ENCLOSURE 2
EPA'S LIST DEVELOPMENT PROCESS

Clean Water Act (CWA) Section 303(d), 33 U.S.C. § 1313(d), (Section 303(d)) requires each state to identify those waters within its jurisdiction for which effluent limitations required by CWA Section 301(b)(1)(A) and (B), 33 U.S.C. § 1311(b)(1)(A) and (B), are not stringent enough to implement any applicable water quality standard, to establish a priority ranking for such waters, and to submit a listing of such waters to the U.S. Environmental Protection Agency (EPA) (Section 303(d) list).

On April 13, 2015, EPA received from the West Virginia Department of Environmental Protection (WVDEP) West Virginia's 2014 Section 303(d) list of water quality limited segments (WQLSs) (West Virginia's Section 2014 303(d) list), as part of the Integrated Report submitted by WVDEP (submission) to meet the requirements of CWA Sections 303(d), 305(b), and 314; 33 U.S.C. § 1313(d), 1315(b), and 1324. As described in Enclosure 1, EPA has partially disapproved West Virginia's 2014 Section 303(d) list submission because WVDEP did not evaluate all existing and readily available water quality-related data and information, specifically, information related to whether certain waters are achieving West Virginia's narrative water quality criteria as applied to aquatic life (W. Va. CSR § 47-2-3.2(e) & (i)), when it developed West Virginia's 2014 Section 303(d) list. See 40 CFR 130.7(b)(5).[1] As required by 40 CFR 130.7(d)(2), EPA has developed a list of waters that are not achieving West Virginia's water quality standards by evaluating and using this existing and readily available water quality related data and information and utilizing a methodology used by WVDEP in connection with previous CWA Section 305(b) reports.

In so doing, EPA utilized a methodology jointly developed by WVDEP and EPA biologists called the Genus Level Index of Most Probably Stream Status (GLIMPSS) for assessing attainment of narrative water quality criteria as applied to aquatic life. Below is a description of the methodology and sources of data that EPA used to (1) assess the specific water quality data and information; and (2) determine whether/which waters were not attaining West Virginia's narrative water quality criteria as applied to aquatic life. Employing that methodology and evaluating and subsequently using this existing and readily available data, EPA proposes to add 61 water quality limited segments to West Virginia's Section 303(d) list. A list of the waters that EPA proposes to add to West Virginia's Section 303(d) list is in Enclosure 3. EPA will issue a notice in the Federal Register of our proposed action within 30 days of this disapproval. There will be a 30 day public comment period. Upon completion of the public comment period, EPA will review all comments and make changes to the proposed list as appropriate.

West Virginia's Narrative Water Quality Criteria

West Virginia's narrative water quality criteria (W. Va. CSR § 47-2-3.2(e) & (i)) provide:

> 3.2. No sewage, industrial wastes or other wastes present in any of the waters of the state shall cause therein or materially contribute to any of the following conditions thereof:

[1] To the extent WVDEP believes it did evaluate the genus-level data, WVDEP did not provide a reasonable explanation for not using that data. 40 CFR 130.7(b)(6)(iii)).

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3.2.e. Materials in concentrations which are harmful, hazardous or toxic to man, animal or aquatic life;

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[and] 3.2.i. Any other condition, including radiological exposure, which adversely alters the integrity of the waters of the State including wetlands; no significant adverse impact to the chemical, physical, hydrologic, or biological components of aquatic ecosystems shall be allowed.

WVDEP's West Virginia Stream Condition Index and Use of Family-Level Data

Starting with its 1998 Section 303(d) list through its 2014 Section 303(d) list (with the exception of the 2012 Section 303(d) list), WVDEP has assessed the health of the macroinvertebrate community. With the exception of its 2012 Section 303(d) list, WVDEP has used the West Virginia Stream Condition Index (WVSCI) since 2002 as its primary means of directly measuring whether the narrative water quality criteria as applied to aquatic life are being satisfied.[2] WVSCI consists of six benthic community metrics combined into a single family-level multimetric index. It was developed by Tetra Tech, Inc. in 2000 using WVDEP and EPA data collected from riffle habitats in wadeable streams.[3]

Since publication of the WVSCI in 2000, available biological data and science have progressed significantly. The number of available reference sites has increased, and the state of the science has shifted focus from family-level analysis to genus-level analysis. EPA's National Rivers and Streams Assessment[4] (and several neighboring states (KY, OH, PA, MD, TN) uses genus-level assessment tools.

At the request of WVDEP, EPA worked with WVDEP to develop GLIMPSS to assess West Virginia's waters. GLIMPSS is a more modern index designed to provide higher resolution than the WVDEP's existing family-level WVSCI. In developing GLIMPSS, 41 different biological metrics were tested across seasonal and geographic strata, primarily to refine expectation criteria for a healthy aquatic community composition in West Virginia waters. GLIMPSS responds favorably to various stressors, providing better diagnostic capabilities than the WVSCI. GLIMPSS is a more accurate index that accounts for natural variability driven by geographic location, seasonality, and waterbody size. GLIMPSS was developed using nearly 400 reference sites (as opposed to the 107 reference sites used for WVSCI). WVDEP currently has over 6,300 sites that have been sampled and identified using genus-level taxonomy and have GLIMPSS (Pond, et al. 2012[5]) scores calculated.

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[2] West Virginia also assesses ambient levels of various parameters against numeric water quality criteria established to protect the aquatic life use.

[3] http://www.dep.wv.gov/WWE/watershed/bio_fish/Documents/WVSCI.pdf

[4] https://www.epa.gov/national-aquatic-resource-surveys/nrsa

[5] Pond GJ, Bailey JE, Lowman BM, Whitman MJ. 2012. Calibration and validation of a regionally and seasonally stratified macroinvertebrate index for West Virginia wadeable streams. Environ Mon Assess 185: 1515-1540.

West Virginia has accumulated 14 years' worth of biological data sampled and identified using genus-level taxonomy. After WVDEP expressed concern in 2010 that GLIMPSS was not peer reviewed, GLIMPSS went through external peer review, was published online in the journal *Environmental Monitoring & Assessment* (May 2012), and appeared in the hard copy version of the journal, Volume 185 Number 2 (May 2012).[6]

GLIMPSS consists of four stratum specific models (mountain/plateau and spring/summer) each with between eight and ten metrics. Generally, all metric values were converted to a standard 0 (worst) to 100 (best) point scale. The standardized metric scores were then averaged for each benthic sample site to come up with a final index score ranging from 0.0 to 100.0. Using the distribution of scores from all sites that are considered reference sites, a threshold score representing the 5th percentile of reference sites, was identified as the lowest GLIMPSS score that was considered as fully supportive of the narrative criteria as applied to aquatic life.[7] This means that 95% of all reference sites had a higher score. Setting a threshold as a percentile of the reference population corresponds to setting the acceptable significance of a hypothesis test (α), or the acceptable type 1 error rate (false positive), as the reference percentile. Use of the 5th percentile of reference sites is a more conservative approach (i.e, will identify fewer waters as impaired) than the approach taken by surrounding states, which set their thresholds at 10th or even 25th percentile of reference.

EPA's List Development Process

EPA started by evaluating the biological data assembled by WVDEP for the CWA Section 305(b) portion of its Integrated Report. This included the WVDEP "Decision Database" that was provided with the submission of WVDEP's final 2014 IR. The Decision Database is an Access database that contains relevant water quality monitoring data including but not limited to biological assessment data. The database also includes the various lists of waters that comprise WVDEP's Integrated Report.

Because the basis of EPA's partial disapproval of the 2014 Section 303(d) list is WVDEP's failure to evaluate certain information against West Virginia's narrative water quality criteria, EPA limited its evaluation to data that was readily available to and assembled by WVDEP, but had not been available previously in connection with the 2012 or other past approved Section 303(d) lists. Phrased differently, EPA did not consider samples that were collected and assembled prior to July 1, 2011. It is not EPA's purpose to re-visit prior listing decisions or EPA's approval of past lists.

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[6] At the time WVDEP was collecting and analyzing data for purposes of its 2012 Section 303(d) list, GLIMPSS had not yet been published in a peer reviewed journal. GLIMPSS was published in a peer-reviewed journal in time for WVDEP's use in connection with the 2014 Section 303(d) list.

[7] As a general matter, the reference sites will have experienced some alteration and thus represent some degree of departure from truly natural conditions. To account for this, many states (Virginia for example) use 10th percentile of reference, or even the 25th percentile of reference. EPA agreed with WVDEP's use of the 5th percentile of reference because of the high quality and general confidence in West Virginia's reference samples as representative of something closer to natural conditions.

EPA then applied the GLIMPSS methodology to the genus-level data collected and assembled from July 1, 2011 – June 30, 2013. EPA acknowledges there may be multiple methodologies that could be used to assess the relevant readily available data. EPA also concludes that it can appropriately apply GLIMPSS to evaluate the existing and readily available data assembled by WVDEP while not pre-empting the methodology development process currently being undertaken by WVDEP pursuant to SB 562.

Using the foregoing GLIMPSS methodology, EPA evaluated the genus level data. Based upon EPA's evaluation and use of the genus-level data, EPA believes that there are 61 additional WQLSs that are impaired and proposes to add the 61 WQLSs to West Virginia's Section 303(d) list. A list of the waters that EPA proposes to add to West Virginia's Section 303(d) list is in Enclosure 3. EPA's list of proposed waters to be added to WV's 2014 303(d) list contains some waters that have previously been identified as impaired by WVDEP and have a Total Maximum Daily Load (TMDL) completed. If WVDEP or others believe the most probable stressor to the aquatic life in any waters is the pollutant for which a TMDL already has been established, a justification that the TMDL already established will achieve water quality standards should be provided during EPA's public comment period.

Because the addition of these waters is proposed based upon a direct measure of the aquatic community and no stressor identification analysis has been performed, the pollutant or pollutants causing the proposed impairments is unknown at this time. EPA neither approves nor disapproves the states' priority ranking submittal and is under no obligation per 40 CFR 130.7(b)(4) or the CWA to include a priority ranking or schedule for TMDL development to waters added to a states' § 303(d) List. EPA expects WVDEP to incorporate the waters, if any, added by EPA into its next priority ranking. Given the significant technical evaluation necessary for TMDL development and WVDEP's efforts to develop a new assessment methodology that may impact future TMDL endpoints, EPA believes it would be appropriate for WVDEP to consider its anticipated development of a new methodology when it develops its priority ranking.

EPA will open a public comment period on these proposed additions to West Virginia's Section 303(d) list and will, if appropriate, revise the list of added waters and pollutants following consideration of any comments received.

It is important to note that EPA's action should not be considered as pre-judging any future assessment methodology that may be developed by WVDEP pursuant to SB 562. If and when WVDEP develops an assessment methodology and such methodology is scientifically sound and applied in connection with future Section 303(d) lists, WVDEP is free to re-assess the waters EPA is adding to the 2014 Section 303(d) list. EPA will consider WVDEP's evaluation of existing and readily available information at that time. EPA's view that GLIMPSS is a more rigorous assessment tool that is more consistent with the state of the science remains unchanged. As WVDEP moves forward, EPA recommends that WVDEP incorporate GLIMPSS into its updated biological assessment methodology. EPA will continue to work with WVDEP as it develops a scientifically rigorous assessment methodology.