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DEPARTMENT OF ECOLOGY

APR 23 2007
WATER QUALITY PROGRAM

Subject: Comments on Draft Industrial Stormwater General Permit

Dear Mr. LaSpina:

This letter presents the Weyerhaeuser Company comments on the Industrial Stormwater General NPDES Permit (hereafter "ISWGP") proposed for comment on February 20, 2007.

The ISWGP is an important permit for Weyerhaeuser. Eighteen company facilities are authorized to discharge stormwaters under the terms of this permit. These consist of six sawmills, two veneer manufacturing operations, four log storage/sort yards, two containerboard packaging facilities, a paper recycling facility, and three facilities with other industrial activities.

GENERAL COMMENTS

Permit Complexity

The present ISWGP (modification 2004) is arguably the most stringent industrial general stormwater permit in the country. Even though the data from Ecology's oversight of the present ISWGP indicates poor understanding and permit compliance¹, the agency has proposed a more aggressive permit with more extensive and sophisticated requirements. Note that this ISWGP has about 60 pages of substantive permit requirements. The proposed permit specifies over 80 mandatory obligations for a permittee to accomplish (and routinely update) to maintain literal compliance with its terms and conditions. This permit directly links and demands detailed knowledge and interaction with the *Stormwater Management Manual for Western Washington*. This effectively adds 300 pages of technical/regulatory requirements to the permit. In comparison, the Oregon Department of Environmental Quality reissued its industrial stormwater permit in the summer 2006 and it is 27 pages long².

¹ "No more than 10% (of permittees) would be considered in full compliance with all permit requirements," Fact Sheet to Draft Industrial Stormwater General Permit, Washington Department of Ecology, February 20, 2007, pp 37

² NPDES General Permit No. 1200-Z, Oregon Department of Environmental Quality, permit effective date July 1, 2007

Each permittee is responsible for permit compliance. That said, the Department should not issue a permit which inevitably produces high rates of non-compliance simply due to the complexity of the permit. This is a bad regulatory policy outcome and reflects badly on the work of the Department. Any non-compliance with the terms of an NPDES permit creates enforcement liability; the Department should not casually force this result on permittees. Ecology should strive for a permit that is focused, limited, meets minimum legal requirements, can be understood by the permittee population, and which provides a confident compliance pathway if good faith and reasonably diligent effort is made.

Specific comments are presented which detail the more obvious examples of superfluous and less important permit requirements. While there is much momentum behind the current form of the permit, Ecology is nonetheless encouraged to simplify this permit.

Conformance to RCW 90.48.555

The Washington legislature recognized the unique nature of stormwater. Core principals in the ESSB 6415 legislation are that stormwater pollutants are best controlled by best management practices, a presumption of water quality standards compliance exists if applicable and appropriate BMPs are in place, and an adaptive management process will inform on opportunities to improve BMPs.

These principles have been diluted or ignored in the proposed ISWGP. Benchmark values are structured to effectively serve as numeric effluent limitations. Benchmark values are equated with receiving water quality criteria. The adaptive management process is reduced to having benchmark value exceedences trigger a regulatory do-loop process to ultimately achieve the benchmark. Any single data value of any quality from any storm event has regulatory significance.

Specific comments are presented which detail proposed permit requirements which deviate from RCW 90.48.555.

Remedy

We appreciate that the challenge of drafting a legally-sufficient ISWGP, expressing an appropriate balance between the promise of stormwater quality improvement and practical implementation, is formidable. It is obvious that Ecology has expended enormous effort in developing this permit package.

That said, our view is that serious legal deficiencies and unwise regulatory policy choices appear in the permit draft. These are detailed in the comments that follow. We would encourage the Department to reassemble a broad-based advisory group to fully examine the issues voiced during this public comment period. The 6415 Consulting team should be re-engaged to assist Ecology. Ultimately this ISWGP should be redrafted and another public comment period offered. The permit renewal schedule will need to be extended. The current ISWGP can be continued.

SPECIFIC COMMENTS

S1. Permit Coverage

Comment 1

In S1.A. Table 1, “road maintenance shops, equipment cleaning operations, or deicing operations” from SIC codes 40xx, 41xx, and 43xx are required to obtain coverage. EPA’s NPDES regulation at 40 CFR 122.26(b)(14)(viii) includes an important exemption:

“Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under paragraphs (b)(14)(i)-(vii) or (ix)-(xi) of this section are associated with industrial activity.”

This exemption should be footnoted into Table 1. We note that this exemption is included in the current ISWGP. There is really no reason why Washington’s ISWGP should deviate from the federal requirement on this point.

Comment 2

S1.C.11 should be deleted. The provision conflicts with S1.D.5., which excludes from ISWGP coverage those facilities having authority to discharge stormwater under an existing NPDES individual or other general permit.

Discussion – Individual permit managers have site-specific knowledge of facilities and are best positioned to determine the appropriate terms and conditions for regulating stormwater discharges. S1.D.5 recognizes this. There is no reason for this ISWGP to overlap with an individual permit. S1.C.11 should simply be deleted to avoid confusion.

Comment 3

In S1.E.1., does Ecology intend that “ground water discharges” are the same as “discharges to ground water?” An example of a ground water discharge might be a natural spring. More precise wording of this section would be helpful.

S2. Application for Coverage

Comment 4

In S2.A.3.c., the requirement for permit application 180 days prior to commencement of stormwater discharge should be shortened to 61 days

Discussion – Requiring an ISWGP Notice of Intent to be submitted 180 days prior to a new stormwater discharge could unnecessarily delay the use or startup of the new facility. The

companion requirements to accomplish the required SEPA review, Public Notice process, and to develop/submit/implement a SWPPP, should effectively control the Notice of Intent permitting timeline. In most cases these requirements will consume much less than 180 days.

At the very least this section needs to be reconciled with proposed S2.D.1, which says that permit coverage will commence 61 days after receipt of a completed application.

We note the existing ISWGP permit requires an application for coverage to be submitted at least 38 days before the commencement of the industrial activity (see S2.B.3.c. in the August 2002 ISWGP). Similarly, note that EPA's *Multi-Section General Permit for Stormwater Discharges Associated with Industrial Activities* proposes that new facilities submit a Notice of Intent for coverage "A minimum of 30 days prior to commencing operation of the facility." (Section 1.5.1 of MSGP, December 1, 2005 proposal.)

S3. Stormwater Pollution Prevention Plan (SWPPP)

Comment 5

S3.A.3. and 5. are just too busy. Ecology wants the 2005 *Stormwater Management Manual for Western Washington* to be used and has structured the permit to require use of this updated new Manual once an exceedence of a benchmark level has occurred. Virtually all permittees will soon trigger this requirement. The permit should just specify use of the 2005 SWM Manuals.

Comment 6

S3.A.6. is redundant. Special Condition S8 is the section which directs necessary actions in response to exceedences of benchmarks.

Discussion – The Department should examine opportunities to simplify this permit. S3.A.6 could be eliminated without materially weakening the permit.

Comment 7

In S3.A.9.c., the proposed permit language overstates Ecology's authority to demand more robust BMPs. The opening sentence should be amended to say

"Ecology may require additional applicable and appropriate BMPs where the Permittee exceeds benchmark values."

Discussion – The suggested modification would conform the permit requirement to the statutory language in RCW 90.48.555(6)(b)(i). Ecology does not have a blank check under the law to require installation of any and all conceivable BMP(s) in the quest to achieve a benchmark value. Rather, the statute specifies that "all applicable and appropriate" BMPs must be provided. The distinction between unlimited BMPs and those that are applicable and appropriate is significant, and especially so with the recognition that benchmark values are not effluent discharge limitations.

Comment 8

In S3.B., Ecology should simplify the required content of a SWPPP to make it more reasonable and meaningful.

Discussion - There are a minimum of 60 specific “shall” requirements which need to be satisfied to literally comply with the SWPPP content detailed in this section. In many instances the permit language requires comprehensive and substantial responses. This requirement overreaches. It sets an unreasonable expectation that will not be achieved given the technical and regulatory knowledge possessed by the typical ISWGP permittee.

For example, this section demands comprehensive and open-ended responses. Typical phrases used are:

“identify all areas,” “potentially may be exposed,” “any potential sources,” “have the potential to contribute any pollutants,” “a narrative description,” “include documentation of procedures,” “provide a procedure,” “include a discussion.”

The requirements expect a thorough knowledge of the *Stormwater Management Manual for Western Washington*. For example, permittees are directed to provide a reference to establish the legitimacy of every BMP.

“The Permittee shall indicate whether each BMP is based on the presumptive approach or demonstrative approach, and shall cite the manual and page number of the BMP.”

Rather than creating the potential for technical NPDES permit violations with SWPPPs that fall short of achieving the extensively detailed S3.B. requirements, Ecology should work with an advisory committee and its stormwater permit inspectors to decide on the reasonable and necessary content of a SWPPP.

Comment 9

S3.B.3 e.iii.1 exceeds statutory authority. This sentence should be amended to say

“The Permittee shall complete construction/installation of applicable and appropriate treatment BMPs when operational and source control BMPs do not adequately reduce pollutants below the benchmark.”

Discussion – This suggested modification would conform the permit requirement to the statutory requirement in RCW 90.48 555(6)(b)(i). Ecology does not have a blank check under the statute to require installation of any and all conceivable BMP(s) in the quest to achieve a benchmark value. Rather, the law specifies that “applicable and appropriate” BMPs must be applied. The distinction is significant, and especially so with the recognition that benchmark values are not effluent discharge limitations.

S5 Benchmarks, Action Levels, and Discharge Limitations

Comment 10

In S5.A. Table 2 - The benchmark parameter for stormwater solids discharges from Timber Products Industry permittees should be total suspended solids or settleable solids. The ISWGP should establish a benchmark value for TSS of 130 mg/l or settleable solids of 0.1 ml/l.

Discussion – Either TSS or settleable solids as an adaptive management parameter would have technical and regulatory advantages. This change would:

- assess solids discharges with a parameter traditionally used in the NPDES program and for which much regulatory and technical information exists,
- yield monitoring data which is more meaningful for assessing the performance of treatment BMPs (which typically are based on gravimetric settling),
- produce monitoring data which could be used to conduct loading analyses to receiving waters,
- conform the benchmark to the parameter (TSS) and value (130 mg/l) adopted by the State of Oregon³. Oregon's analysis of stormwater monitoring data should be relevant and credible with Ecology, and
- conform the benchmark to the parameter used by EPA for the Timber Products Industry in their Multi-Sector General Stormwater Permit.⁴
- allow for more direct correlation of solids discharges and other pollutants, including metals.⁵

Note that a change to TSS as an adaptive management parameter would be consistent with a recommendation in the 6415 Report.⁶ The 6415 Report recommendation for TSS benchmark values and actions levels are off-target as they are derived from a small data base that does not include Forest Products Industry data

The permit Fact Sheet analysis of this issue is misleading in several respects with its implication that a TSS benchmark of 100 mg/l or 130 mg/l would not protect water quality or endangered species, and specifically that it would cause acute mortality among Atlantic or Pacific salmon.

³Oregon's *NPDES General Permits 1200-A, 1200-Z and 1200 COLS Renewal Evaluation Report*, February 28, 2006, page 13, states: "The total suspended solids (TSS) benchmark was based on a best management practice approach since there is no TSS water quality standard. Available guidance on the effectiveness of storm water treatment practices indicates that when properly implemented and maintained these practices can generally reduce TSS concentrations by 80%. Using this information, the department applied the 80% reduction to the 95th percentile of TSS data submitted by permittees (640 mg/l) during the first permit cycle."

⁴"*Multi-Sector General Permits for Stormwater Discharges Associated with Industrial Activity*," Part 4 Subsection A, Environmental Protection Agency, draft permit proposed October 2005

⁵Note Figure 2, "*Time Series of Trace Element Concentrations Calculated from Time Series of Suspended Concentrations and RMP Water Samples*," D. Schoellhamer, US Geological Service, September 1996. This technical paper was provided to Ecology's Water Quality Program during an April 11, 2007 workshop.

⁶"*Evaluation of Washington's Industrial Stormwater General Permit*," Prepared by EnviroVision and Herrera Environmental Consultants, November 2006, page 31

First, the NOAA letter speaks to a sustained exposure at 100 mg/l TSS “for a few days”⁷ Peak stormwater solids loadings would be for a limited duration (a significant storm event may contribute peak pollutant loadings for a 4-12 hour period; typical TSS concentrations will be much less than any benchmark. Stormwater discharges at 130 mg/l will quickly be diluted in the receiving water.

As a side note, the Fact Sheet comparison of stormwater discharge data for turbidity (and then BOD₅) between industry categories, and the resulting conclusion that the existing benchmark values are reasonable for the Timber Products Industry, completely misses the relevant point.⁸ Ecology must surely appreciate that a “one size fits all” approach for all industrial permittees across the state may not be appropriate. The question is whether the Timber Products Industry has sufficiently different stormwater discharge characteristics to warrant industry-specific benchmark values or even a separate general permit.

Comment 11

In S5 A. Table 2, the ISWGP benchmark value for turbidity of 25 NTU is inconsistent with recent Ecology AKART determinations. Ecology has defined AKART control for stormwater turbidity to be 50 NTU.

Discussion – RCW 90.48 requires Ecology to develop technology-based effluent discharge limitations reflecting the “all known, available, and reasonable methods of treatment” (AKART). AKART is defined in WAC 173-201A as

“... the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge. The concept of AKART applies to both point and non-point sources of pollution. The term “best management practices,” typically applied to nonpoint source pollution controls is considered a subset of the AKART requirement.”

There are numerous and recent individual construction stormwater NPDES permits where the Department has made regulatory determinations that AKART is 50 NTU.⁹ These permits direct that best management practices contained in the *Stormwater Management Manual for Western Washington*, Ecology 2005, will be used. These determinations of AKART come at the end of a rigorous regulatory process. Similarly, the ISWGP specifies reliance on the same stormwater management manual.

A benchmark value in the ISWGP is to serve as an indicator of BMP performance. An inability to achieve a benchmark value triggers an obligation to implement “all applicable and

⁷ Fact Sheet for draft ISWGP, February 2007, page 71

⁸ Ibid, page 71

⁹ Issaquah Highlands, NPDES Permit #WA-003188-7; Brightwater Conveyance System Project, NPDES Permit #WA-003205-1; Brightwater Wastewater Treatment Plant, NPDES Permit #WA-003204-2; Snoqualmie Ridge II, NPDES Permit #WA-003201-8; Redmond Ridge East, NPDES Permit #WA-003208-5

appropriate” BMPs. If “all applicable and appropriate” BMPs have been implemented, then a presumption exists that WAC 173-201A water quality standards are achieved.¹⁰

It is not credible that a benchmark value for turbidity in this ISWGP would be more stringent than an AKART determination in contemporaneous individual construction permits. Both regulatory determinations seek the “most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge.” The various NPDES permit writers in the Water Quality Program should adhere to a common logic on the capability of modern BMPs to achieve numeric performance markers.

If the turbidity benchmark level is retained it should be increased to at least 50 NTU. Better yet, the ISWGP should substitute settleable solids or total suspended solids as the appropriate adaptive management parameters for solids discharges.

Comment 12

In S5 A. Table 2, the justification for the turbidity benchmark value of 25 NTU (and action level of 50 NTU) ignores Ecology’s regulatory determination in support of the turbidity effluent limitation in the Sand and Gravel General NPDES Permit.

Discussion – The explanation of the 25 NTU turbidity benchmark in the draft ISWGP permit is limited to

“Ecology best professional judgment”

“Ecology retained the turbidity benchmark of 25 NTU from the existing permit. Based on field experience, Ecology staff determined that a stormwater discharge of 25 NTU or less will typically cause no water quality standards violation. (2002 ISWGP Fact Sheet, page 34)”¹¹

In contrast, the Response to Comments in the Sand and Gravel General NPDES Permit (2006) evidences a correct evaluation of the WAC 173-201A water quality criterion for turbidity in its determination of an effluent limitation.¹² Ecology asserts that the 50 NTU turbidity effluent limit is both a technology-based and water quality-based limitation.

“Ecology interprets the turbidity criteria to be an ambient “in-water” parameter, applied to various class of surface waters in the State of Washington, and not directly applied to point source dischargers. . . . It is assumed that, in a vast majority of situations, a 50 NTU discharge will not cause or contribute to a violation of water quality standards in the receiving waterbody.”

¹⁰ RCW 90.48.555(6)

¹¹ Fact Sheet for draft ISWGP, February 2007, page 63

¹² Addendum to Permit Fact Sheet, The Sand and Gravel General NPDES Permit, modification date May 17, 2006, pages 53-54

“In an effort to prevent violations of the turbidity standard within the context of a general permit, Ecology has used Best Professional Judgment (BPJ) and applied a conservative dilution factor of 10 which resulted in the 50 NTU “end of pipe” effluent limitation ”

The analysis Ecology employed in the Sand and Gravel permit has direct application to the selection of a benchmark value for this ISWGP. Once again, the various NPDES permit writers in the Water Quality Program should adhere to a common logic on a turbidity AKART determination and implementation of the WAC 173-201A turbidity criterion.

If the turbidity benchmark level is retained it should be increased to at least 50 NTU. Better yet, the ISWGP should substitute settleable solids or total suspended solids as the appropriate adaptive management parameters for solids discharges.

Comment 13

In S5.A. Table 2 - The benchmark value for turbidity of 25 NTU (and action level of 50 NTU) is unreasonably low for facilities in the Timber Products Industry (SIC 24)

Discussion – Some monitoring data has been collected which indicates stubbornly high turbidity concentrations, even though “all applicable and appropriate” BMPs have been provided. Attachment 1 presents selected data on stormwater discharges from two Weyerhaeuser western Washington timber product manufacturing facilities and two log storage/sort yards. These performance data show evidence of well-controlled discharges; i.e., low BOD₅, O&G, and metals. Yet the reported turbidity values are inconsistent and above benchmark levels. We would consider that the sawmill and veneer manufacturing facility have all applicable and appropriate BMPs, including several forms of treatment BMPs (e.g., bioswales and settling basins) sized to criteria presented in the *Stormwater Management Manual for Western Washington* (2005).

The ISWGP should substitute settleable solids or total suspended solids as the appropriate adaptive management parameters for solids discharges. If turbidity must be retained as the benchmark parameter, a data-driven industry specific adaptive management threshold should be developed. To not do so will force the Timber Products Industry to pursue arbitrary performance targets and be more quickly enmeshed in the expensive S8 *Corrective Action* process.

Comment 14

In S5.A. Table 2 - The benchmark value for turbidity of 25 NTU (and action level of 50 NTU) is unreasonably low for facilities in the Timber Products Industry (SIC 24). Ecology committed in the 2002 ISWGP renewal process to review and, if warranted, to adjust benchmark values.

Discussion – Monitoring data produced from the Timber Products Industry over the past 3 years has indicated this benchmark level is too low. Fifty-one percent of the sample data were reported as above 25 NTU. Thirty-three percent of the data are above the action level value of

50 NTU.¹³ These results are not surprising. Facilities in this industry are predominately located in Western Washington, are 10-100 acres in size with expansive outside storage of raw materials and finished products, and have significant heavy equipment travel on both paved and rocky surfaces. Elevated concentrations of suspended solids and turbidity in stormwater runoff will be typical.

Prior Commitment - Various stakeholders commenting on the 2002 ISWGP renewal had questions and/or were critical of several benchmark parameters and values incorporated in the permit. One of the complaints was that turbidity would not be a good measure of BMP effectiveness and that the value of 25 NTU was unrealistically low. Ecology responded with an immediate explanation for the choice of the parameter and value, and then offered that

Response: ...Except for the turbidity benchmark value, all the values are from the EPA multi-sector general permit. Ecology will not consider any revision of these values now but will reconsider them when the permit is reissued in 5 years. The data collected under this permit may provide the basis for such consideration.

Response: ... Ecology will reassess the use of benchmarks and the values used during the next permit cycle. The data gathered under this permit will be part of this assessment.¹⁴

In summary, the Department of Ecology committed to a data-based review on the appropriateness of the benchmark parameters and values, to occur in conjunction with the 2007 permit renewal. Ecology was reminded a year ago of Timber Products Industry interest in a data-based review.¹⁵

This draft ISWGP adds monitoring requirements into the permit for the Timber Products Industry to explore this relationship between turbidity and TSS (and also, we note, BOD₅ and COD). The idea, apparently, is that this data might be used to inform the decision of appropriate benchmark parameters and concentrations in the 2012 ISWGP renewal. This concession on the issue will simply be too late. As the ISWGP is drafted, permittees exceeding benchmark and/or actions levels will be forced by the S8 *Correction Action* provisions into making significant financial investments within the 2007-2012 permit cycle (and likely within the first 24 months).

Ecology should commit to addressing the turbidity issues – appropriateness as a benchmark parameter and the adaptive management response levels – during the current permit revision process.

Comment 15

The S5 A.2. requirement stating the “sampling requirements in Table 2 shall apply to all discharges” is potentially inconsistent with S4.B 2 d. This latter permit section states

¹³ “Evaluation of Monitoring Data From General NPDES Permits for Industrial and Construction Stormwater,” page A-1, Prepared for the Dept of Ecology by Herrera Environmental Consultants, March 23, 2006

¹⁴ Both references are from pages 79-80 of “Fact Sheet for Industrial Stormwater General Permit – Summary,” Industrial Stormwater General NPDES Permit, 2002)

¹⁵ Letter – Ken Johnson, Weyerhaeuser, to Jim LaSpina and Pat Brommer, WDOE, dated March 14, 2006.

d. Where pollutant types do not vary, the Permittee may sample only the discharge point with the highest concentration of pollutants.

Discussion – As a prudent and practical cost savings measure the allowance in S4 B.2 d. should be retained. In order to avoid confusion and consistent with what we presume to be the Department’s intention, S5.A.2. could simply be eliminated. This section apparently intends to differentiate between discharges to non-303(d) and 303(d)-listed waterbodies. The S5.A. heading clearly indicates the permit requirements in this section apply only to discharges to non-303(d)-listed water bodies.

Comment 16

In S5 A.3. and throughout S8 *Corrective Actions* the trigger for implementing corrective actions is when a benchmark (or action) level is exceeded. That a single stormwater monitoring data value would force a corrective action is much too stringent a requirement. The adaptive management process should be based on an average or median value of the data produced in the October 1 – June 30 sampling period.

Discussion – This permit should acknowledge the inherent limitations of any reasonable monitoring program to characterize the quality of a stormwater discharge. The factors are well known – variability in storm intensities, duration, and patterns; variability in pollutant loading as affected by these conditions; differences in the antecedent periods between storm events; differences in sampling personnel, and sample collection methodology and type; variability in stormwater quality caused by atmospheric pollution, dry deposition and stormwater run-on; variability of measured stormwater quality due to changing business conditions which affect “on-the-ground” activities; etc. The reality is that no single data value can reasonably characterize the performance of BMPs or be used to interpret impacts on receiving water quality.

These highly variable data and inherent uncertainty in their interpretation make it imprudent to trigger the adaptive management process on a single data value. The structure of proposed S8 *Corrective Actions* will require permittees to incur costs for consultants, engineering and capital equipment with as few as two data values (probably from grab samples). This threshold is simply too low.

Ecology’s consultants and the EPA recognize this. The 6415 Final Report recommended that the Corrective Action process be based on the median value of data values collected over a rainy season.¹⁶ EPA’s Multi-Section General Permit requires the permittee to respond with an improved SWPPP if the “average of 4 monitoring values exceeds the benchmark.”¹⁷ Either of these approaches are more reasonable than Ecology’s proposal.

¹⁶ “Evaluation of Washington’s Industrial Stormwater General Permit,” Prepared by EnviroVision and Herrera Environmental Consultants, November 2006, page 28

¹⁷ “*Multi-Sector General Permits for Stormwater Discharges Associated with Industrial Activity*,” section 3.2.2.4, Environmental Protection Agency, draft permit proposed October 2005

Finally, note that the Washington legislature in ESSB 6415 recognized the unique nature of stormwater discharges and directed that the variability of stormwater pollutants in the discharge be accounted for.¹⁸ Linking regulatory actions to some averaged characterization of stormwater quality better achieves the legislatures' directive.

Comment 17

In S5.A Table 2, the benchmark values for total zinc and total copper are unreasonably stringent to serve as adaptive management indicators in this general permit. The benchmark values are derived from the acute water quality criterion for these pollutants and apply at the point-of-discharge. A number of remedies are suggested.

Discussion – As explained in the permit Fact Sheet, the copper and zinc benchmark values are water quality-based to protect aquatic life¹⁹. These benchmarks are derived from the WAC 173-201A water quality acute criteria and data-based assumptions on receiving water hardness (35 mg/l) and dissolved fraction (75th percentile translator, or about 0.53). This derivation is transparently inconsistent with the definition of *benchmark*:

“...Benchmark values are not water quality criteria and site-specific conditions must still be considered to determine if an actual water quality violation exists.”

(draft ISWGP, Appendix 2)

Stormwater hardness - These benchmark levels will not accurately represent the dissolved portion of metals at individual sites. If the stormwater discharge and/or receiving water hardness is greater than 35 mg/l (as CaCO₃) hardness, the appropriate benchmark value for protection of aquatic life will be higher. The general permit benchmarks may well drive unnecessary a Corrective Action effort to reduce metal levels where the metals discharge are not, in fact, at toxic levels.

Dilution must be considered - These benchmark values do not take into account any dilution of the stormwater discharge in the receiving water, thus over-estimating potential toxicity of the discharge to juvenile salmonids. Stated differently, the proposed benchmark values do not account for magnitude, duration and frequency of exposure of salmonids. It is a very conservative choice to structure regulatory determinations on the pollutant concentrations at the immediate point of discharge into the receiving water. For the purposes of this general permit, some dilution should be considered in the process of setting benchmark values. Benchmark values are to serve as indicators of BMP effectiveness; they are not water quality-based effluent limitations. If there are stormwater permittees discharging into smaller waterbodies with limited dilution and which support salmon spawning or rearing, those permittees would be candidates for individual stormwater permits.

¹⁸ RCW 90.48.555(4) and ESSB 6415 Findings

¹⁹ “Ecology determined that the benchmarks and action levels recommended by the 6415 study for these toxics would not adequately protect aquatic life and decided to develop water quality based benchmark values and action levels.” (emphasis added), Fact Sheet for draft ISWGP, February 2007, page 64

Statutory Issues - Benchmarks are to serve as adaptive management indicators. A benchmark set at the water quality criterion without consideration of dilution will effectively work as an effluent limitation. As such, note that RCW 90.48.555(4) specifies that the variability of the pollutant loading and dilution of the stormwater in the receiving water should be considered, as appropriate.

Practical Considerations – Benchmark values are to serve as adaptive management indicators. Does Ecology believe there are applicable and appropriate BMPs which can achieve the proposed benchmark values? Stormwater data compiled in the 6415 Final Report suggests (by extrapolation) that 70-80% of the data values will exceed the proposed copper benchmark and perhaps 60% will exceed the zinc benchmark. The costs to permittees to comply with the S8 *Corrective Action* process will be very significant.

Possible Remedies - In establishing benchmark values for total zinc and copper, Ecology should either:

- 1) assume a 10:1 dilution and adjust benchmark values accordingly (the 6415 Final Report demonstrated that with even higher benchmark values for zinc and copper, the calculated frequency of water quality criteria violation would be <10 percent probability²⁰),
- 2) allow the use of site-specific hardness and translator values similar to EPA's approach in the *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Discharges*²¹, or
- 3) allow permittees who have exceeded benchmark values to develop an analysis using the Water Effects Ratio or Biotic Ligand Model.²²

Comment 18

In S5, Tables 2-5, and S6 Table 6, and the corresponding Fact Sheet discussions of the tabular information, the selection of Action Levels values is clearly arbitrary. Ecology has simply doubled the benchmark values to arrive at Action Levels. In similar fashion, the technical support for Ecology's statement that an Action Level is a "pollutant concentration that is likely to cause a violation of the applicable water quality standard" is simply lacking. The role Action Levels play in this proposed permit is significant. Ecology needs to conduct a more complete technical evaluation and fix these important permit deficiencies. Alternatively, the ISWGP could be simplified by eliminating the concept and use of Action Levels. Properly established benchmark values would adequately serve the adaptive management purpose.

Discussion - The inability to continuously achieve Action Levels has significant implications as the S8. *Corrective Actions* process plays out. Significant financial obligations are triggered if Action Levels are not achieved. Citizen enforcement actions are being pursued based in part on

²⁰ "Evaluation of Washington's Industrial Stormwater General Permit," Prepared by EnviroVision and Herrera Environmental Consultants, November 2006, page 35-37

²¹ "*Multi-Sector General Permits for Stormwater Discharges Associated with Industrial Activity*," section 3.2.2.4, Environmental Protection Agency, draft permit proposed October 2005, see part 4 tables

²² Aquatic Life Ambient Freshwater Quality Criteria – Copper 2007 Revision, Environmental Protection Agency, 72 FR 7983-7985, February 22, 2007

Ecology's representation that an exceedence of an Action Level will likely produce a water quality standards violation. Yet Ecology has produced little technical analysis to support the appropriateness of the proposed Action Levels or that water quality standard violations will result. Level Three and Four corrective actions will force permittees to hire environmental engineers (\$10-50k) and install treatment BMPs (\$10-1,000K based on site-specific factors).

Comment 19

In S5.B Table 3, COD should replace BOD₅ as the benchmark value for Timber Products Industry facilities. Ecology could substitute Chemical Oxygen Demand and simply accept EPA's benchmark value for the industry of 120 mg/l. Please also reference Comment 14 for an understanding of Ecology's commitment during the 2002 ISWGP development.

Discussion – The basis for Ecology's choice of BOD₅ as a benchmark parameter and value of 30 mg/l can be traced back to EPA's Secondary Treatment Regulation (40 CFR 133)²³ While it was convenient for Ecology to incorporate this benchmark parameter and value for Timber Products in the ISWGP (2002), it was totally arbitrary. EPA recognizes that wood products manufacturing operations will contribute organic pollutants to stormwater. EPA has now selected COD as the Timber Products industry sector benchmark parameter and at a value of 120 mg/l.²⁴

Ecology has rationalized BOD₅ as a benchmark parameter because it can serve as an indicator of the impact on receiving water dissolved oxygen. If BOD₅ must be retained as benchmark parameter, a science-based approach to the selection of an appropriate benchmark value would have Ecology model a typical stormwater discharge to determine the BOD₅ discharge concentration which yields an in-stream dissolved oxygen reduction of 0.2 mg/l (WAC 173-201A-200(1)(d)). For almost all reasonable discharge scenarios, the "allowable" BOD₅ will be much higher than 30 mg/l

Comment 20

In S5.D.2. the list of *Conditionally Approved Non-Stormwater Discharges* should be expanded to mimic the list in EPA's *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Discharges*.²⁵

Discussion – The following discharge types should be added:

- Landscape watering provided all pesticides, herbicides, and fertilizers have been applied in accordance with manufacturer's instructions:
- Pavement wash waters where no detergents are used and no spills or leaks of toxic or hazardous materials have occurred (unless all spilled material has been removed).

²³ *Stormwater Multi-Sector General Permit for Industrial Activities*, Environmental Protection Agency, footnote 4 to Table 3, 65 FR 64767, October 30, 2000.

²⁴ "Multi-Sector General Permits for Stormwater Discharges Associated with Industrial Activity," Part 4, Sector A, Environmental Protection Agency, draft permit proposed October 2005

²⁵ *Ibid*, section 1 2 3

A decision by Ecology not to add these non-stormwater discharge types to this permit implies a regulatory obligation to obtain NPDES permit authorization for these discharges from industrial facilities. Neither permittees nor Ecology have the resources to develop individual NPDES permits for these innocuous wastewater types. A decision by the Department to authorize these discharges will eliminate an area of potential permit non-compliance.

Comment 21

Subsection S5.D.3. should be redrafted to simply accept the permit requirements for “*Allowable Non-Stormwater Discharges*” in the EPA’s *Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Discharges*.²⁶

Discussion – Ecology’s interest in regulating these non-stormwater discharges will be adequately addressed if the EPA general permit requirements are achieved; in essence, to identify the discharge location and describe the appropriate BMPs. Ecology add-on requirements in sub-paragraph S5.D.3 b. represents an example where significant effort is expected, but for which a trivial regulatory benefit will accrue.

Comment 22

Subsection S7.B.6. imposes an unrealistic expectation for the documentation of visual inspections.

Discussion – This is an example where the Department’s desire to be especially thorough renders the requirement unrealistic. There may be 10-20 different BMPs within each sub-basin drainage area on an industrial millsite. The obligation to literally satisfy the demands of subsection (6)(a)-(d) will overwhelm most stormwater teams. Note that if benchmark values are exceeded the S8. *Corrective Actions* process will require a complete assessment of candidate BMPs and BMP effectiveness. It will be more effective to expect a quality response to a benchmark exceedence, than to demand monthly, substantive responses to the S7 B (6)(a)-(d) prompts.

Comment 23

In S8. *Corrective Actions*, Ecology requests comment on the choice between the adaptive management approaches presented in this draft permit and in the 6415 Final Report. The 6415 Final Report approach is far superior and should be incorporated in this permit.

Discussion – The 6415 Final Report scheme is favored for three reasons. First, the reliance upon the median value of the data collected over the wet season is much more reasonable than Ecology’s “single data value” decision trigger. See Comment 16.

Second, the “evaluate for 9 months/respond in 3 months” cycle presented in the 6415 Final Report establishes a more realistic schedule for determining appropriate BMP upgrades and

²⁶ Ibid, section 2.1.4.5

implementing them. Ecology's draft permit has a more close-coupled "evaluate/respond" schedule (quarterly) and it has been difficult to keep up and provide meaningful responses.

Third, the 6415 Final Report scheme of grouping appropriate BMP upgrades during the summer months will then allow the possibility of determining whether the BMP package actually produces some tangible benefit. A more meaningful trend analysis can occur.

Comment 24

In S8. *Corrective Actions*, the regulatory process requires the selection and implementation of BMPs to get "below benchmark values." The practical result is an NPDES requirement which positions benchmark values to perform as de facto effluent limitations. This represents a misapplication of RCW 90.49.555(6) and (8).

Discussion – The proposed S8. *Corrective Actions* requires that each exceedence of a benchmark value or action level triggers the need to evaluate candidate BMPs, actions to implement appropriate BMPs (including treatment BMPs and BMPs requiring a capital expenditure), and reporting to Ecology through the quarterly Discharge Monitoring Report. The performance outcome specified in the permit is "to reduce stormwater contamination levels to or below benchmark values."

RCW 90.48.555(8) specifies that "monitoring benchmarks" are to be adaptive management indicators. If benchmark values are not achieved this is an indication that additional BMPs be evaluated and implemented. When "all applicable and appropriate" best management practices for on-site pollution control are provided, compliance with water quality standards shall be presumed RCW 90.48.555(6). In short, the end point of the effort is the implementation of "all applicable and appropriate" BMPs, not continuous attainment of benchmark values.

Comment 25

The S8 *Corrective Action* regime is based on a hopeful assumption that there is a direct cause-effect relationship between the presence and/or maintenance of a BMP and the resulting stormwater pollutant discharge concentrations. This has not been demonstrated.

Discussion – The approach presented in Level One, Level Two and Level Three *Corrective Actions* processes would be very effective if there was some evidence that incremental BMPs could be layered on, with corresponding step-change reductions in stormwater pollutant discharges.

A broad summary from the three years of stormwater monitoring data from Weyerhaeuser's 18 permitted facilities is that 1) the data is highly variable, and 2) at larger complex manufacturing facilities it is not possible to distinguish the value of individual BMPs, be they operational, structural source control, and sometimes even treatment BMPs. After a basic set of appropriate BMPs are present, the data variability appears to be most related to factors related to storm intensity and sampling protocols. That this relationship is not generally in evidence means the corrective action scheme seems unproductively busy.

Comment 26

The overlap between S8.B. and C. is confusing and not productive. These categories could be consolidated, and this will simplify the permit.

Discussion – Any facility that will produce two sampling values above an action level after September 30, 2007 (Level Two) will almost certainly have documented four values above action levels since December 31, 2004 (Level Three). In essence, most facilities with elevated stormwater pollutant concentration will jump from Level One to Level Three, or will start this next permit cycle in Level Three.

Comment 27

The S8.D. Level Four Corrective Action procedure has a number of problems. It is illogical, expensive, and contrary to RCW 90.48.555. This section needs to be re-drafted to address the deficiencies presented below.

Discussion

1. Note that Level Three Corrective Action demands implementation of all applicable and appropriate treatment (and previously, operational and structural source control) BMPs. If all applicable and appropriate treatment BMPs were implemented at the Level Three stage, there are no other BMPs to consider and the discharge is presumed to be complying with water quality standards (per RCW 90.48.555(6)). There would be no reason to embark on a Level Four process.
2. As drafted, Level Four stimulates the requirement for a WAC 173-240-130 engineering report. Inexplicably, it is only after Ecology review and approval of this engineering report that a permittee may request a waiver from implementing stormwater treatment BMPs. (S8.D.6.) This potential outcome is out-of-synch with Level Three.
3. Ecology can anticipate that a very high percentage of permittees are not going to achieve the copper and zinc benchmark values. Rather than forcing this population through a site-specific engineering review, Ecology should simply provide permittees a list of the BMPs which are applicable and appropriate. Permittees can plan for and implement the relevant choices. The list would presumably be extracted from the *Stormwater Management Manuals* and any newer Ecology-approved BMPs. This directed list of candidate BMPs would be considered at each level of the corrective action process.

This approach is entirely appropriate for a general permit. It would unburden permittees and save the significant costs associated with a Level Four Corrective Action. As presently drafted, the ISWGP requires preparation of an engineering report by a professional engineer (WAC 173-240-130). For nearly all permittees this will require the involvement of an environmental consulting firm. A site-specific AKART analysis is

a minimum \$10-25k effort. A water quality analysis, with sampling/analysis/QA plans, may be \$5-20k+.

There are other benchmark parameters for which high rates of exceedences have been noted. A helpful action would be for the Department to list appropriate and applicable BMPs

Comment 28

The S8 *Corrective Action* section needs to include a practical “off-ramp” from the Corrective Action process.

Discussion - An ability should be provided in the Corrective Action process for a permittee to simply demonstrate that “all applicable and appropriate” BMPs are implemented and to conduct a reasonable receiving water quality study to evaluate compliance with water quality standards. The elements of this assessment would include:

- a. Consideration of authorizing a mixing zone consistent with WAC 173-201A
- b. Development of a receiving water study plan.
- c. Allow storm water dilution modeling or direct evaluation of receiving water quality.
- d. Consideration of pollutant variability in stormwater and of dilution of storm water in the receiving water.
- e. Once per permit term demonstration.
- f. Possible individual permit development.

This direct approach would be efficient in addressing the fundamental demands of RCW 90.48. The ISWGP should provide flexibility in allowing a permittee to demonstrate AKART is present and water quality standards are achieved. A paragraph could be added to Level Three which states:

8. Any permittee may demonstrate the implementation of all applicable and appropriate best management practices, and with Ecology approval conduct a receiving water study to assess attainment with water quality standards.

Comment 29

The requirement in S9.D.1. to provide notice of “any bypass or upset” is not realistic. That phrase should be deleted from the permit. The remaining Noncompliance Notification section requirements are fully capable of yielding the information Ecology needs.

Discussion – The *Stormwater Management Manual for Western Washington* directs that treatment BMPs be designed to treat the volume of runoff predicted from a 24-hour storm with a 6 month return frequency or, alternatively, for flow rate-based treatment systems, the design

basis is the flow rate at which 91% of the runoff volumes can be treated.²⁷ The logical consequence is that stormwater runoff from larger storm events will be bypassed. The Manual recognizes this and instructs that provision for a bypass or overflow be provided. There would seem to be little regulatory value for Ecology to be notified that stormwater was bypassed during an extreme precipitation event. The subsequent requirement to submit a detailed written report would have even less value.

Comment 30

Special Condition S10 *Compliance with Standards* should be moved to the front of the permit.

Discussion – S10 announces the regulatory principles around which the ISWGP has been developed. It would have more information value if presented as S1. or before the Special Condition addressing stormwater pollution prevention plans, currently S3.

Comment 31

General Condition 25 *Bypass Prohibited* should be simplified to become meaningful for permittees. The *Stormwater Management Manual for Western Washington* (2005) instructs that treatment BMPs be designed to treat stormwater runoff from a 6-month, 24 hour precipitation event return frequency. In the future most permittees will intentionally by-pass stormwater volumes above this specified volume. Refer to Comment 29.

Discussion – This General Condition is NPDES permit boilerplate originally developed for permittees with continuous discharges. This General Condition is loaded with detailed and conditional requirements which are difficult to understand and apply in a stormwater discharge context. Because of this, most permittees likely ignore this section. Now that Ecology has chosen to relocate this section from the body of the permit (it appeared as Special Condition S8 in the ISWGP (2004)) to the General Condition section, it is even more obscure.

Ecology should redraft this section to provide clear and concise instruction to stormwater permittees, especially relating to the treatment BMP design issue. As an example, G25 A.4 (a-c) are unreasonable limitations for the bypassing of stormwaters arising from extreme precipitation events. It would be fruitless to force a demonstration that the bypass was unavoidable or that no feasible alternatives exist to the bypass. The Stormwater Management Manual design specification moots out these considerations. These subsections should be deleted. We also suggest there would be little value in forcing a permittee to notify Ecology when a bypass has occurred (especially since there is no S9 E. in this permit draft).

G25.A 5. and 6. need to be deleted from the permit or customized to acknowledge the BMP treatment design specification which allows for a bypass.

²⁷ *Stormwater Management Manual for Western Washington*, Washington Department of Ecology, page Volume 4-1, publication no. 05-10-029 through 05-10-033, February 2005

Comment 32

The former *Dispute Resolution* Special Condition (S13 in the ISWGP (2004)) should be retained in this renewal permit. Ecology should encourage the use of this informal process to resolve disagreements on permit terms and conditions, and implementation.

Comment 33

Page 4 of the Permit Fact Sheet describes “Stormwater contaminated by contact with raw materials or products” as being “process water” and that the discharge of process water is not authorized under the ISWGP. This represents a misunderstanding of the definition of process water. The discussion should be corrected.

Comment 34

Page 35 of the Fact Sheet expresses a misunderstanding on the concept of permit compliance. The statements are made that “BMPs must be sufficient to assure that the discharge of stormwater does not violate water quality standards” and “Facilities determined to be out of compliance must implement BMPs to achieve compliance.”

The exact context for these statements is somewhat unclear. Irrespective, note that RCW 90.48.555(6) requires that “all applicable and appropriate” BMPs must be provided and that compliance with water quality standards is “presumed” so long as these applicable and appropriate best management practices are provided and maintained, and certain administrative tasks accomplished.

While the statute does allow for Ecology to make a “reasonable potential analysis” of a dischargers contribution to water quality standards, we suggest this draft ISWGP has consistently misapplied the water quality standards presumption directive. The Fact Sheet discussion regarding “Consideration of Surface Water Quality-Based Limits for Numeric Criteria” offers further evidence of misunderstanding.²⁸ The linking of “compliance” and “benchmarks” in the same sentence adds to this perception.²⁹

Comment 35

The analysis of the antidegradation requirement on page 43 of the Fact Sheet is inadequate and obsolete. The regulation section referred to - WAC 173-201A-070 - no longer exists. WAC 173-201A-320(6) describes Ecology’s obligations for an antidegradation policy review for the issuance of a general permit. There are substantial regulatory requirements which Ecology will need to accomplish in tandem with the issuance of this permit.

²⁸ *Fact Sheet*, Draft ISWGP, February 2007, page 46-47

²⁹ *Ibid*, page 66

Comment 36

Page 65 of the Fact Sheet asserts that “Sampling results above the action levels, ... ,tend to indicate that water quality standards are being violated.” This is an untested statement that, on balance, is probably not technically accurate. It is a statement that serves to bootstrap the S8 *Corrective Action* scheme.

Elsewhere in the Fact Sheet, the Department acknowledges that a “reasonable potential analysis” would be “difficult to conduct given the variability of pollutant concentrations and flows of stormwater discharges, and the variability of receiving water characteristics during a storm event.”³⁰ Actions levels themselves are mostly arbitrary; i.e., “Ecology established action levels values by doubling the benchmark concentrations.” The lack of technical merit for some of the benchmark values has been described. We remain disappointed in the Department’s unwillingness to critically evaluate available information on appropriate industry-based benchmark values and levels.

Comment 37

The thesis behind the Timber Products Industry request for consideration of customized benchmark/action levels is tied to the view that this industry is not typical of other industries, and therefore the benchmark parameters/values should be examined for their appropriateness. The Fact Sheet discussion on benchmark/action levels for the Timber Products Industry mostly sidesteps the relevant issues.³¹

First, the EPA Multi-Sector and Oregon’s Industrial Stormwater Permit benchmark values for TSS and COD have a rational basis. In contrast, the benchmarks suggested from the 6415 Final Report are derived from manipulation of limited data from all other industries (note there is not a Table 49 in the 6415 Final Report). Conclusions about Timber Products Industry BOD and turbidity data simply make the point that this industry has a much different pollutant discharge profile than other industries. The reference to NOAA-Fisheries survey data is apparently based on extended exposures of higher pollutant concentrations. Stormwater dischargers quickly mix in receiving waters. Conclusions based on point-of-discharge benchmark values have little relevance in evaluating the exposure of fish to stormwater pollutants.

Comment 38

The Economic Impact Statement prepared to support the issuance of this ISWGP is very incomplete. Other commenter’s will provide specific details. We note two obvious deficiencies

First, the estimate of 1-4 hours for updates of a facility SWPPP is unrealistic. The S3 SWPPP technical requirements are very extensive. See Comment 8. With an active citizen enforcement campaign now underway, permittees will be compelled to accomplish comprehensive upgrades of their SWPPP’s to address each of the literal permit requirements. The time/effort estimates

³⁰ Ibid, page 39-40

³¹ Ibid, pages 69-70

will vary but 20-50 hours by a knowledgeable environmental professional may be a reasonable range.

Second, available data indicates a high percent of permittees will be forced into the Level Four Corrective Action Process. A requirement is to develop an engineering plan meeting WAC 173-240. Compliance with this regulation is "in scope", i.e., it is an "included cost" for the purposes of this economic analysis. WAC 173-240 must necessarily be prepared by a registered engineer. This implies the need to hire an environmental engineering firm. Early cost estimates suggest a \$10-25k cost to accomplish the required AKART analysis with additional cost to perform water quality modeling and/or receiving water quality evaluations.

Thank you for your hard work in developing this proposed permit and for providing several opportunities to exchange ideas on the necessary and appropriate permit content.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Johnson". The signature is written in a cursive, slightly slanted style.

Ken Johnson
Regulatory Affairs Manager

ATTACHMENT 1

Stormwater Monitoring Data

| Type of Facility | Sample Date | pH | Turbidity (NTU) | BOD5 (mg/l) | O&G (mg/l) | Total Zn (ug/l) | Total Pb (ug/l) | Total Cu (ug/l) | Hardness (mg/l CaCO3) |
|------------------|-------------|-----|-----------------|-------------|------------|-----------------|-----------------|-----------------|-----------------------|
| Sawmill | 3/2005 | | 180 | <3 | <5.0 | 70 | 4 | 60 | 369 |
| Sawmill | 5/2005 | | 110 | 17 | <5.0 | 110 | 3 | 20 | 71 |
| Sawmill | 9/2005 | 6.8 | 170 | <4 | <5.0 | 60 | 1 | 40 | 273 |
| Sawmill | 11/2005 | 6.2 | 450 | 10 | 6.5 | 100 | 3 | 120 | 147 |
| Sawmill | 3/2006 | 6.5 | 110 | <200 | <5.0 | 23 | 5.6 | 26.5 | 113 |
| Sawmill | 9/2006 | | 240 | 4 | <5.0 | 38 | 0.8 | 16.1 | |
| Sawmill | 11/2006 | | 30 | <6 | <5.0 | 8 | 0.7 | 12.8 | 713 |
| Veneer | 10/2006 | 6.5 | 34 | 23 | <5.0 | 30 | | | |
| Veneer | 12/2006 | 7 | 94 | 48 | <5.0 | 40 | | | |
| Log Yard | 3/2005 | | 310 | <3 | 6.2 | 40 | | | |
| Log Yard | 5/2005 | | 140 | No data | <5.0 | 10 | | | |
| Log Yard | 9/2005 | | 750 | 8 | 7.6 | 120 | | | |
| Log Yard | 12/2005 | | 240 | 20 | 6.2 | 40 | | | |
| Log Yard | 1/2006 | | 43 | 13 | 13 | <10 | | | |
| Log Yard | 3/2005 | 7 | 43 | <3 | <5.0 | <10 | | | |
| Log Yard | 5/2005 | | 24 | 3 | <5.0 | <10 | | | |
| Log Yard | 9/2005 | 6.5 | 750 | 10 | 7.6 | 120 | | | |
| Log Yard | 12/05 | 6.3 | 240 | 20 | 6.2 | 40 | | | |
| Log Yard | 12/2005 | | 99 | <3 | <5.0 | <10 | | | |
| Log Yard | 3/2006 | | 44 | <3 | <5.0 | <10 | | | |
| Log Yard | 3/2007 | | 57 | | | | | | |