Response to Comments for Proposed Policy Handbook Establishing a Standard Method of Testing and Reporting of Microplastics in Drinking Water

August 9, 2022

The following tables contain summaries of written comment letters and responses for the Draft Microplastics in Drinking Water Policy Handbook (November 10, 2021). To obtain full copies of public comment letters, please send an email to commentletters@waterboards.ca.gov with 'Microplastics Policy Handbook Comment Letters' in the subject line.

Table of Contents

Comment Category Key

Category	Topic	Comment IDs
Analytical method	A	16,37,39
Clarity	B	27,48
Consumer messaging	C	31,42,51
Coordination	D	25,40
Definition	E	2,3,4
Exemptions in Phase II	F	46
Funding	G	18,30
Health language	H	6,19
Infrastructure	I	28,47
Miscellaneous	J	1,8,9,10,11,12,15
Monitoring frequency	K	44
Pilot phase	L	14,17,20,21,26,41,50
Process	M	5,7
Reporting	N	23,24,36
Resources for novice laboratories	O	35
Sample analysis	P	54
Sample collection	Q	53
Sampling matrices	R	38
Size limit	S	45,49
Surrogates	T	22,33
Tiered monitoring	U	34
Timeline	V	13,29,43,52
Two-phase monitoring	W	32

Commenter Key

Commenter Name	Submitted by:	Date Comments Received	Comment Categories	Comment Numbers
American Chemistry Council	Brett Howard	12/22/2021	E,H,J,M	1 to 12
American Water Works Association-California-Nevada Section	Sue Mosburg	12/22/2021	A,J,L,V	13 to 16
Association of California Water Agencies, California Water Association	Nicholas Blair, Jennifer Capitolo	12/21/2021	D,G,H,L,N,T	17 to 25
California Urban Water Agencies	Wendy Broley, Helene Baribeau, Tiffany Tran	12/20/2021	B,C,G,I,L,V	26 to 31
McCampbell Analytical, Inc.	Kelly Chen	12/22/2021	O,T,U,W	32 to 35
RJ Lee Group	Keith Rickabaugh	12/21/2021	A,N,R	36 to 39
San Diego County Water Authority	Kelley Gage	12/22/2021	C,D,L,V	40 to 43
San Francisco Public Utilities Commission	Andrew DeGraca	12/21/2021	B,F,I,K,S	44 to 48
SiMPore	James Roussie	12/22/2021	S	49
The Metropolitan Water District of Southern California	Paul Rochelle	12/21/2021	C,L,P,Q,V	50 to 54

Summary and Response to Comments

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
American Chemistry Council	Miscellaneous	**ACC Supports the Handbook's Focus on Quality Control / Quality Assurance and Methods for Identifying Microplastics.** As a general matter, ACC supports the Board's extensive focus on QA/QC for microplastics sample collection, preparation, and identification. Many have noted the exponential increase in microplastics publications recently, although the ability to compare and aggregate data within the various studies remains challenging due to incompatible sampling and reporting methods [Cunningham et al. 2019]. Further, overall data quality from these publications leaves much to be desired, with recent publications scoring an average of 45% on quality criteria concerning particle characterization, experimental design, applicability in risk assessment, and ecological relevance [de Ruijter et al. 2020]. Based in part on these challenges, we agree with the Board's finding that it is inappropriate at this time to provide numerical exposure guidance, while providing detailed steps to ensure that sampling and analysis of microplastics in drinking water are as accurate as possible (i.e. by using positive and negative controls, fortified blanks, etc.). Moreover, the contamination and quality control sections within the Handbook represent a comprehensive approach to minimizing ambient microplastics contamination during sample handling and analysis, thus reducing the chance of reporting inaccurate microplastic levels. While the microplastics research field has ample room for improvement, the Handbook's standard operating procedures move the science in the proper direction [The demonstrations of accuracy and	Thank you for your comment and for several of your member agencies' participation in our efforts to advance the science and develop standardized analytical methods. We look forward to continuing to work together to improve analytical methods.	1

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		precision, for example, we expect to improve over time.]. ACC was also pleased to see that the Handbook identifies Raman and infrared spectroscopy as the preferred methods for microplastic identification. These instruments represent tried-and-true analytical techniques to discern synthetic particles from natural materials and are uniquely suited to the regulatory requirements in SB1422. The draft protocols within the Handbook have appropriate minimum cutoff sizes for microplastic particles that best represent the capabilities of the instruments and laboratory personnel (20 and 50 µm, respectively). And while other technologies will likely be available in the future for microplastics identification—namely pyrolysis / gas chromatography and laser direct infrared analysis—the current limited quantity of these instruments in laboratories and incipient analysis protocols prevent them from use within a regulatory setting at this time. We encourage the Board to continue to work with voluntary consensus organizations, such as ASTM and ISO, to develop these technologies. Relatedly, ACC acknowledges the importance of the Board's work within ASTM to date that has resulted in D8332-20 and its inclusion in the Handbook. We hope that this effort will continue to yield new methods applicable to microplastics in the future.		

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
American Chemistry Council	Definition	**The Working "Microplastics" Definition Continues to be Problematic and Should be Updated.** 1. "Microplastics" as defined is overbroad and unworkable. ACC previously commented on the proposed "microplastics in drinking water" definition. SWRCB staff have indicated an openness to revisiting the definition as the program matures. We recommend that California update and refine the definition now.6 The definition as is remains too broad because it encompasses not only traditional microplastics from major resins in consumer products—polyethylene (PE), polypropylene (PP), styrene-butadiene rubber (SBR), and polyester, for example—but also particles not associated with plastic, such as dyed wool and polyethylene glycol. SWRCB can solve this issue by adopting the plastic definitions put forth by ASTM or ISO. Both are similar in that they define plastic as being shaped by flow, a traditional method for manipulating heated polymers into end products during manufacturing. ASTM defines plastic as: *"a material which contains as an essential ingredient one or more organic polymeric substances of large molecular weight, is solid in its finished state, and at some stage in its manufacture or processing into finished articles can be shaped by flow."* (ASTM D883-19b) Including "plastic" in the definition rather than "polymer" is more appropriate because plastic MPs can be properly detected and quantified. Non-plastic polymer particles often have complex dissolution behaviors in water and are	As stated on page 13 of the staff report (Coffin 2020), the ISO definition for 'plastic' has been criticized for being too narrow, as while it would include common, high-production classes of polymers such as thermoplastics and thermosets, some elastomers (e.g. anthropogenic rubbers) would be excluded (Hartmann et al. 2019). The ASTM definition is more narrow than the ISO definition due to its explicit exclusion of rubber, textiles, adhesives, and paint (ASTM 2020). Exclusion of textile- and rubber-derived microparticles from a definition of 'microplastics in drinking water' may exclude a significant portion of particles from analysis. Textile-derived fibers that would meet the ISO definition of 'plastic' may constitute 50-99% of 'microplastics' found in drinking water (Pivokonsky et al. 2018), and rubber-derived	2

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		very difficult to detect in drinking water matrices. Developing adequate methods to detect non-plastic polymers would take concerted effort and time, while adding unneeded complexity to analytical methods. Thus, traditional plastic particles that are solid and insoluble in drinking water should be the focus. Referencing the ASTM and ISO definitions for plastics would help ensure this. OMB Circular A-119 encourages adoption by reference of voluntary consensus standards such as those developed by ASTM, so this ASTM definition is likely to be influential and likely to be the leading definition used by federal agencies such as EPA, NOAA and others, as well as researchers across the US.	particles that would meet the ISO definition of 'plastic' have been found at high concentrations in aqueous samples (48% of 11 trillion microparticles entering the San Francisco Bay) (Sutton et al. 2016). Furthermore, the substance criteria in the proposed definition is virtually synonymous (with the exception of biodegradability criteria) with the proposed definition of 'microplastics' by the European Chemicals Agency (European Chemicals Agency 2019a), and was supported unanimously by a panel of five leading experts commissioned for external peer review (California State Water Resources Control Board 2020) and again by four additional reviewers solicited to meet the requirements of California Health and Safety Code Section 57004 (State Water Resources Control Board 2022).	

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American Chemistry Council	Definition	2. The minimum size threshold does not comport with polymer science principles. Turning to the size requirements within the “microplastics” definition, draft ASTM standards use the traditionally accepted maximum microplastics size of 5 mm, which comports with the SWRCB’s Proposed Definition. Aligning the Board’s definition with this generally recognized upper limit will substantiate boundaries for microplastics research and regulatory efforts. The Board’s defined lower limit of 1 nm, however, is not grounded in any scientific principle and demonstrates a fundamental misunderstanding of polymer science. Paraffin wax, for example, is a polymer that comprises a fully saturated alkyl carbon chain commonly 31-33 carbon atoms in length – roughly 40 nm [Soliman 2020]. This structure is identical to polyethylene, and thus synthetic polyethylene with a length of 40 nm would be chemically indistinguishable from paraffin wax. The structural similarities at this size are important because waxes are distinct from plastics due to their inherent characteristics – and more importantly waxes readily biodegrade [Arnbjörn 1992]. Consequently, the present “microplastics” definition is problematic because it fails to include a lower size threshold that excludes waxes. It is also conceivable that additional, biologically-derived molecules could be swept up in definition as well – n-octanol, for instance, has a length of 1 nm. Further complicating the matter is that the detection and analysis of particles within this size range is extremely difficult. Therefore, we recommend that the Board increase the minimum size requirement for microplastics to 100 nm to avoid these complications. It is worth noting that the 100	Based on the demonstrated toxicity of <100 nm plastic particles (Coffin et al. 2022), the State Water Board cannot justify the inclusion of a lower size limit of 100 nm in the definition of ‘microplastics in drinking water’. ECHA's draft definition includes a lower size limit of 100 nm in part due to their existing regulations for nanomaterials (<100 nm), while such regulations are lacking for California. Furthermore, the lower size limit effectively conforms with the definitions of 'microplastics' used by additional agencies, including the US EPA (Murphy 2017), National Oceanic and Atmospheric Administration (Courtney Arthur, Baker, and Bamford 2008), and International Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP 2019) - all of which actually do not have lower size limits whatsoever.	3

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		nm minimum size limit is in line with recommendations from the Committee on Risk Assessment for intentionally added microplastics under REACH [ECHA 2020].		

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American Chemistry Council	Definition	3. Soluble polymers should be excluded. Reframing the microplastic definition on plastics rather than polymers will focus SWRCB efforts on creating analytical methods for traditional plastic particles that are solid and completely insoluble in water. The current definition will likely implicate many materials that should not be viewed as associated with the presence of trace amounts of microplastics in the environment, such as polyethylene glycol and polyvinyl alcohol. That is not to say these polymers might not be without risk in unusual situations where very high exposures could theoretically occur, since risk is a function of hazard and exposure. But as used in commerce at present, these polymers are not widely detected in environmental or biotic screening studies looking for trace concentrations of microplastics. More commonly, these chemicals dissolve when formulated into consumer products. For instance, functional polymers used in cosmetic and other products may be manufactured as solid particulate materials but dissolve when used in aqueous formulations and remain dissolved after use and disposal. While these functional polymers share the same backbone with their larger structural polymeric relatives, it is the unique and subtle co-monomer profile that effectively differentiates a functional and a structural polymer. These small and often proprietary differences in the co-monomer content may lead to significantly altered polymeric properties that allow, among others, for an enhanced solubility but also may considerably change the applicability of analytical test methods.	The claim that soluble polymers such as polyethylene glycol and polyvinyl alcohol represent “...trace amounts of microplastics in the environment" is neither substantiated by the commentator, nor a sound argument for their exclusion from the definition. Once in the environment, soluble polymers (such as polyacrylamide) may appear as solid microscopic particles due to a number of poorly understood factors, including low pH synthesis (Berndt et al. 1991), cross-linking (Rivas, Urbano, and Sánchez 2018), or other processes (Arp and Knutsen 2019). This heterogeneity and uncertainty in the solubility of so-called, “soluble polymers” is demonstrated in the findings of such polymers as solid particles in environmental monitoring studies. For instance,	4

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		Including these functional polymers within “microplastics” unnecessarily broadens the definition scope beyond plastics one would expect to find. We propose a 100 mg/L solubility threshold to ensure the definition for “microplastic” can facilitate proper analytical method development for polymers relevant to human ingestion.	polyvinyl alcohol has been found as solid particles in the guts of deep-sea amphipods (Jamieson et al. 2019), benthic crustaceans (Cau et al. 2020), wastewater treatment plant influent and effluent (Kang et al. 2018; Mintenig et al. 2017), and stormwater (Liu et al. 2019). In a 2018 review of environmental microplastic monitoring studies, polyvinyl alcohol (in solid particulate form) represented approximately 1% of the total relative polymer composition in water, and approximately 11% of the total relative polymer composition in sediment (Burns and Boxall 2018). Polyethylene glycol, which is a type of synthetic “polymer gel” industrially produced in large quantities, has been detected in solid particulate form in various environmental compartments (e.g., stormwater (Liu et al. 2019), fish guts (Collard et al. 2017)) using typical	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
			microplastic sampling protocols and detection techniques (i.e., Raman or FTIR spectroscopy). The concept of a solubility threshold becomes particularly challenging when considering nanoscale sized polymeric particles. For instance, degraded polyacrylamide (a “soluble” polymer) appears as a solid particle ranging from 18 to 350 nm in size (Jop et al. 1997), which can agglomerate to make larger polymeric nanocomposites and micro-scale particles (Rivas, Urbano, and Sánchez 2018). Furthermore, test methods to determine “solubility” can be confounded for particle dispersion, which is highlighted in a recent regulatory registration guidance document for nanoparticles (European Chemicals Agency 2019b). In consideration of challenges over the determination of	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
			solubility of particles (particularly in the nano-sized range), the European Chemicals Agency considers polymer “solubility” to not be a useful term to define “microplastics”, concluding that additional defining terms such as “solid” and “particle” sufficiently captures “that a polymer has kept its shape in the medium into which it is placed and can move as a unit” (European Chemicals Agency 2019a). By omitting a solubility threshold, the proposed definition of ‘microplastics in drinking water’ is in harmonization with the proposed definition for ‘microplastics’ by the European Chemicals Agency (European Chemicals Agency 2019a).	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
American Chemistry Council	Process	**Including "Surface Waters" Within the Phased Approach Is Overly Broad and Unworkable.** While ACC supports a phased system for microplastics method development and monitoring, the Board's expansion of monitoring activities to include "source waters" will dramatically increase the scope of this program, which will impose unnecessary costs and complexities. We also believe this was not intended by the legislature when the program was authorized under SB1422, is not supported by the plain language of the authorizing statute, and is inconsistent with accepted differentiation – and regulation – of "source waters" and drinking water. The State should focus on "drinking water" as that term is generally understood by the general public, by the legislature, and by the drinking water regulated community. At the federal level, it is well understood that drinking water does not include "source waters" and there is a well-established distinction between drinking water that has been treated and is safe, or ready, to drink or cook, versus untreated "source water," which is "water in its natural state, prior to any treatment for drinking."[EPA n.d.] California also recognizes this distinction: the California Water Board's website on safe drinking water simply says "[d]rinking water, which is also known as potable water, is the water used for drinking, bathing and making food."[https://mywaterquality.ca.gov/safe_to_drink/] Employing the proposed two-phase iterative approach described in Section 4.3 is an appropriate way to address the statutory requirements while continuing to develop	State Water Board staff disagrees with ACC's reading of Health and Safety Code section 116376 and interpretation of the Legislature's intent in enacting this legislation. The Safe Drinking Water Act contains no express definitions of "drinking water" and "source water." Under the Safe Drinking Water Act, the Board is authorized to, and regularly does, require water systems to test source water. Testing source water is a critical component of ensuring that safe and potable water is delivered to water system customers. There is no indication that the Legislature intended to somehow limit the Board's testing and monitoring authority in implementing the microplastic's testing requirements. Moreover, the State Water Board's proposed plan for testing of microplastics in	5

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		scientific capabilities that will enable detection at lower concentrations and microplastic sizes. That said, the Handbook indicates phase 1 will comprise characterizing microplastics greater than 20 µm in size "in source waters used for drinking [water]". This interpretation of the statute expands the Board's activities beyond those delineated within the enabling statute. SB1422 requires development and testing of "drinking water" for microplastics. "Source water" is inherently separate from "drinking water" – numerous processes are involved to filter, sanitize, and deliver drinking water from its original source. Many Federal and State requirements apply to drinking water that are not applicable to surface waters. As such, reading "drinking water" to include "source water" is incompatible with the plain language of SB1422 – they are fundamentally two different things. Furthermore, the California legislature was aware of the SWRCB Resolution No. 88-63 dealing with "source waters" when enacting SB1422. SB1422 could have directed that the SWRCB actions be applied to "sources of drinking water" – instead the legislature used the term "drinking water." Based on the statutory language, it is imperative that the Board revamp the Handbook to focus on drinking water.	source waters as described in the proposed Policy Handbook is the most reasonable and effective use of resources. The best available standardized analytical techniques (infrared and Raman spectroscopy) are currently capable of accurately quantifying microplastics in source waters. Because some treatment techniques may incidentally remove microplastics larger than 20 and 50 micrometers - which are the current lower size limits of detection for these standardized methods - microplastic contamination in the State's drinking water may be under-counted if only treated drinking water were to be sampled. Furthermore, because multiple treatment plants often share a common source of water, sampling at these sources dramatically reduces the total number of samples required to determine contamination for	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
			the majority of the State's drinking water supplies.	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
American Chemistry Council	Health language	**The "Health Effects" Section in the Handbook Should be Revised for Accuracy.** The proposed recommended health-based guidance language in Section 4.1.1 of the Handbook vastly overstates the scientific certainty of purported MP-induced adverse health effects in laboratory rodent studies. All of these studies contain significant scientific flaws, such as failure to use sufficient number of exposure groups, failure to use sufficient number of animals in each exposure group, failure to characterize the dose solutions (for uniform concentration, stability and actual amounts administered (not just nominal concentrations)), failure to use EPA or OECD standardized and validated toxicity testing study designs, failure to use validated methodologies for determining adverse effects, insufficient or inappropriate use of statistical analyses, failure to follow Good Laboratory Practice guidelines, etc. For these reasons, the scientific basis for the first sentence in the recommended guidance language should be deleted in its entirety, and the recommended language should be modified, along the lines of: *"Finding a measurable amount of microplastics in drinking water is only an indicator of possible exposure and does not mean that any adverse health effect will occur. More research is needed to understand potential human health implications, if any, and to determine if there are environmentally relevant concentrations, frequencies and durations of exposures that could potentially lead to adverse health effects. Therefore, California is monitoring*	Thank you for your comment. The proposed health language is based on an independent expert workshop's comprehensive and in-depth meta-analysis of the human health effects of microplastics, and at the time of writing represents the most up-to-date and rigorous assessment available (Hampton et al. 2022; Gouin et al. 2022; Coffin et al. 2022). The expert workshop was fully aware of the flaws in underlying toxicity studies described by the commentator, which have been enumerated and discussed in detail (Coffin et al. 2022). Insufficient sample sizes were considered, and power analyses were performed on raw dose-response when appropriate, which resulted in further exclusion of several (but not all) toxic endpoints and studies (Coffin et al. 2022). Additionally, the failure to use a standardized testing study	6

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		microplastics in drinking water to understand its occurrence and is supporting ongoing research."	design does not necessarily mean resulting data are not informative, and Public Health Goals are often derived from studies that do not use standardized designs. In light of these and other apparent shortcomings with the underlying toxicity, an expert elicitation approach was employed to more thoroughly evaluate each study on a case-by-case basis, ultimately resulting in a consensus between a wide group of recognized experts (with specializations in microplastics toxicity and each endpoints' physiological field of study) of a number of endpoints deemed to be reliable (Coffin et al. 2022). Findings across four studies deemed reliable demonstrate that there is either a direct effect or indirect effect of some types of microplastics (e.g., polystyrene spheres) on biomarkers linked to impaired male reproductive	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
			function in mammals in a dose-dependent manner, including: increased sperm abnormalities, decreased sperm motility and viability, decreased sperm concentrations, apoptosis of sperm cells accompanied by a dose-related expression of cytokines decreased testosterone levels, increased inflammation markers, and decreased proteins involved in oxidative stress defense (Xie et al. 2020; Li et al. 202; Hou et al. 2021; Amereh et al. 2019; Coffin et al. 2022). Furthermore, findings in two studies deemed reliable demonstrate effects of some types of microplastics (i.e., polystyrene spheres) on a biomarker linked to impaired female reproductive function in mammals (i.e., anti-müllerian hormone) in a dose-dependent manner (An et al., 2021; Amereh et al. 2020).	

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			As described by the commentator, the expert workshop agreed that uncertainties related to exposure concentrations in many studies (e.g., a lack of confirmation of concentrations in exposure media) were too great to develop quantitative health-based guidance levels at this time (Coffin et al. 2022). Accordingly, the expert workshop advised that qualitative health language be communicated to consumers *in lieu* of a quantitative threshold (Coffin et al. 2022). Accordingly, we respectfully decline the commentator's proposed language, which downplays and ignores reliable evidence for probable mammalian health effects of certain forms of microplastics (i.e. polystyrene spheres < 10 µm). The recommend health-	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
			based guidance language has been approved without suggestions for revisions by four external peer reviewers (State Water Resources Control Board 2022), with expertise in toxicology, microplastics, and risk assessment. Furthermore, the underlying meta-analysis for the language underwent external scientific peer review per Health and Safety Code 57004 as well as journal peer review for publication (Coffin et al. 2022).	

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American Chemistry Council	Process	**California Health and Safety Code Requirements.** In promulgating the Handbook, the SWRCB needs to comply with the requirements of California Health and Safety Code § 57004. Accordingly, the SWRCB must submit "…the scientific portions of the proposed rule [The Handbook], along with a statement of the scientific findings, conclusions, and assumptions on which the scientific portions of the proposed rule [The Handbook] are based and the supporting scientific data, studies, and other appropriate materials, to the external scientific peer review entity for its evaluation." • The Handbook falls within the definition of HSC § 57004 since it is a "policy that is adopted by the State Water Resources Control Board pursuant to the Porter-Cologne Water Quality Control Act (Division 7 (commencing with Section 13000) of the Water Code) that has the effect of a regulation and that is adopted in order to implement or make effective a statute." • As stated in the Introduction section of the Handbook, "This Microplastics in Drinking Water Policy Handbook's (Policy) purpose is to implement Health and Safety Code section 116376 by setting forth the requirements for conducting monitoring and reporting of microplastics in drinking water." • The scientific portions of the Handbook subject to the requirements of HSC § 57004 include, but are not limited to: Section 3, Definitions; Section 4, Background; Section 5, Monitoring and Reporting Requirements; Attachment A; Standard Operating Procedures for Extraction and Measurement by Infrared Spectroscopy of Microplastic Particles in Drinking Water; and Standard Operating	Thank you for your comment. All portions of the Handbook, including the definition, analytical methods, handbook, and health effects guidance language have been subjected to external scientific peer review per HSC § 57004 (State Water Resources Control Board 2022).	7

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		Procedures for Extraction and Measurement by Raman Spectroscopy of Microplastic Particles in Drinking Water.		
American Chemistry Council	Miscellaneous	**Miscellaneous Comments** Phase 2 of the proposed implementation plan notes that the focus will shift to smaller particles (sizes greater than 5 µm) rather than the 20 µm particles in Phase 1. Challenges exist when attempting to sample and analyze particles of this size. While the technology may advance to that point in 2-years' time, 5 µm may be overly ambitious.	Thank you for your comment.	8

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American Chemistry Council	Miscellaneous	The Handbook mentions Nile Red as a potential surrogate method for resin identification. Recent studies have shown that Nile red adsorbs onto plastic surfaces and fluoresces. Successfully analyzed microplastic particles include PE, PP, PS, nylon-6, PC, PET, PVC and PUR – tire rubber does not cause Nile red to fluoresce [Erni-Cassola 2017]. That notwithstanding, natural contaminants such as chitin and wood can give false positive results, particularly in the case of less hydrophobic plastics (e.g. PC, PVC, PUR, and PET) [Maes et al 2017].	Thank you for your comment. False positives with Nile red will be taken into consideration for its applicability as a potential surrogate method.	9
American Chemistry Council	Miscellaneous	Section 6.3 recommends vacuum filtration with 20 µm pore size filters of polycarbonate. It is important to note that polycarbonate should not be used if a lab is running pyrolysis GC/MS on this sample later.	Thank you for this comment.	10
American Chemistry Council	Miscellaneous	Section 6.6 quality control materials only focus on spherical shapes of microplastics. Fibers and fragments should be included, especially since fibers are likely the most abundant physical form that will escape 10 – 20 µm filtration.	Thank you for your comment. State Water Board staff are currently collaborating with the National Institutes of Standards and Technology (NIST) to develop improved quality control materials.	11
American Chemistry Council	Miscellaneous	The Handbook does not identify laboratory accreditation targets.	Thank you for your comment. The Environmental Laboratory Accreditation Program (ELAP) will release laboratory accreditation targets alongside their additional parameters for accreditation later this year.	12

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
American Water Works Association-California-Nevada Section	Timeline	Provide sufficient time for water systems to undertake microplastic sampling and analysis required in the proposed monitoring program. The analytical methods proposed by the State Board to characterize microplastics in drinking water are currently not used by water systems. Therefore, water systems will have to rely on contract laboratories or acquire the necessary equipment to perform monitoring. The costs for the proposed analytical methods (conducted either in-house or by commercial laboratories) are elevated and not included in water systems' budgets approved for Fiscal Year 2022. Therefore, it is very unlikely that water systems will be prepared to start monitoring microplastics in 2022 or even in 2023. Moreover, some of the equipment required for microplastic sampling and analysis is not readily available, either because of their nature (water sampling apparatus recommended by the ASTM Method D8332-20) or current supply chain disruptions.	Thank you for your comment. The State Water Board acknowledges and appreciates supply chain disruptions and other challenges being experienced by water systems. To address these concerns, the proposed Policy Handbook includes the following revisions: - Description of one-year pilot monitoring phase paid for by the State Water Board to assist water systems in preparing for sampling and allow time for laboratory on-boarding. - List of water systems included in Phase 1. - Timeline for monitoring, which will start in summer 2023 to allow systems to prepare financially and otherwise.	13

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American Water Works Association-California-Nevada Section	Pilot phase	We appreciate the State Board's efforts with the Southern California Coastal Water Research Project (SCCWRP) to evaluate analytical methods for detecting and characterizing microplastics in a variety of water matrices. This effort has led to an impressive advancement in the ability for scientists to study microplastics in the environment in a relative short period despite limitations imposed by the pandemic. However, challenges were observed with all of the methods including time of analysis, cost and practicality. In addition, the study did not represent microplastic conditions found in untreated or treated water. Which means, further evaluation and validation of sampling protocols and analytical methods is necessary prior to compliance with proposed State Board monitoring orders. To address these and other limitations, CA-NV AWWA suggests that before requiring a Phase I microplastic monitoring effort from water systems, the State Board consider conducting a pilot monitoring phase of source water to develop and validate sample collection and analytical methods and provide a clearer understanding of microplastic occurrence in drinking water. This state-led pilot monitoring phase could be conducted in collaboration with other federal or state organizations such as the United States Environmental Protection Agency, the United States Geological Survey, the Department of Water Resources, the California Water Quality Monitoring Council, or the Surface Water Ambient Monitoring Program. Results obtained from this pilot monitoring phase would further define more specific monitoring to be conducted by water systems in Phase I, both for microplastics and adequate surrogate tools.	Thank you for your comment. Based on these concerns, the State Water Board has executed a contract with the Southern California Coastal Water Research Project to conduct monitoring at several voluntary facilities in California over the next year as part of a pilot phase. The pilot phase will provide validation of the standardized analytical methods in real-world source water and treated samples, provide training for water system operators to sample for microplastics, evaluate potential surrogates, and further demonstrate laboratory performance of volunteer accredited laboratories. Details regarding the pilot phase are included in the revised Policy Handbook.	14

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		Following the Phase I monitoring period, the State Board could assess the need for an additional state-led pilot phase to capture changes in analytical methods and impact of data obtained from the initial pilot and Phase I monitoring, prior to requesting a Phase II monitoring from water systems.		
American Water Works Association-California-Nevada Section	Miscellaneous	CA-NV AWWA commends the State Board for the excellent scientific process and acceptance of the expert panel recommendations that there is insufficient evidence to develop health guidance levels. The decision to wait instead of using assumptions to propose a guidance level is commendable. Considering the immature stage of understanding the occurrence of microplastics in drinking water and potential impacts to human health, much research is needed, and CA-NV AWWA suggests the State Board continue to rely on expert	Thank you for your support and comment.	15

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		panels and a peer-review process in future steps, including in the development of a robust and standardized system for microplastic sampling, extraction, analysis, and reporting.		
American Water Works Association-California-Nevada Section	Analytical method	While the State Board acknowledges there is currently insufficient evidence to issue a notification level or other numerical guidance for microplastics, the draft Policy requires water agencies to report positive detection in their Consumer Confidence Report. In the absence of clear health impacts, CA-NV AWWA suggests the State Board define a Detection Limit for Purposes of Reporting (DLR), and reconsider how to provide publicly available microplastics monitoring data, particularly during Phase I monitoring. Furthermore, we suggest establishing clear messaging for water systems to provide consistent and effective public communication about the implications of positive detections of microplastics in untreated or treated water.	Establishing a DLR is outside the scope of investigatory monitoring for emerging contaminants and would not be feasible given the current limitations. The proposed Policy Handbook includes information regarding the ongoing consumer messaging workgroup that is developing messaging tools for water systems through the Microplastics Subcommittee of the California Water Quality Monitoring Workgroup. AWWA member agencies are invited to participate in this collaboration.	16

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
Association of California Water Agencies, California Water Association	Pilot phase	**Include a pilot phase prior to the Policy proposed Phase I and II to serve as a planning and experimental phase.** ACWA and CWA propose inclusion of a pilot phase before Phase I of the Policy to develop, validate, and test the sampling and analysis methods. This step could serve as a planning and experimental phase to establish best practices and provide guidance before monitoring requirements commence. The pilot phase could collect additional information on economics and implementation before requiring monitoring orders. ACWA and CWA believe that more time is needed to successfully develop microplastics methodology and monitoring requirements to generate best practices for collecting samples to prevent contamination. We encourage use of a third party to facilitate the pilot phase to develop the necessary research and coordinate efforts with other state and federal agencies conducting synonymous research. Adding the pilot phase to the process will provide time to: • Prepare for Phase I and II to ensure that samples and results from each public water system avoid contamination, and are comparable. • Acquire necessary resources to set up and validate the sampling and analysis equipment and protocols. • Establish analytical reporting structure so that laboratories can correctly report data under the order while accruing experience sampling or analysis. • Accredit laboratories certified under National Environmental Laboratories Accreditation Conference	Thank you for comment. The proposed Policy Handbook now includes a description of the pilot monitoring phase paid for by the State Water Board that is designed to address the concerns in this comment.	17

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		standards. • Report pilot study results into peer-reviewed journals.		

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
Association of California Water Agencies, California Water Association	Funding	**The State should work with public water systems to secure additional funding to support Policy implementation.The State should work with public water systems to secure additional funding to support Policy implementation.** ACWA and CWA suggest that the State Water Board make state funding available to help public water systems pay for associated microplastics program costs. ACWA and CWA members anticipate that the cost of compliance with this regulation would require significant investment. The use of new methods would require a demonstration study and place the burden of cost and efforts to conduct the study onto the public water systems. Establishing best practices in laboratories will be essential for deployment and usage across the state by all impacted public water agencies, and will likely have significant costs. Funding could subsidize the high cost of adopting new testing method tools that determine microplastics content in drinking water as public water systems seek more practical, less expensive, and less time-consuming methods to conduct monitoring. The Legislative Analyst's Office estimates that the State of California will have a budget surplus of $31 billion to allocate in 2022-23 budget process [Legislative Analyst's Office- https://lao.ca.gov/Publications/Report/4472]. The human health effects from microplastics is a statewide issue, and therefore justifies use of state funds to supplement the cost born by public water agencies to participate in this process.	The State Water Board is unable to provide additional funding or resources for monitoring microplastics outside of the investments of the planned research in the Pilot Phase.	18

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
Association of California Water Agencies, California Water Association	Health language	**Maintain the scientific process to determine public health guidance for microplastics.** ACWA and CWA appreciate the State Water Board's reliance on scientific process and expert recommendations to develop the Policy and we encourage continued research in the effort. The State Water Board needs more research to make informed claims about microplastics on human health effects than the study conducted on rodents referenced in 4.1.1 of the Policy. More research to determine human health effects of ingesting microplastics is essential to factually informing the public about the contents of drinking water. Developing standards for sampling, extraction, analysis and reporting are essential for navigating public health guidance. As the State Water Board has acknowledged, further research is necessary to accurately understand and determine the health effects of microplastics to be communicated to the public. The State Water Board should develop best practices for laboratory testing that incorporates public water systems and laboratories' feedback to help shape the Policy.	Thank you for your comment. The expert health effects workshop recommended best practices for laboratories to provide reliable toxicity evidence for assessing risks to humans (Coffin et al. 2022). In addition to research recommendations for toxicity experiments (Hampton et al. 2022), recommendations to ensure monitoring data are maximally informative for risk assessment include reporting the size, shape, and polymer of particles in samples. To ensure data received inform future risk assessments, State Water Board staff, in collaboration with numerous stakeholders, are developing a harmonized data reporting tool and sampling and analysis manual.	19

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
Association of California Water Agencies, California Water Association	Pilot phase	**A pilot phase will add more flexibility to the Policy timeline to implement the methodology and monitoring requirements.** ACWA and CWA suggest that using a pilot phase to develop the Policy will provide further timeline flexibility to develop and implement the microplastics methodology and monitoring requirements. We encourage the State Water Board to utilize the proposed pilot phase prior to Phase I monitoring to provide more time for the analysis of drinking water samples that were left out of previous analyses conducted during the COVID-19 pandemic. Including additional studies would be valuable for characterizing particles, establishing and validating sampling protocols to be used in the methodology and monitoring requirements, and using the findings to better understand the health effects of microplastics in humans. Added flexibility is essential for the Policy timeline because: • Public water systems do not currently implement the proposed analytical methods and would likely have to rely on contract laboratories or acquire the necessary equipment to perform monitoring. Public water systems currently are overcoming potential supply chain issues and technological limitations because the necessary equipment for microplastics sampling and analysis remains unavailable (such as water sampling apparatus recommended by the ASTM Method D8332-20). • The State Water Board should provide evidence of formally validated microplastics methodology and monitoring requirements before requiring public water systems to implement the required work of the Policy. For example, research methods used for regulatory use and/or	Thank you for this comment. See response to comment 14 for details regarding the pilot monitoring phase.	20

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		monitoring orders should follow the forthcoming California Environmental Laboratory Technical Advisory Committee recommendations for research methods. • Early estimates suggest that the cost of analyzing one sample would be around $2000 and take 9 days to analyze. This cost estimate is infeasible for public water systems to administer for monitoring microplastics. Added flexibility to the Policy timeline, including use of pilot phase, can enable development of additional methods that are less expensive, and less time consuming. • It is important to consider lessons learned and the approach utilized for the Unregulated Contaminant Monitoring Rule (UCMR) before the monitoring plan is completed to consider factors including: cost-effectiveness of the potential monitoring approaches; implementation factors (e.g., laboratory capabilities and capacity); and further evaluates health effects, occurrence, and persistence/mobility data to identify the list of proposed UCMR contaminants. Additionally, messaging used for CCRs is validated by laboratories to ensure that contaminants are accurately described to the public.		

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
Association of California Water Agencies, California Water Association	Pilot phase	**The State Water Board should revise the Policy to provide clear implementation guidelines.** ACWA and CWA request the State Water Board revise the Policy to ensure consistency in guidance for public water agencies in reporting limits, procedures, analytical methods, and tools available. More specifically: • ACWA and CWA requests further clarification of Environmental Laboratory Accreditation Program (ELAP) Requirements, and more time to accredit laboratories to meet the requirements. Laboratory quality systems, proposed analytical method validations, and health effects studies are still being researched and developed. Phase I of the proposed Policy should begin after completing formal external validation of analytical methods and development of implementation guidance and quality management plans. Moreover, human health effects of microplastics consumption in water are not yet clear enough for accurate communication with the public. Having monitoring orders in place before sufficient laboratories are available to accept samples creates bottlenecks for conducting monitoring. Water systems do not use or are not regularly using the analytical methods proposed by this Policy to characterize microplastics in drinking water. Therefore, water systems would have to rely on contract laboratories for monitoring, which can provide several logistical and capacity challenges. Efforts could be delayed because these available methods are not yet accredited by the ELAP.	Thank you for your comment. To ensure that both sufficient time is available to build laboratory capacity and that the standardized analytical methods undergo additional external validation, the proposed Policy Handbook includes a one-year pilot phase funded by the State Water Board. Extracted microplastics from real-world drinking water and source water samples collected during the pilot phase will be sent to laboratories seeking ELAP accreditation for additional external validation of identification and harmonization of data reporting.	21

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
Association of California Water Agencies, California Water Association	Surrogates	ACWA and CWA request planned research to correlate microplastics with potential surrogate parameters in order to correct for sample contamination. Research should include recovery efficiency evaluation from spiked matrix samples in order to optimize microplastics recovery from real samples. Preparations could include location and reservoir depth, accessibility, sample volume, surrogate water quality parameters, contamination, weather impacts (e.g. rain events), and for wholesale water agencies that blend, the percent blend and turnover at the reservoir. Phase II monitoring would have similar considerations, particularly for multiple supply and blend options.	Thank you for these valuable suggestions. These recommendations have been included in the proposed Policy Handbook and will be prioritized in the sampling and analysis plan.	22
Association of California Water Agencies, California Water Association	Reporting	ACWA and CWA request the pilot phase and Phase I monitoring results be excluded from Consumer Confidence Reports (CCRs), and instead released in publicly available research reports for peer review. It is inadvisable to require reporting for microplastics in CCRs during the proposed pilot phase and Phase II because of the many known uncertainties with microplastics sample collection and analysis, including known sample contamination problems, and in the absence of appropriate health effects information. We encourage the State Water Board to refrain from enforcing public notification requirements until there is adequate research and data to factually and meaningfully construct a potential human impact of microplastics in drinking water in Phase II. We anticipate future efforts will provide additional information on the health effects of microplastics in drinking water, but information is currently lacking to allow the State Water Board to develop a Notification Level or similar guidance. Preliminary studies have shown that microplastics are	Health and Safety Code 116470, subdivision (a)(4) includes provisions for the reporting of unregulated contaminants -for which monitoring is required due to state law or regulation and applies to all public water systems as defined in Health and Safety Code section 116275. Additionally, as stated in Health and Safety Code Section 66480, a community or non-transient, non-community water systems (NTNC) (as defined in Health and Code section 116275) that sells water to another community or NTNC	23

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		removed with current treatment technologies. Therefore, the findings from Phase I sampling should not be required for reporting in CCRs. Additionally, input on the following questions would be greatly appreciated. o Are positive findings above the detection limit for unregulated contaminants required to be include in CCRs for source (untreated) water? o What type of health effects information would the State Water Board provide at this early stage? o For agencies that are not required to submit CCRs, how should agencies present results?	water system shall deliver the required monitoring data to the purchasing system by no later than April 1 of each year or on a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties. In addition to the health language available on the State Water Board's webpage and detailed in the Policy Handbook, and the peer-reviewed publication (Coffin et al. 2022), the State Water Board is currently collaborating with water systems, consultants, academia, non-governmental organizations, and other government agencies to develop health effects information and communication tools for water systems through the Microplastics Subcommittee of the Water Quality Monitoring Committee.	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
Association of California Water Agencies, California Water Association	Reporting	ACWA and CWA request that the Policy should specify the maximum allowable value for Minimum Reporting Level (MRL) for each particle size range that participating laboratories must validate and then adopt for reporting purposes prior to approval. The Policy acknowledges that individual laboratory Lowest Concentration MRLs (LCMRLs) may differ from those determined in the Southern California Coastal Water Research Project intercalibration study methods reported in Table 1. Answers to the following questions would help clarify. Is it assumed that each laboratory will achieve their own LCMRL, which are similar to the values reported in Table 1? Is each laboratory required to adopt their individual calculated LCMRL as the MRL, or are they allowed to set the MRL higher than their determined LCMRL?	The proposed Policy Handbook has been updated to include explicit requirements regarding minimum detectable amounts (MDAs) - similar to MRLs but for particles. While the State Water Board appreciates the commentators' recommendation to include minimum MDAs, such ruling may encourage laboratories to default to those MDAs as an artificially high limit. Accordingly, the proposed Policy Handbook and standardized methods will require laboratories to calculate and report their own MDAs and compare them to a recommended MDA by DDW. This method will ensure data can be evaluated without an artificially high detection limit.	24

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
Association of California Water Agencies, California Water Association	Coordination	**ACWA and CWA request that the State Water Board re-assess the methods identified and used to detect microplastics following Phase I and prior to Phase II of the study in 4.4.2 to further standardize the methodologies used for extracting and analyzing microplastics.** ACWA and CWA encourage the State Water Board to collaborate with existing state and federal agency programs that could be useful resources in developing the Policy. The proposed pilot phase and phase I are research phases. Collaboration with state and federal agencies is essential to performing the best research to develop a scientifically informed Policy. The State Water Board's Surface Water Ambient Monitoring Program (SWAMP), California Water Quality Monitoring Council (CWQMC), Department of Water Resources (DWR), United States Geological Survey (USGS), and United States Environmental Protection Agency (US EPA) are important programs with overlap that could inform development of the Policy. SWAMP and CWQMC currently engage in monthly webinars to enable members within California's monitoring community to exchange information on topics of interest. DWR can provide source water insights to inform Policy revisions on methodology and monitoring development. USGS engages in its Contaminants of Emerging Concern program to monitor contaminants from sources all the way through human consumption. US EPA maintains and enhances the Contaminant Candidate List to track contaminants that do not yet have drinking water regulations. Microplastics monitoring could fit quite well into these conversations, which would create additional	Thank you for your comment. State Water Board staff are collaborating with the State Lands Commission, Division of Water Rights, and the Surface Water Ambient Monitoring Program to optimize sampling locations for Phase I, and plan to hold a workshop prior to issuing orders to receive feedback from water systems. Additionally, the State Water Board intends to revisit and update sampling and analytical methods for Phase II based on lessons learned during Phase I. Finally, the State Water Board encourages ACWA members to join the microplastics subcommittee of the Water Quality Monitoring Council to further collaborate.	25

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		avenues for dialogue amongst technical experts and stakeholders. Time should be provided for the necessary conversations between the State Water Board and the listed entities to develop the Policy.		
California Urban Water Agencies	Pilot phase	**Consider a state-led pilot monitoring phase.** CUWA encourages the State Board to consider an initial pilot monitoring phase of the main water sources in California, in collaboration with organizations such as the United States Geological Survey, the Department of Water Resources, the California Water Quality Monitoring Council, or the Surface Water Ambient Monitoring Program. This initial pilot effort would provide an overview of microplastic occurrence in the state's water sources, further develop and validate the sampling and analysis methods, and provide economic information on	Thank you for this comment. See response to comment 14 for details regarding the pilot monitoring phase.	26

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		implementation with minimal impact to ratepayers. These data could then be used to further define more specific monitoring to be conducted by water systems.		
California Urban Water Agencies	Clarity	Further define which water systems will be required to monitor for microplastics. Clarify thresholds (volumetric and/or population served) for each phase of monitoring and whether groundwater users will be required to monitor to allow systems to prepare for monitoring.	The proposed Policy Handbook includes a list of potential sampling locations and the rationale for their choice for Phase I. Selection of sites in Phase II will depend on results from Phase I. Very few groundwater sources will require monitoring in Phase I due to the anticipated low contamination.	27
California Urban Water Agencies	Infrastructure	Ensure sufficient sampling and analytical capacity before requiring monitoring. For water systems that rely on commercial laboratories, the ability to process monitoring samples will be limited by the number of accredited laboratories. There are currently zero and they will likely remain insufficient during Phase I and Phase II of the proposed monitoring program.	To ensure sufficient capacity, the State Water Board has developed a pilot phase (see comment 14). Furthermore, laboratory availability will be taken into consideration for the number and frequency of sampling locations in both Phase I and Phase II.	28

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
California Urban Water Agencies	Timeline	Allow time for procurement procedures and staff training. Water systems that process microplastic samples in-house will need time to procure sampling and analytical equipment. Although two analytical methods are offered in the Policy Handbook (Infrared Spectroscopy and Raman Spectroscopy), only the more extensive end expensive Raman Spectroscopy method meets the proposed microplastic particle size requirement. These methods require extensive laboratory analyst training and days of analysis using sophisticated equipment not normally present in water treatment plants. Current procurement timelines for equipment (which are often a year or more) have been worsened by supply chain disruptions and there has been a shortage of specialized staff due to the pandemic and accelerated retirement.	Thank you for this comment. The proposed Policy Handbook has been revised to ensure that Raman or Infrared spectroscopy can be used. Furthermore, the proposed Policy Handbook provides at least one year of notice to water systems regarding monitoring requirements, which we hope will be sufficient. Finally, sampling training for system operators will be completed in the pilot phase (see comment 14).	29
California Urban Water Agencies	Funding	**Mitigate the monitoring costs to lessen the impact on water suppliers and ratepayers.** The estimated cost to water suppliers may amount to thousands of dollars per sample and is likely not accounted for in existing budgets for 2022-2023 (anticipated start date for monitoring). Given that approximately one third of Californians fall below 200% of the federal poverty level—including more than 9 million people or approximately 35% within CUWA agencies' collective service area—implications on affordability must be considered when establishing monitoring requirements. CUWA appreciates the flexibility for water systems to submit a shared source water sampling plan to the State Board to streamline monitoring efforts. To further reduce monitoring costs, the State Board could negotiate a statewide fixed cost for	The State Water Board is unable to provide additional funding or resources for monitoring microplastics outside of the investments of the planned research in the Pilot Phase.	30

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		microplastics analysis by commercial laboratories and offer state funds (e.g., through the Safe Drinking Water Fund or Drinking Water State Revolving Fund) for water systems analyzing samples in-house.		
California Urban Water Agencies	Consumer messaging	**Work with stakeholders to develop clear customer messaging.** As acknowledged by the State Board, there is currently limited data on the human health effects of microplastics and insufficient evidence to issue a notification level or other numerical guidance. However, the Policy Handbook would require water systems to report positive detection (at a level quantified in the monitoring order) in the Consumer Confidence Report (CCR). CUWA recommends that the State Board engage with stakeholders to develop clear messaging, to be documented in the State Board CCR Reference Manual, for water systems to consistently and effectively communicate the implications of positive microplastic detection in untreated source waters in a way that preserves consumer confidence in treated drinking water.	State Water Board staff currently co-manages the microplastics subcommittee of the Water Quality Monitoring Council alongside academic, non-profit, and industry partners, which has a workgroup co-led by water industry and consulting stakeholders to develop a toolkit for consumer messaging strategies for microplastics. All interested parties are invited to join this collaboration.	31

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
McCampbell Analytical, Inc.	Two-phase monitoring	**Two-Phase Monitoring** We agree with the proposed two-phase approach to monitoring microplastics due to evolving science and the uncertainty of the microplastics exposure in drinking water. During the six-month period between the two phases, we suggest that the Water Board solicit stakeholder comments so that water district and contract laboratories can prepare appropriately for Phase II in anticipation of the proposed lowering of the microplastic size limits. Additional preparation time between monitoring phases may be needed to accommodate possible ELAP accreditation modifications or available PT studies.	Thank you for your comment. State Water Board staff intend to collaborate with stakeholders during the interim period.	32
McCampbell Analytical, Inc.	Surrogates	**Potential Surrogate Techniques** We agree with the evaluation of potential surrogate techniques such as total suspended solids and other common wet chemistry methods for microplastics as a rapid screening method. However, the draft SOPs for FTIR and Raman spectroscopy describe significant contamination controls suggested for microplastics analysis but sampling and analysis for the proposed surrogate techniques do not typically take into account ambient microplastics contamination. In the proposed Phase II, the differences in sampling and laboratory environments could affect data if surrogate techniques and any additional, required spectroscopic analyses are performed in different laboratories.	Thank you for your comment. This is a useful suggestion that has been included in the proposed Policy Handbook.	33

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
McCampbell Analytical, Inc.	Tiered monitoring	**Tiered Monitoring** Although we understand the rationale behind tiered monitoring (Tier 1: wet chemistry methods, Tier 2: pyrolysis-GC/MS, Tier 3: FTIR/Raman), each instrument in Tiers 2 and 3 does not provide all the information needed for microplastics monitoring. We suggest a modified Tier 2 that includes all three instruments: pyrolysis-GC/MS, FTIR and Raman spectroscopy, due to inherent limitations of each technique and the significant setup costs for a laboratory to provide three tiers of monitoring. The contamination controls needed for microplastics analysis already serve as a barrier to entry for setting up the methods, but flexibility in choosing pyrolysis-GC/MS or FTIR/Raman spectroscopy within a monitoring tier will encourage labs that are already familiar with a given technique. While pyrolysis-GC/MS provides microplastics mass data, particle count cannot be obtained and the microplastic particles are consumed during analysis. Unless samples are sieved before analysis, as described in the draft SOPs for FTIR and Raman spectroscopy, particle size distribution also remains undetermined using pyrolysis-GC/MS analysis.	Thank you for your comment. This is a useful and insightful suggestion that will be considered once pyrolysis-GC/MS is available.	34

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
McCampbell Analytical, Inc.	Resources for novice laboratories	**Resources for Novice Laboratories** The results from the SCCWRP (Southern California Coastal Water Research Project) inter-lab calibration study suggest that experience, adhering to the SOP, and training from SCCWRP correlate with improved microplastics recovery for various size fractions. Were the laboratories that trained at SCCWRP also following the SOP without deviation? Since most water districts and contract laboratories are likely to be novices to microplastics analysis, it might be helpful for SCCWRP, the Water Board, ELAP, or experienced laboratories to share best practices in this emerging field to ensure the best possible outcome for microplastic monitoring and analyses.	The State Water Board, in open collaboration with stakeholders, is developing a free and open-access guidance manual for sampling and analysis of microplastics through the microplastics subcommittee of the Water Quality Monitoring Council. All interested parties are invited to participate in the development of this manual.	35
RJ Lee Group	Reporting	Focus the policy (at least initially) on specific polymers. We suggest that polymers of most concern be specified in the plan so that standards can be created and lab procedures be properly evaluated. For instance, consider focusing on common consumer polymers such as Polyethylene (PE), Polyethylene Terephthalate (PET) and Polystyrene (PS). Perhaps, polyvinyl chloride (PVC) and polypropylene (PP) could also be considered relevant.	Current (free and paid) spectroscopic libraries allow for the identification of a wide range of polymers with a high degree of certainty. Accordingly, there is no justification for analyses to be restricted to a small number of polymers. Furthermore, the State Water Board is building a data harmonization platform to address issues relating to nomenclature and uncertainties around polymers meeting the official definition.	36

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
RJ Lee Group	Analytical method	The current lab methods do not have a target concentration value limit. Consider adding an upper concentration level that could be used as a stopping rule for lab analysis if heavily microplastic loaded samples are encountered. In addition, identification of samples not amenable for analysis due to overall high particulate concentrations should be addressed.	Thank you for this useful comment. This point will be addressed during the Pilot Phase, which is detailed in the proposed Policy Handbook.	37
RJ Lee Group	Sampling matrices	The current plan is initially focused on sampling of surface waters. Surface waters will not necessarily be representative of what is delivered as drinking water to the consumer. Consider adding sampling and analysis of tap water samples as well at the distribution points.	Finished drinking water samples will be included in Phase II. To optimize resources, only source waters will be included in Phase I.	38
RJ Lee Group	Analytical method	There are a number of instances where “mm” is listed in the document where it is apparent that micrometer measurements are intended. These should be corrected to reflect the “µm” abbreviation.	Thank you for this comment. These typos will be fixed in the revised method.	39

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
San Diego County Water Authority	Coordination	Support Research, Rely on Scientific Experts, and Expand Interagency Coordination Due to the groundbreaking nature of this work, we recommend the State Water Board continue to support research and monitoring and rely on scientific experts to advise on the development of monitoring requirements and health-based guidelines. The work of DDW staff to engage with the scientific community, public water agencies, and other partners has been noteworthy and effective. This work should be expanded to increase collaboration with other government and research agencies to leverage resources and expertise, such as: Water Research Foundation, Department of Water Resources, Office of Environmental Health Hazard Assessment, Ocean Protection Council, United States Geological Survey, and US Environmental Protection Agency (USEPA). An excellent forum for coordination is the California Water Quality Monitoring Council, which held its kick-off meeting of the Microplastics Subcommittee on December 9, 2021. The meeting brought together 200 participants including researchers, state and federal agencies, and public water systems. We recommend the State Water Board allow additional time for the Microplastics Subcommittee and its working groups to meet and make recommendations on the monitoring and reporting requirements. The draft Policy should also undergo the state's independent peer review.	Thank you for your comment. State Water Board staff are currently collaborating with the Water Research Foundation, Department of Water Resources, Office of Environmental Health Hazard Assessment, Ocean Protection Council, US Environmental Protection Agency, US Department of Energy, and numerous others through the Microplastics Subcommittee and otherwise for this effort. The draft Policy Handbook underwent external scientific peer review according to the requirements of Health and Safety Code section 57004.	40

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
San Diego County Water Authority	Pilot phase	**Add a Pilot Phase to the draft Policy** The draft Policy acknowledges that no government in the world has required microplastics monitoring in drinking water. We strongly recommend the draft Policy incorporate a pilot phase to gather additional data for planning and implementation purposes. While the pilot phase is underway, the State Water Board should provide additional support for monitoring, further research, and greater agency coordination. As noted in the draft Policy, there are currently few laboratories capable of monitoring microplastics at this time. Flexibility is needed to account for supply chain issues and delays due to limited laboratory capacities. Agencies are also not familiar with microplastics, and samples can be easily contaminated in the field and in the laboratory. We recommend that DDW coordinate internally with the Surface Water Ambient Monitoring Program during the pilot phase to develop quality assurance plans for monitoring. Microplastics monitoring is also very costly. We request funding and resources be made available to help support monitoring during the pilot phase and in Phase 1 monitoring. According to the draft Policy, the monitoring approach was based on the USEPA's Unregulated Contaminant Monitoring Rule (UCMR) program. A pilot phase would allow time for DDW to gather important information that USEPA also considers in establishing its UCMR list.	Thank you for this comment. See response to comment 14 for details regarding the pilot monitoring phase.	41

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		USEPA uses a multi-step prioritization process that considers economics, laboratory capacity, and other implementation factors. According to the USEPA website: *During the final step, EPA considers stakeholder input; looks at cost-effectiveness of the potential monitoring approaches; considers implementation factors (e.g., laboratory capacity); and further evaluates health effects, occurrence, and persistence/mobility data to identify the list of proposed UCMR contaminants.* The draft Policy should provide flexibility to revisit monitoring requirements based on information collected during the pilot phase. Monitoring orders should be delayed until the pilot phase has concluded, data is reviewed, and recommendations are generated by science experts and partner agencies. Data collected under the pilot phase will provide useful information to ensure the monitoring requirements are built on solid science and allow for practical, real-world implementation.		

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
San Diego County Water Authority	Consumer messaging	**Identify a Process for Risk Communication** The draft Policy requires public water systems to include information on microplastics monitoring in their annual Consumer Confidence Reports (CCRs). We recommend that DDW provide additional guidance for public water systems to communicate the results and potential health impacts of microplastics monitoring to the public. Research into microplastics health effects is rapidly increasing, and more information on health effects and treatment efficacy is likely to be made available while a pilot phase is underway. In late 2020, the Southern California Coastal Water Research Project, in coordination with DDW, brought together 20 international experts in microplastics research to review health effects information and report on its findings. On September 8, 2021, the experts concluded that current knowledge is inadequate to establish human health effects levels for regulatory use by DDW, and that more research is needed. The draft Policy should incorporate a process for DDW to work with science experts on risk communication to the public during the pilot phase.	See response to comment 31.	42
San Diego County Water Authority	Timeline	Leading the way globally to establish a microplastics monitoring plan for drinking water is a huge undertaking, and we encourage the State Water Board to allow ample time to engage experts and stakeholders to carefully develop a policy that can serve as a model for other governments.	Thank you for your comment. See response to comment 29.	43

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
San Francisco Public Utilities Commission	Monitoring frequency	**Justification of the two-year quarterly monitoring is needed.** The proposed monitoring program in the draft Handbook consists of two phases, with each phase lasting for two years. The monitoring approach is reportedly templated on the United States Environmental Protection Agency's Unregulated Contaminant Monitoring Rule (UCMR) program. UCMR monitoring typically requires monitoring of the prescribed contaminants for four consecutive quarters. SWRCB's initial monitoring requirements for new water sources and/or a contaminant with new Maximum Contaminant Level (MCL) is also for four consecutive quarters only. The 4-quarter monitoring approach is to allow the agencies to assess the temporal variability of a contaminant in a complete hydrological cycle. The MP monitoring in the draft Handbook, however, is two years in each phase. Without including a justification and consideration of the challenges associated with the contamination controls during the field sampling and the subsequent sample handling/processing in the laboratory, the extra one year- monitoring would require additional but unnecessa1y expenditure of resources. This appears contradicting the statement made by the State Water Board in the Introduction section of the Handbook that [it] "intends to use its monitoring authority carefully to minimize the unnecessary use of resources ...". The SFPUC believes the usual four-consecutive-quarter monitoring approach should suffice to provide valuable data of MP in drinking water without unduly burdening the water systems' limited financial and staff resources. Alternatively, the SWRCB should allow monitoring	The proposed Policy Handbook's sampling plan is designed to minimize the number of samples required to obtain reliable and representative information regarding the occurrence of microplastics in the State and potential human exposures through drinking water. Quarterly sampling allows for two samples during each of the rainy or dry seasons of both years (for a total of eight samples for each location over two years). As stormwater and atmospheric deposition are expected to be significant transport pathways for microplastics, sampling during rainy and dry seasons will provide critical information for further assessments.	44

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		exemption in the second year if the first-year MP data shows no detections.		

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
San Francisco Public Utilities Commission	Size limit	**Targeted ranges of MP monitoring seems not matching with health finding.** The Handbook is designed to help the SWRCB gather occurrence data on MP in chinking water so that the agency can obtain "necessary occurrence and exposure information to allow for more reliable characterizations of risk" to consumers. In the Health Effects section of the Handbook, "[a] principal research finding relevant to monitoring is that microplastics smaller than 10 µm in length have an increased likelihood of causing adverse health effects in mammals and should be prioritized for monitoring when possible". The Handbook, together with the two methods of extraction and analysis, however, focus on the monitoring of MP in the range 20 µm through >500 µm, and monitoring for MP shorter than 20 µm is "strongly encouraged". The SFPUC understands the two recommended spectroscopy methods of analysis (Raman and IR) have verified performance of detections with good average recovery capability at MP in length >20 µm and >50 µm, respectively, and hence requires water systems to collect drinking water samples for MP analysis in these ranges. However, it seems the cost and resources to be expended in this monitoring does not match the purpose of assessing the public health risks associated with the exposure of the MP shorter than 10 µm that is found to increase the likelihood of causing adverse health effects. If water systems are required to spend their limited resources on helping the agency to gather water quality data, it should be for the ultimate purpose of public health protection. While the current literature information does not have a more definite finding about the likely health effects caused by MP >10 µm than those shorter,	State Water Board staff appreciate this comment and the concern to optimize resources. The proposed Policy Handbook includes additional rationalization for the choice of monitoring frequencies, as well as the utility of microplastics monitoring data for particles larger than 20 microns. In particular, size distribution data for microplastics in freshwaters are highly conserved (Kooi et al. 2021) and can be used to estimate exposure concentrations in drinking water in the absence of meaningful removal techniques (Mohamed Nor et al. 2021). Due to consistent and predictable nature of microplastics size distributions within compartments (Kooi et al., 2021; Kooi & Koelmans 2019), it is not necessary to always monitor particles small enough to translocate through mammalian tissues (i.e., ~<10 µm), as such	45

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		the SWRCB should provide more information and justification why the monitoring efforts will not focus on the occurrence of MP with length <10 µm but in the range of >20 um. Together with Comment No. I above, the 2-year quarterly monitoring of MP not in the range of<10 µm seems not justified.	particle abundance may be reliably estimated from size distribution data from a small set of samples in a given compartment (e.g., freshwater) (Koelmans et al. 2022). The monitoring methods required in the proposed Policy Handbook are the best available standardized analytical methods and will provide useful information for the abundance of microplastics in source waters used for drinking water that will inform future monitoring efforts and assessment of exposure and risks to humans. Delaying monitoring until a standardized analytical method with superior size detection capabilities becomes available would not provide substantial benefits in terms of estimating potential human exposure through drinking water, and such a delay could potentially be in excess of >3 years.	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
San Francisco Public Utilities Commission	Exemptions in Phase II	**Exemption of Phase II monitoring should be allowed.** The Handbook should include a monitoring exemption or waiver for a water system if its Phase I monitoring results conclude that no MP detections were above the corresponding reporting limits in the source water. Phase II monitoring focuses on treated water monitoring for MP down to 5 µm; but the prior Method Study by SWRCB via Southern California Coastal Water Research Project found that the two recommended methods do not have good recovery and chemical identification performance when MP are less than 20 µm and 50 µm, respectively. Any future findings of MP detections between 5 µm and these low boundary values could be questionable. Drawing conclusions from MP occurrence in treated water with questionable data quality may lead to challenges for water systems in explaining the findings to consumers. While there might be some limited sources of MP from the typical treatment processes that could contaminate the water, the SFPUC considers that a water system with well-established chemical quality control program will help minimize such MP sources from the water treatment chemicals used. MP sources from air-deposition are usually beyond the control of system operators and are not watershed-related. Therefore, Phase I system with non-detectable MP levels should not be required to conduct Phase II monitoring.	The proposed Policy Handbook includes additional guidance for Phase II, including an exemption for systems that report no positive detections during Phase I.	46

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
San Francisco Public Utilities Commission	Infrastructure	**Sampling guidance and training are needed before issuance of monitoring order.** Due to the ubiquitous presence of MP in the environment, stringent precautionary measures should be uniformly and consistently implemented to prevent any potential contribution of MP from sampling techniques or tools. Like the SWRCB's implementation of PFAS monitoring, the SFPUC suggests SWRCB develop and publish a standardized list of contamination control measures for systems' use before issuing any monitoring request. The draft policy also requires sample collectors receive proper training by the SWRCB or ELAP-certified laboratory for MP sampling. The SFPUC is concerned that the proposed timeline to have laboratories accredited by ELAP is very aggressive, especially when the analytical methods are still in a draft form. Since (i) both methods are considered "sophistical technology" by ELAP, (ii) laboratories need to seek assessment from third party assessors before application can be submitted to ELAP for accreditation, and (iii) Section 4.2.3 of the draft policy also indicates some obstacles, it is uncertain whether the SWRCB would have sufficient training capacity when qualified laboratories are not yet available for training. The SFPUC recommends that any monitoring schedule in the SWRCB monitoring order should take into consideration of the limitations of available and qualified sample collectors and laboratories.	State Water Board staff appreciate these concerns and is taking steps to mitigate them. The following actions are being undertaken to address these concerns: i. A sampling and analysis playbook is being developed through an open collaboration between stakeholders and the State Water Board and is being facilitated through the Microplastics Subcommittee of the California Water Quality Monitoring Council. SFPUC staff are invited to participate if they are able to. ii. ELAP staff and third-party assessors were trained to assess laboratories for the microplastics methods in April, 2022. iii. The timeline has been revised to allow for laboratory capacity, and now includes a one-year Pilot Phase in which the State Water Board will	47

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
			provide assistance to laboratories and water systems to ensure adequate infrastructure.	

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
San Francisco Public Utilities Commission	Clarity	The current draft contains a few typos and incorrect references that should be fixed. Examples are: a. Footnote reference number under Section 3.1 does not have the corresponding footnotes at the end of the page. b. The order of Attachment Band Attachment C appears reverse and are different from the reference in Section 4.2.1.1 and 4.2.1.2. c. The surrogate method list is Attachment A, not C as described in Section 4.2.2. d. It is not clear if the system size of 10,000 MGD is a typo or not. The second last sentence in Section 5.1 calls out one type of the select water systems, which produces>10,000 MGD. e. Will special monitoring be conducted in addition to Section 5.2.1.9, which specifies qua11erly monit01ing, if unusual significant events like wildfires occurred between the scheduled quarterly sampling? f. The corresponding Health & Safety Code Section appears missing from Section 5.2.1.11.2 about sample collector qualification and training requirements. g. The Handbook does not clearly specify if duplicate field samples would be required in addition to the types and number of QC samples. h. The Handbook is not clear about whether a Phase I system will be required to submit a separate monit01ing plan for Phase II. I. Suggest adding an excerpt of the sampling method ASTM 8332-20 for information.	Thank you for these useful comments. These typos have been corrected and additional clarity added where appropriate.	48

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
SiMPore	Size limit	Regarding the Microplastics in Drinking Water Policy Handbook, I want to underscore the importance of several of its proposals. First, the proposed tiered screening methods are likely to be the most economical ways for the eventual routine monitoring of microplastics in drinking waters. Second, the Handbook's details standard operating procedures (SOPs) for microplastics monitoring are valuable standard-setting guides for both the routine monitoring of microplastics in drinking water systems and for the broader microplastics-concerned research community. For understandably pragmatic reasons, the Handbook's SOPs detail testing methods for microplastics that are 20 µm and larger in size, since methods for measuring 20+ µm microplastics have been validated thus far. Consequently, the Handbook proposes monitoring for 20 to 5,000 µm sized microplastics in its initial two-year Phase I plan. As the Handbook indicates, I would point out that current scientific consensus suggests microplastics smaller than 20 µm are those most likely to have any potential impacts on human health. Thus, in the Handbook's proposed Phase II drinking water monitoring plan, monitoring will be extended to include microplastics in the 5 to 20 µm size range. From this brief	Thank you for your comment. State Water Board staff are closely monitoring external research efforts to advance analytical detection limits with regards to size (e.g., ASTM WK67788; EUROqCHARM; USEPA; European Commission's Joint Research Centre, Wageningen University and Research, and the Bundesanstalt für Materialforschung undprüfung) and anticipates the readiness of an analytical method capable of monitoring microplastics smaller than 20 microns in drinking water prior to the implementation of Phase II.	49

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		discussion I would conclude that there is a gap between the currently validated methods (20+ µm size microplastics), what current scientific evidence suggests should be monitored, and the proposed Phase II monitoring plans (5-20 µm sized microplastics). Given the above discussion, I would propose the following to the State Water Resource Control Board, since a need remains for method development and validation efforts to fill the gap I have described. I suggest the Board provide funding and pathways for developing and validating technologies and methods that can survey microplastics smaller than 20 µm. I would further suggest that there be identifiable pathways put in place for such development and validation. For example, such pathways could be put in place by continuing the inter laboratory methods validation study recently completed and that funding be made available to support both study coordination and study participation. These support mechanisms and development pathways are needed in order for technology developers and manufacturers to warrant their investment in developing new methods and technologies for the 5-20 µm sized microplastics. Moreover, such method		

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		development and validation seem warranted and required in order for the Board to carry out its Phase II plan.		

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
The Metropolitan Water District of Southern California	Pilot phase	**Propose a pilot phase to develop and validate sampling and analysis methods.** Metropolitan recommends that the State Water Board implement a pilot exploratory phase to properly develop, validate, and pilot test the sampling and analysis methods. The pilot phase would allow utilities to test the methods and provide preliminary occurrence data to the State Water Board without being concerned about public risk communication in the absence of a drinking water standard. The pilot program would support a multi-phased research effort to improve the accuracy and reliability of the monitoring results. During the exploratory phase, agencies can prepare for certification by the Environmental Laboratory Accreditation Program (ELAP) before widespread monitoring is required. Metropolitan understands that the two analytical methods proposed in the Policy Handbook (Raman and Infrared spectroscopy) are being updated to reduce processing time and improve sensitivity. However, other analytical methods not included in the draft Policy Handbook, such as pyrolysis GC/MS, may offer faster and less labor-intensive analysis options and can be tested during the pilot phase. In addition, the pilot phase can also be used to develop and test potential surrogates. Stakeholders recently convened a working group to develop a project to evaluate potential surrogates for monitoring microplastics in drinking water. Metropolitan recommends the State Water Board support and join with the stakeholders by providing oversight and resources, and supporting peer-review of the results.	Thank you for this comment. See response to comment 14 for details regarding the pilot monitoring phase.	50

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		Metropolitan recommends that the State Water Board implement the pilot program before issuing orders for water systems to begin Phase 1 monitoring. Furthermore, Metropolitan recommends the State Water Board reassess the analytical methods and Phase 1 data before implementing Phase 2 monitoring.		

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
The Metropolitan Water District of Southern California	Consumer messaging	As currently written, the draft Policy Handbook includes provisions to require selected water systems to monitor microplastics in drinking water. While the State Water Board included some guidance on collecting samples, monitoring and reporting the data, the information is insufficient to develop a monitoring plan. Clear and complete implementation guidance should be provided for this monitoring. Metropolitan reiterates the need for a preliminary pilot study, which could also be used to support the development of implementation guidance, including monitoring and reporting plans. In addition, section 5.3.3 of the Policy Handbook requires water systems to include detections of microplastics in their annual Consumer Confidence Reports (CCRs). Reporting preliminary monitoring data in the absence of drinking water standards and health risk data may confuse the public and reduce confidence in the safety of drinking water. Therefore, Metropolitan recommends that results of the first round of monitoring should not be reported in CCRs. If reporting is required, the State Water Board should clearly define a "Detection Limit for Purposes of Reporting". In addition, Metropolitan asks the State Water Board to develop public messaging on the context and significance of monitoring results and provide utilities with guidance on communicating the relative risk of microplastics in drinking water, including knowledge gaps and the current state of the science.	Thank you for your comment. See response to comment 14 regarding the planned pilot phase, and response to comment 31 regarding consumer messaging tools.	51

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
The Metropolitan Water District of Southern California	Timeline	**Ensure sufficient time is allocated for utilities to procure instruments and develop standardized methods and monitoring plans.** The development of scientifically sound and logistically feasible analytical tools remains a significant challenge for microplastics monitoring. Metropolitan would need sufficient time and resources to procure instruments, test the methods, and develop a representative monitoring plan. Similarly, other public water systems may not have the experience or expertise to collect such monitoring data. In addition, utilities may struggle with financial constraints in trying to procure instruments and develop methods. Metropolitan recommends that the State Water Board incorporate a flexible monitoring schedule to ensure that water systems and laboratories have sufficient time and the resources necessary to establish and validate sample collection procedures and analytical methods, especially if ELAP certification is required. In addition, Metropolitan urges the State Water Board to clarify ELAP accreditation requirements for these monitoring methods so that utilities can adjust their timelines accordingly.	Thank you for your comment. See response to comment 29.	52

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
The Metropolitan Water District of Southern California	Sample collection	**Sample collection:** Section 4.2.1 of the Policy Handbook refers to the Standard Operating Procedures (SOPs) of the proposed two methods—Raman and Infrared spectroscopy. These technical comments refer to section 1.2 of the SOPs. i. The SOPs recommend a sample volume "up to 1,500 L" for treated drinking water. However, the first phase of monitoring is for source water samples, which will contain higher concentrations of organic matter than treated drinking water, and can clog sampling filters. Therefore, 1,500 L volumes may not be practical for source waters. The State Water Board needs to evaluate the appropriate sample volumes for source and treated water to determine the most practical sample volume recommendations. ii. The SOPs outline a sample collection protocol that requires field reagent blank (FRB) of the same sample volume for each set of field samples to determine if interferences are introduced during sample collection. The sampling protocol also requires a trip blank of the same sample volume for each set of field samples to determine if interferences are introduced during shipment. It is not practical to take 1,500 L of microplastics-analysis-grade (MAG) water to each field location for a FRB in addition to 1,500 L of MAG water for a trip blank. Appropriate QA/QC and quality control protocols should be evaluated and optimized prior to monitoring, especially for minimizing sample contamination. iii. The SOPs outline procedures to generate a laboratory fortified blank and a matrix sample that specifies particles between 100-300 mm and 30-200 mm. The unit "mm" is a typo and should be "µm."	Thank you for these useful comments. Comments i, ii, and iv will be addressed during the Pilot Phase and are detailed in the proposed Policy Handbook. Comment iii has been addressed in the revised SOPs on the State Water Board webpage, which are included in the proposed Policy Handbook.	53

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		iv. The ASTM Standard D8332 (2020) sample collection equipment setup needs to be further tested before monitoring plans are put in place to avoid sample contamination. Metropolitan suggests using a closed sampling system with inline filtration to minimize background contamination. If a closed inline filtration system is used to minimize background contamination, it is unclear if a FRB would still be needed.		
The Metropolitan Water District of Southern California	Sample analysis	**Sample analysis:** i. The SOPs indicate the Raman method can reliably measure down to 20 µm in size but the Infrared method can only reliably measure down to 50 µm. Considering that Phase 1 monitoring will target particles that are "larger than 20 µm in length", the State Water Board should clarify if results from either method are acceptable. ii. The SOPs do not consider provisions for reducing	Thank you for these useful comments. The proposed Policy Handbook addresses both of these components. Specifically: i. Laboratories are now required to report microplastics as small as	54

Commenter Name/Organization	Comment Category	Comment	Response	Comment ID
		sample interference from water with high organic content. Due to the high content of natural organic matter, algae, and minerals in source water samples, a sample digestion step should be evaluated to minimize interferences before implementing monitoring requirements.	those listed in the standardized method (i.e. 20 µm for Raman, 50 µm for FTIR). ii. The Pilot Phase will determine appropriate guidelines and protocol for digesting samples with interferences.	

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