




Turbidity Monitoring During Construction





Cory Engel
Water Resources Program Leader
503-986-6641
cory.c.engel@odot.state.or.us



Turbidity Monitoring

Excess turbidity is a sign that erosion and sediment control is not working, and that improvements are needed.



Turbidity Monitoring

Specification related to turbidity:
[Standard Specification 00290.30 \(a\)\(1\)](#)

“Do not cause turbidity to waters of the State and US
outside of regulated levels.”

This is expanded in [Special Provisions 00290.30\(a\)](#):

- (7) Water Quality, and
- (8) Visual Turbidity Monitoring (or “Meter Turbidity Monitoring” or simply “Turbidity Monitoring”)



Turbidity Monitoring

Monitoring is required for

In-water work

(CWA 404 Permit:
Section 401
Clean Water Certification)



Stormwater discharges

(NPDES 1200-CA)



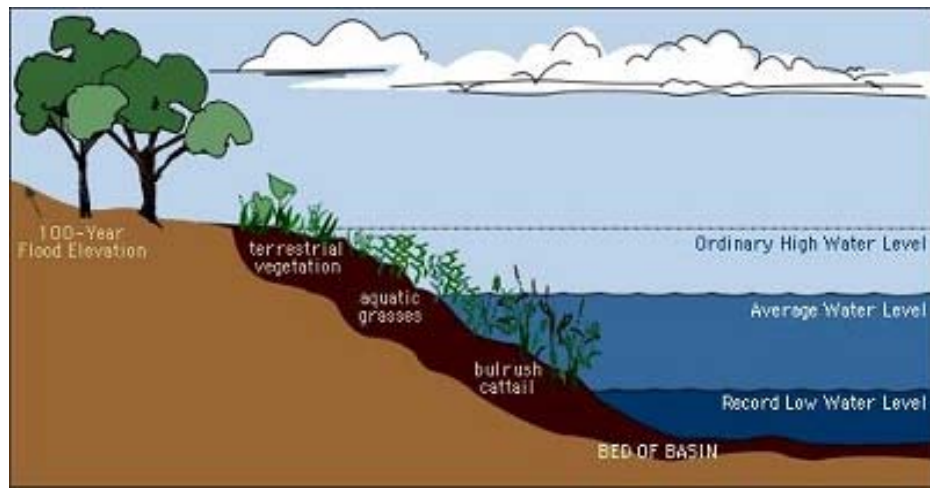
Nationwide 404 Permit 401 Certs: Special Note

- US Army Corps of Engineer permits and associated 401 Water Quality Certifications are issued every 5 years.
- The current (2017) Nationwide 404 Permit's 401 Certification has different turbidity monitoring requirements than previous versions of the Nationwide Permit:
 - Meter monitoring is required, except when specifically approved otherwise
 - 100-foot upstream and downstream measurement locations (doesn't vary with stream width)
 - 2-hour monitoring intervals



In-Water Work Monitoring

**Any work below the Ordinary High Water Level
whether it is submerged or not**



Turbidity Monitoring Methods

Visual monitoring allowed:

Stormwater: NPDES 1200-CA



Turbidity meter required:

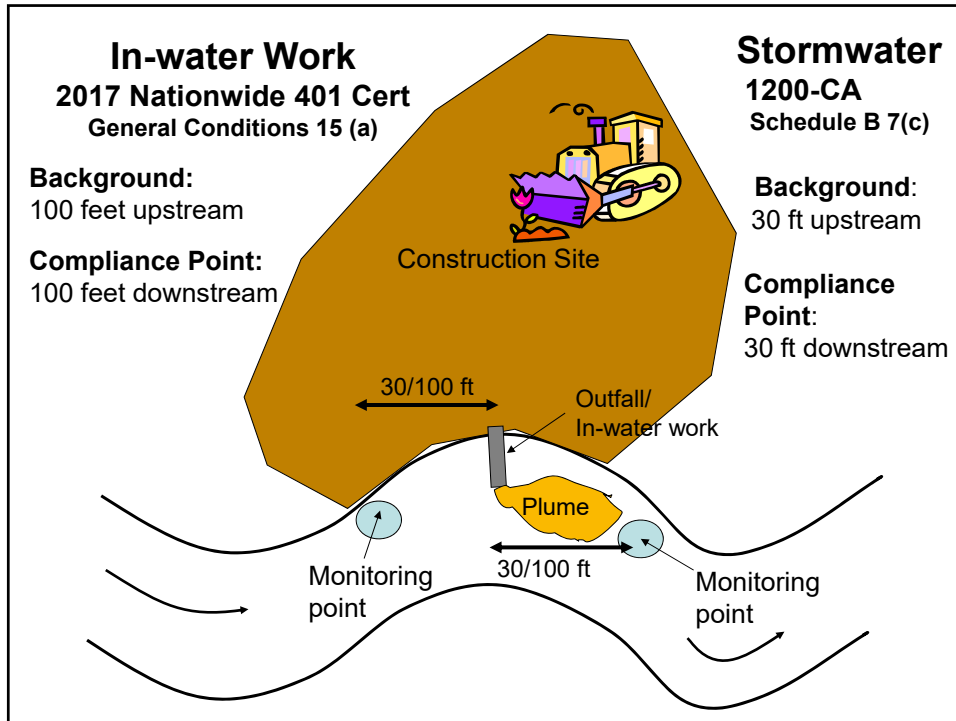
In-water Work: All 401 certifications (Individual and 2017 Nationwide) “unless another monitoring method is proposed and authorized by DEQ.”



Safety First!

Move the monitoring site or revert to visual monitoring if conditions are sketchy.





Considerations

Non-Project Turbidity Sources

- Place the monitoring point between the non-project source and the Project activity or discharge point.
- Record on the monitoring form, and take a photograph.



Monitoring Protocol

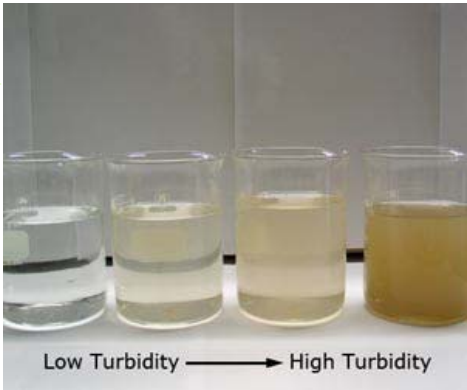
Metered Monitoring Location

- Well-mixed stream: Away from the shore line
- Visible plume: In the plume
- Mid-depth of the stream



Turbidity Monitoring Stormwater Discharge (1200-CA Criteria)

- **Visual:** A noticeable increase in turbidity
- **Metered:** 10% increase above background
(For all practical purposes, up to a 5 NTU increase is permitted)



What is a visible plume/noticeable increase?

Any difference you can see between upstream and downstream, or across the stream at the compliance point.



Turbidity Monitoring for Stormwater:

Monitor daily during rain storms
and within 24 hours of a 0.5-inch storm

(1200-CA Schedule A 5a and Schedule B 7(d))

With exceedance of the criteria:

- Inspect the site to identify turbidity sources
- Immediately upgrade/repair erosion and sediment controls
- Repeat monitoring, inspection and upgrade until exceedances stop
- Record each inspection and remedial steps





**Response to Metered Monitoring
Individual and 2017 Nationwide 401
General Conditions 15 (b)
2-hour Monitoring Interval**

Turbidity Level	Restrictions to Duration of Activity
0 to 4.99 NTU above background	No restrictions. Continue to monitor every 2 hours.
5 to 29.99 NTU above background	Work continues for 4 hours. If turbidity doesn't abate, stop. Modify BMPs. Resume work when NTU is 0-4.99 above background.
30 to 49.99 NTU above background	Work continues for 2 hours. If turbidity doesn't abate, stop. Modify BMPs. Resume work when NTU is 0-4.99 above background.
50 NTU or more above background	Stop work immediately and notify inspector/DEQ

Recording Turbidity for In-Water Work

- Location, date, time (tidal stage)
- Calibration documentation (date, reading of calibration samples)
- Background NTU
- Compliance NTU
- Difference between background and compliance readings
- Discussion of exceedances
- Actions to reduce turbidity/upgrade BMPs, effectiveness of the actions





IN-WATER WORK TURBIDITY MONITORING REPORT

PROJECT NAME	KEY NUMBER	CONTRACT NUMBER
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1. For ODOT use

DSL permit no.		Compliance Distance
Army Corps of Engineers permit no.		Wetted stream width (Check the one that applies to your project)
Instream work start date		<input type="checkbox"/> ≤ 30 feet <input type="checkbox"/> > 30 feet to 100 feet <input type="checkbox"/> > 100 feet to 200 feet <input type="checkbox"/> > 200 feet
Instream work end date		<input type="checkbox"/> > Lakes, ponds and reservoirs <input type="checkbox"/> Individual permit (additional conditions)
Extension date (if applicable)		Approximate downstream compliance point (Check the one that applies to your project)
Nationwide permit no.		<input type="checkbox"/> 50 feet <input type="checkbox"/> 100 feet <input type="checkbox"/> 200 feet <input type="checkbox"/> 300 feet <input type="checkbox"/> Lesser of 100 feet or maximum surface dimension

← Use 100 feet for 401 WQC

2. For Contractor Use

Turbidity meter monitoring

Turbidity measurements (NTUs) – First monitoring four hours after work begins

MONITORED BY	DATE	MONITORING START TIME	TIDAL STAGE (EBB OR FLOW)	APPROXIMATELY 100 FEET UP CURRENT	FEET DOWN CURRENT	STOP TIME	COMMENTS (IF TURBIDITY INCREASES > 5 NTU ABOVE BACKGROUND, HOW WAS WORK MODIFIED TO REDUCE TURBIDITY?)

Visual observation

Plume observed – First monitoring four hours after work begins

MONITORED BY	DATE	MONITORING START TIME	TIDAL STAGE (EBB OR FLOW)	INSIDE COMPLIANCE DISTANCE	OUTSIDE COMPLIANCE DISTANCE	STOP TIME	COMMENTS

3. Signature and submission

PRINTED NAME	SIGNATURE	DATE	TITLE	PHONE

Submit according to Section 00290.
Distribution: Original to Agency Project Manager


Record calibration and actions here

734-2755 (7/15)

Page 1 of 1

Turbidity Monitoring of Stormwater Discharge

Form 734-2361 (6/15)



EROSION AND SEDIMENT CONTROL MONITORING

PROJECT NAME	INSPECTION DATE	KEY NUMBER	CONTRACT NUMBER
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1. Identify the erosion control measures from ESCP:

EROSION CONTROL MEASURES	FUNCTION AS DESIGNED?	DESCRIBE WHAT IS NOT FUNCTIONING	LOCATION OF DEFICIENCY	CORRECTIVE ACTION	DATE COMPLETE	IS THERE VISIBLE OR MEASURABLE SEDIMENT LEAVING THE SITE?	HAS SEDIMENT ENTERED A BODY OF WATER?
DESCRIBE ANY EROSION CONTROL MEASURES NOT LISTED ABOVE							

2. Add or attach any additional information as needed:
ADDITIONAL INFORMATION MAY BE INCLUDED IN THIS FIELD OR ATTACHED AND SUBMITTED WITH THIS FORM

3. Weekly rainfall amounts:

RAINFALL REPORTING STATION	MONITORING PERIOD	<input type="checkbox"/> ACTIVE	24-HOUR RAINFALL AMOUNT:						
		<input type="checkbox"/> INACTIVE	ENDING DATES:						

4. Signature

ESCPM PRINTED NAME	ESCPM SIGNATURE	DATE	CERT NO.	PHONE

Minimum Monitoring Requirements: Inspect all erosion control facilities at least every 7 calendar days on active sites and two weeks on inactive sites. Inspect daily during storm water or snowmelt runoff and within 2 hours after more than ½ inch of rain per 24 hour period. See Section 00280 for additional information.

Distribution: Original to Agency Project Manager

Enter turbidity monitoring data here

734-2361 (6/15)

Page 1 of 1

Turbidity Criteria Exceptions

Anticipated Exceedances

- Negotiated ahead of time and included in the permit
- Still requires monitoring
- Extra conditions, including timing and duration restrictions may be imposed



Turbidity Criteria Exceptions

Exceedances due to factors outside ODOT's control (extreme weather, etc.)

- Must be reported
- E&SC must be immediately restored
- Violation, but not a problem if E&SC in place according to plan

