLE DISCHARGE POINTS

“If a single permitted activity has multiple points of discharge, each point of discharge will need its own mixing zone analysis and authorization. When these multiple points of discharge are to the same water body the combined area and volume shall not exceed that which would be allowed if there were a single point of discharge.”

MULTIPLE MIXING ZONES

Draft – 060.01(f)

“Multiple mixing zones can be established for a single discharge, each being specific for one (1) or more pollutants contained within the discharged wastewater;”

Current – 060.01(d)

“Multiple mixing zones can be established for a single discharge, each being specific for one (1) or more pollutants contained within the discharged wastewater;”

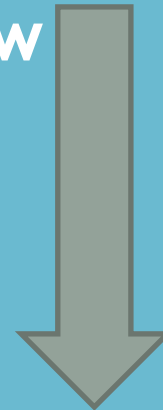
OUTFALL

10% for
cadmium

25% for
chlorine

Chronic criteria
met at edge of
mixing zone

Stream
Flow



Example of different sized mixing zones for different pollutants present in the same discharge.

NESTED MIXING ZONES

“Multiple nested mixing zones can be established for a single point of discharge, each being specific for one (1) or more pollutants contained within the discharged wastewater;”

MIXING ZONE SIZE RESTRICTIONS

- Size restrictions are intended to protect aquatic life and human health
- Subsection (h) delineates these restrictions but allows DEQ to authorize mixing zones that vary from the restrictions.
- Subsection (h) edited to clarify restrictions

STREAM WIDTH

Draft – 060.01(h) i

“The width of a mixing zone is not to exceed twenty-five percent (25%) of the stream width.”

Current – 060.01(e) ii

“The width of a mixing zone is not to exceed twenty-five percent (25%) of the stream width **or three hundred (300) meters plus the horizontal length of the diffuser as measured perpendicularly to the stream flow, whichever is less;**”

SHORELINE PROXIMITY

Draft – 060.01(h) ii

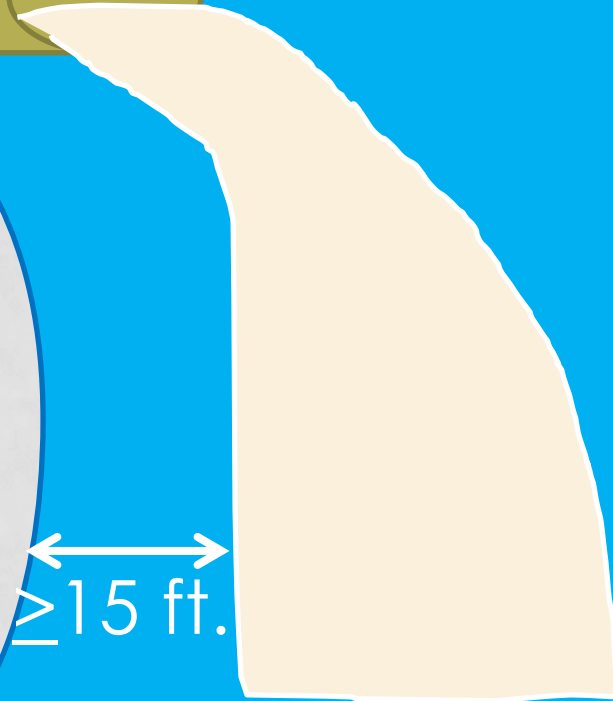
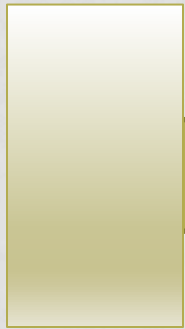
“The mixing zone shall be no closer to the ten (10) year, seven (7) day low-flow shoreline than fifteen percent (15%) of the stream width;”

Current – 060.01(e) iii

“The mixing zone is to be no closer to the ten (10) year, seven (7) day low-flow shoreline than fifteen percent (15%) of the stream width;”



Stream width @ critical flow
volume = 100 ft.



Shore
line

Shore
line

≥ 15 ft.

PROPOSED CHANGES TO DRAFT 060.01(h)

Move 060.01 (h):

“The mixing zone should be no closer to the ten (10) year, seven (7) day low-flow shoreline than fifteen percent (15%) of the stream width;”

to new Section 060.01 (j) regarding design considerations

VOLUME

Draft – 060.01(h) iii

“The mixing zone shall not include more than twenty-five percent (25%) of the critical volume of the stream flow as set forth in section 210.03.b of these rules;”

Current – 060.01(e) iv

“The mixing zone is not to include more than twenty-five percent (25%) of the volume of the stream flow;”

LOW FLOW DESIGN DISCHARGE CONDITIONS

(Section 210.03(b))

- Aquatic life
 - CMC (“acute criteria”) – 1Q10
 - CCC (“chronic criteria”) – 7Q10
- Human health
 - Non-carcinogens – 30Q5
 - Carcinogens – Harmonic mean flow

WHAT HAS BEEN REMOVED

- Section 060.01 (f) – reservoirs and lakes
 - Mixing zones will be developed on a case-by-case basis for non-flowing waters
- Section 060.02 – mixing zones for outstanding resource waters
 - Removed to provide consistency with Antidegradation Policy
- Section 060.01 (a) – how mixing zone receives wastewater

WHAT IS BEING CHANGED

- Draft 060.01 (d) – unreasonable interferences expanded and clarified
- Draft 060.02 – changed from outstanding resource waters to points of compliance for nonpoint source discharges
- Current 060.01 (d) – hazardous materials moved to 060.01 (d)v – unreasonable interferences

WHAT IS BEING ADDED

- Draft 060.01 (a) mixing zones in impaired waters
- Draft 060.01 (c) size of mixing zones should be based on design flows
- Draft 060.01 (g) adjacent independent activities
- Draft 060.01 (i) authorization of mixing zones that vary from 060.01 (h)

PATH FORWARD

- **Comments** on changes made today due by **May 15, 2014**
- **Next meeting June 12, 2014** to discuss draft rule sections that have been added or changed

THANK YOU