Practical Quantitation Limitation Guidance Document

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Water Quality Control Division
Laboratory Services Division

Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

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TERMS AND DEFINITIONS

1. Alternative Test Procedure (ATP) means a procedure for analyzing a chemical or compound using a different method than that published at 40 CFR Part 136. An ATP can be granted at the EPA regional level for a specific compound in a specific discharge or for a specific compound at the national level in which case it would become an approved method pursuant to 40 CFR Part 136.3.
2. Method Detection Limit (MDL) means the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero as determined by the procedure set forth at appendix B of 40 CFR Part 136.
3. Practical Quantitation Limit (PQL) means the minimum concentration of an analyte (substance) that can be measured with a high degree of confidence that the analyte is present at or above that concentration.
4. PQL Robust means the PQL of a substance using an EPA approved laboratory method that provides results for multiple analytes (e.g. EPA Method 624).
5. PQL Minimum means the minimum PQL that can be achieved for an analyte using an EPA approved laboratory method.
6. EPA-approved method or EPA-approved analytical method means an analytical method that is approved by EPA pursuant to 40 CFR Part 136.

INTRODUCTION

The Water Quality Control Commission (Commission) modified Section 61.8(2)(m) of Regulation No. 61 (effective May 30, 2003) to delete a table of Practical Quantitation Limitations (PQLs) for organic compounds and to include a provision that requires, in the absence of a site specific or discharge specific PQL, the Water Quality Control Division (Division) to use the PQLs listed in a PQL guidance document. This change was made in order to afford the Division and stakeholders more flexibility in updating PQLs and/or adding new PQLs without the necessity of submitting them to the Commission for review and subsequent consideration at a rulemaking hearing.

This “Practical Quantitation Limitations Guidance Document” (Guidance Document) describes the process after March 2003 to update PQLs, to add new PQLs, and to provide priorities for the development of the remaining PQLs for organic compounds.

APPLICABILITY

This guidance document is intended to inform the Division regarding the selection of analytical methods and associated practical quantitation limits (PQLs) for use in permits issued for discharges to surface waters or ground water under the Colorado Discharge Permit System (Regulation No. 61).

In addition, under certain circumstances, this guidance applies to regulated activities outside of the Division. Pursuant to C.R.S. 25-8-202(7), the Commission and the Division recognize water quality responsibilities of the following state agencies, referred to as the "implementing agencies”: The Division of Reclamation, Mining, and Safety; the State Engineer; the Oil and Gas Conservation Commission; and the state agency responsible for activities related to the federal "Resource Conservation and Recovery Act of 1976, as amended, and related state programs (e.g. the solid waste program under the Hazardous Materials and Waste Management Division and the underground storage tank program implemented by the Division of Oil and Public Safety of the Department of Labor & Employment). The Commission is solely responsible for assigning beneficial uses to, and adoption of appropriate water quality standards for, state waters that may be affected by activities subject to the jurisdiction of the implementing agencies. Such classifications and standards are to be implemented by the implementing agencies, after consultation with the Division and the Commission, through their own programs. The Division is solely responsible for the issuance and enforcement of permits authorizing point source discharges to surface waters of the state, regardless of whether the activity resulting in the discharge is undertaken by an entity otherwise subject to regulation by an implementing agency.

With respect to requirements for PQLs to be used under an implementing agency’s program, § 41.5(C)(4) of the Basic Standards for Ground Water (Regulation 41) states:

"Whenever the practical quantitation limit, or PQL, for a pollutant is higher (less stringent) than a standard listed in subsection 2 or 3 above, the PQL shall be used in regulating specific activities. These PQL's shall be approved by the Water Quality Control Division unless an alternate PQL has been established by the applicable implementing agency."

Section 61.8(4)(j) of the Colorado Discharge Permit System regulations directs the Division to require, in permits, that the permittee use analytical methods approved by EPA pursuant to 40 CFR Part 136 or, where a method for a particular analyte has not been approved by EPA, to use a method approved by the Division. This requirement does not extend to implementing agencies, as they are not authorized to issue permits under the federal NPDES program. As such, implementing agencies are not bound by the methods used to derive the PQLs in Table 1 but they are bound to achieve the PQL in Table 1 unless they have established an alternate PQL.

Therefore, the PQLs identified in this guidance are appropriate for use by an implementing agency unless the agency has adopted an alternate PQL. For activities regulated by an implementing agency, it is recommended that the regulated entity contact the implementing agency to determine if an alternate PQL has been adopted.

There are several compounds for which there is no EPA-approved analytical method. The work group that developed this guidance identified methods for analyzing most of these chemicals and associated PQLs using the same approach as that for the compounds for which there are approved methods. The Division will generally use the identified PQL in its regulatory programs. Unless and until the Division formally approves the methods for these compounds, an implementing agency is not bound by the PQLs for these compounds. However, the implementing agency in its regulatory activities may choose to use the identified method and associated PQL for such compound.

The following table summarizes the process to determine which PQL must be used.

Regulation of Activity (Discharge, Remedial Action, etc.)		Agency Approving Analytical Method/PQL
Receiving Water	State Agency Authority	
Surface Waters	Water Quality Control Division	EPA* or WQCD/WQCD PQL
Ground Waters	Water Quality Control Division	EPA* or WQCD/WQCD PQL
	Implementing Agency	Implementing Agency/WQCD PQL or alternate PQL where established by Implementing Agency

* Where there is no EPA approved method for an analyte, the WQCD is authorized to approve the method to be used.

STAKEHOLDER INVOLVEMENT

The Division relies upon a work group process as a participation mechanism for stakeholders to provide ideas and recommendations on the development of proposed policies and guidance documents. In 2004, the Division established a PQL Work Group (Work Group) to obtain stakeholder input to the development of the guidance document that included a variety of participants (i.e., citizens, attorneys, staff of municipal dischargers, chemists from commercial and municipal analytical laboratories, staff of industrial dischargers, consultants, and staff from the Hazardous Materials and Waste Management Division). The primary tasks of the Work Group were to:

- Identify PQLs for organic chemicals, including those that were previously listed in Regulation No. 61 as well as other compounds for which the WQCC has adopted standards, and

- Develop a methodology for determining statewide PQLs where none are listed or established as site-specific PQLs.

The initial group identified that the value of PQL Guidance Document could extend to other implementing agencies and the scope was expanded to waters other than effluents. In response to this change, the work group was re-organized and moved under the auspices of the Colorado Water Quality Forum (http://www.cwqf.org/Workgroups/PQL_workgroup/PQL.htm).

Issues identified by the work group and addressed in this guidance include:

- As the sources of information on PQLs were examined, it was evident that many factors need consideration before selecting a PQL for a method used in determining compliance with effluent limits. Factors included: matrix interferences, process for defining PQLs based on detection limits, PQLs attainable at commercial laboratories, and extent of deviation from the methodology in EPA-approved methods. Consequently, additional efforts were needed by the technical subcommittee of the work group to examine the available data on methodology and PQLs.

- Commercial and business interests emphasized their concerns that the development of new and lower PQLs could place a major economic burden on small businesses with discharge permits. The increased cost was portrayed in several ways, including: more expensive analyses are required to achieve lower detection limits and past practices of having many chemicals analyzed with a single robust method will be replaced with need to conduct separate tests on some of these chemicals where a PQL obtained by the robust test would be above the water quality standard. Under the latter, additional costs would result from the additional separate tests and from having to perform additional steps in sample collection and transport. As a result, additional efforts were undertaken to explore options for maintaining the use of robust methods.

- Participating chemists identified analytical method "drift" as a concern. There have been many changes in analytical techniques due to advances since many EPA-approved methods were established in the 1970 to 1990 period. An issue raised was: How much change is acceptable before the modified method is no longer equivalent to the EPA-approved method? To address this issue, discussions were initiated with EPA concerning their Alternative Test Procedure (ATP) Program and related decisions on method "drift." This discussion identified the need to inventory ATP decisions that are available to dischargers in Colorado.

- The Hazardous Materials and Waste Management Division emphasized the need for the guidance document to maintain clarity on use of EPA-approved and performance-based Measurement System (PBMS) methods in referring to PQLs. The latter may be the preferred option when an EPA-approved method is not available for analyzing a parameter that would be regulated under a CDPS permit.

This guidance represents the product of the work group's efforts and draft versions were presented to all interested parties for review and comment prior to an informational hearing before the Water Quality Control Commission in October of 2006. Since that time, the work group discovered that many of the methods upon which the PQLs in the October 2006 draft were based are not being utilized by Colorado commercial laboratories. This required re-analysis of the PQLs for these compounds as the process defined in the Guidance to establish PQLs requires that the method associated with the PQL be commercially available.

PRACTICAL QUANTITATION LIMITATIONS

The EPA approved methods define how the method detection limit (MDL) is determined and this is part of the approved methodology. The establishment and use of PQLs is left up to the NPDES authority (delegated state or EPA, as appropriate) and this Guidance reflects the PQLs that the Division has established. It is important to emphasize that, for CDPS permitting purposes, there is no option to utilizing an EPA approved method or, where there is no EPA approved method, a Division approved method, even if a non-approved method is more precise, accurate, exhibits a lower PQL, and/or considers interferences present in common wastewaters. Where the Division determines that monitoring and/or a permit limit may be necessary for an analyte for which no approved method exists, the Division will identify a method for analysis in the permit along with a required PQL. If the analyte does not have an approved method, the Division will generally select the PQL identified in this Guidance but may specify the use of a more precise PQL where the limit or calculated assimilative capacity is significantly less than the listed PQL and information indicates that there are laboratories in Colorado that are capable of achieving a lower PQL.

PROCESS FOR PQL SELECTION

- A decision sequence, to describe how a PQL is selected, was developed with recognition of the above mandatory requirements of Regulation No. 61 and the preference to select a PQL associated with a robust method, where such PQL would allow quantitation at or below the compliance threshold (limit). Figures 1 and 2 present this sequence.

- When using data from the laboratory survey, an outlier test was conducted. After any outliers were eliminated, the median of the remaining detection limits from the laboratories was used and is referred to as "the qualified detection limit" in Figures 1 and 2. The qualified detection limit was used with the recognition that a small number of laboratories may have to improve their performance in order to achieve the required PQL.

- When there was an EPA-approved analytical method for a compound, yet no laboratories from the survey reported a detection limit for that method, the laboratories were contacted to determine if they were running the method but had not provided a detection limit. In those cases where none of the laboratories contacted was running the method, the method was considered to be "not commercially available."

- The statewide PQL Robust and statewide PQL Minimum are derived by multiplying the detection limit by a factor of 10. This is consistent with the site-specific procedure. That value is then rounded based on the number of significant figures. Where there is one significant figure, the PQL is rounded up to the nearest 1, 2, 5, or 10 (or multiple of 10 of those values), in accordance with standard methodology. Where there are two significant figures (maximum), the second digit in the PQL is rounded up to the nearest 5 or 10. In a very few cases, the work group rounded down slightly to establish the PQL (e.g., 5.1 to 5) where this would allow the PQL to be at our below the water quality standard. This was deemed appropriate given the use of the detection limit multiplier of 10.

The Division has established PQLs for robust methods in order to provide information that entities regulated by the Division and/or an implementing agency can use to make decisions as to whether a robust method can detect to the level necessary to determine compliance with an effluent limit or a water quality standard. Where the PQL associated with a robust method cannot detect the pollutant of concern at the required level, the analytical method chosen must achieve a PQL at or less than the PQL Minimum. Where the regulated entity can demonstrate with appropriate quality assurance that their laboratory can achieve the PQL Minimum using another method, which could be a robust method, the use of such method is acceptable.

As noted in Figure 1, the Division is using the information from the initial survey (2005) of qualified laboratories in the determination of an acceptable PQL Robust or PQL Minimum. As new data are developed from additional labs or where existing labs improve their ability to detect compounds at lower concentrations, this step can be repeated by the Division with the possible outcome of determining modifications to the PQL Robust or PQL Minimum.

Where there was no EPA or Division approved method for an analyte, a similar process, shown in Figure 2, was used to determine appropriate PQLs. In this case, these values, listed in Table 1 as PQL_{NN} Robust and PQL_{NN} Minimum, are not being portrayed as PQLs for statewide use. They do, however, provide guidance to the Water Quality Control Division in determining appropriate quantitation levels for these analytes in CDPS discharge permits. Other implementing agencies are free to use these values or select others as they see fit. There is an exception for diisopropylmethylphosphonate (DIMP). At an October 4, 1993 rulemaking hearing, the Commission established a statewide water-quality standard for DIMP of 8 ug/l and also set a PQL for DIMP at 1.0 ug/l. An analytical method was not specifically identified.

Figure 1. Decision Sequence For Compounds With an Approved Commercially Available NPDES Method (Steps 1 through 25)

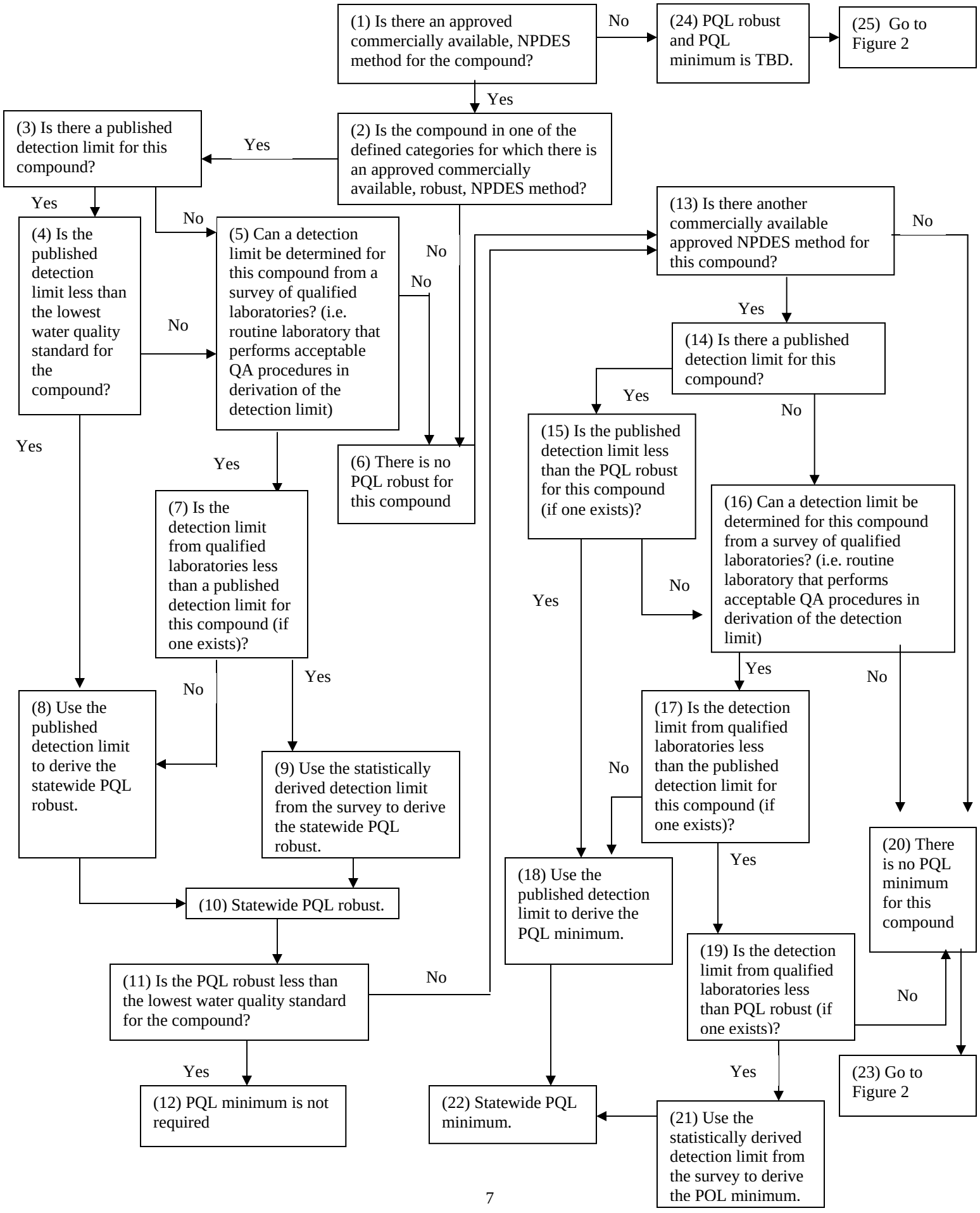
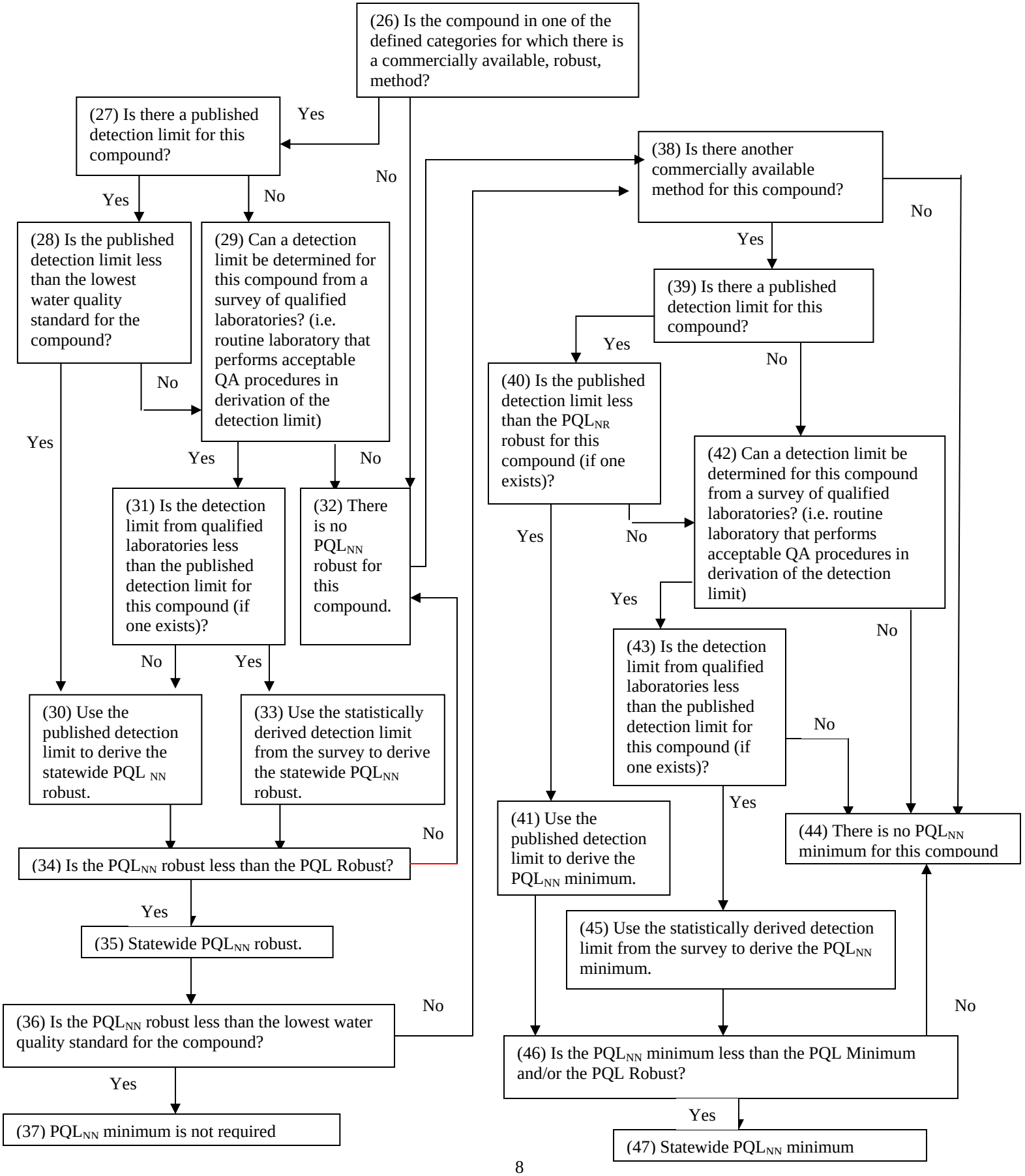


Figure 2. Decision Sequence For Compounds With No EPA/WQCD Approved Commercially Available Analytucal Method (Steps 26 through 47)



NN = Non-NPDES/WQCD approved method

Table 1
Practical Quantitation Limits - Organic Compounds

Compound Name	CAS #[1/]	Lowest Surface/ Groundwater Quality Std. (ug/L)[2/]	PQL-Robust (ug/L)	PQL-Minimum (ug/L)	PQL_{NN}[3/] - Robust (ug/L)	PQL_{NN} - Minimum (ug/L)
1,2 Dibromo-3-Chloropropane	96-12-8	0.2	TBD [4/]	TBD	15	4.5
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408-74-3	0.0000056	TBD	TBD	None [5/]	None
2,2'-Dichloroisopropyl ether	108-60-1	280	60	NR [6/]	NR	NR
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	$5.0x10^{-9}$	TBD	TBD	1	None
4,4'-Methylene bis(N,N'-dimethyl)aniline	101-61-1	0.76	TBD	TBD	None	None
4-Chloro-3-methylphenol	59-50-7	30	30	NR	NR	NR
Acenaphthene	83-32-9	420	20	NR	NR	NR
Acenaphthylene	208-96-8	NA [7/]	30	25	NR	NR
Acrolein	107-02-8	3.5	15	None	>PQLR [8/]	0.45 (DW) [9/]
Acrylamide	79-06-1	0.0078	TBD	TBD	100	None
Acrylonitrile	107-13-1	0.051	5.3	None	>PQLR	None
Alachlor	15972-60-8	2	TBD	TBD	15	2 (DW)
Aldicarb	116-06-3	7	TBD	TBD	None	1
Aldicarb Sulfone	1646-88-4	7	TBD	TBD	None	10 (DW)
Aldicarb Sulfoxide	1646-87-3	7	TBD	TBD	None	6 (DW)
Aldrin	309-00-2	0.000049	0.05	None	>PQLR	None
Aniline	62-53-3	6.1	TBD	TBD	20	None
Anthracene	120-12-7	2100	20	NR	NR	NR
Aramite	140-57-8	1.4	TBD	TBD	35	20
Atrazine	1912-24-9	3	TBD	TBD	150	1.0 (DW)
Azobenzene	103-33-3	0.32	TBD	TBD	50	None
Benzene	71-43-2	2	3	None	0.5	NR
Benzidine	92-87-5	0.000086	170	None	>PQLR	None
Benzo(a)anthracene	56-55-3	0.0038	12	0.1	None	0.06
Benzo(a)pyrene	50-32-8	0.0038	20	0.2	None	0.07
Benzo(b)fluoranthene	205-99-2	0.0038	35	0.20	None	0.05
Benzo(g,h,i)perylene	191-24-2	0.0038	20	1.0	None	0.070
Benzo(k)fluoranthene	207-08-9	0.0038	25	0.20	None	0.060
Benzotrichloride	98-07-7	0.0027	TBD	TBD	None	None
Benzyl chloride	100-44-7	0.21	TBD	TBD	100	None
Bis(2-ethylhexyl) adipate	103-23-1	400	TBD	TBD	None	1 (DW)
bis(2-Ethylhexyl) phthalate	117-81-7	1.2	25	None	None	3.0
Bis(chloromethyl)ether (BCME)	542-88-1	0.0001	TBD	TBD	None	None
Bromate	15541-45-4	0.05	TBD	TBD	15	None
Bromodichloromethane	75-27-4	0.55	2.5	None	1	0.05 (DW)
Bromoform	75-25-2	4.3	3.0	NR	NR	NR
Butyl benzyl phthalate	85-68-7	1400	25	NR	NR	NR
Carbofuran	1563-66-2	35	TBD	TBD	None	5
Carbon tetrachloride	56-23-5	0.23	3	None	2	1 (DW)
Chlordane	57-74-9	0.0008	0.14	None	>PQLR	None

Compound Name	CAS #[1/]	Lowest Surface/ Groundwater Quality Std. (ug/L)[2/]	PQL-Robust (ug/L)	PQL-Minimum (ug/L)	PQL_{NN}[3/] - Robust (ug/L)	PQL_{NN} - Minimum (ug/L)
Chlorobenzene	108-90-7	100	60	NR	NR	NR
Chlorodibromomethane	124-48-1	14	3	NR	NR	NR
Chloroform	67-66-3	3.4	3	NR	NR	NR
Chloromethane	74-87-3	5.6	3.5	NR	NR	NR
Chloronapthalene	91-58-7	560	20	NR	NR	NR
Chlorophenol or (2-Chlorophenol)	95-57-8	35	35	NR	NR	NR
Chlorpyrifos	2921-88-2	0.041	TBD	TBD	0.2	None
Chrysene	218-01-9	0.0038	18	1.5	None	0.08
cis-1,2-Dichloroethylene	156-59-2	70	TBD	TBD	5	NR
Dalapon	75-99-0	200	TBD	TBD	None	6
DDD 4,4'	72-54-8	0.00031	0.11	None	None	None
DDE (4,4'-DDE)	72-55-9	0.00022	0.04	NONE	>PQLR	>PQLM [10/]
Demeton	8065-48-3	0.1	TBD	TBD	None	2.5
Dibenz(a,h)anthracene	53-70-3	0.0038	20	0.5	None	0.065
Dichloroacetic acid	79-43-6	0.7	None	None	None	2.5 (DW)
Dichlorobenzene 1,2	95-50-1	600	2.5	NR	NR	NR
Dichlorobenzene 1,3	541-73-1	94	2.5	NR	NR	NR
Dichlorobenzene 1,4	106-46-7	63	3.5	NR	NR	NR
Dichlorobenzidine	91-94-1	0.021	18	None	None	1
Dichloroethane 1,2	107-06-2	0.38	3.0	None	1	0.2 (DW)
Dichloroethyl ether	111-44-4	0.03	15	None	None	0.5
Dichloroethylene 1,1	75-35-4	7	5.0	NR	NR	NR
Dichlorophenol 2,4	120-83-2	21	30	None	None	0.5
Dichlorophenoxyacetic acid (2,4-D)	94-75-7	70	TBD	TBD	None	5.5
Dichloropropane 1,2	78-87-5	0.5	2	None	0.5	NR
Dichloropropylene 1,3	542-75-6	0.34	TBD	TBD	2.5	1.5
Dichlorvos	62-73-7	0.12	TBD	TBD	None	3
Dieldrin	60-57-1	0.000052	0.02	None	>PQLR	None
Diethyl phthalate	84-66-2	5600	20	NR	NR	NR
Diisopropylmethylphosphonate	1445-75-6	8	TBD	TBD	None	1.5
Dimethyl phthalate	131-11-3	70000	20	NR	NR	NR
Dimethylphenol 2,4	105-67-9	140	30	NR	NR	NR
Di-n-butyl phthalate	84-74-2	700	25	NR	NR	NR
Dinitro-o-cresol 4,6	534-52-1	0.27	17	None	None	None
dinitrophenol 2,4	51-28-5	14	100	None	None	20
Dinitrotoluene 2,4	121-14-2	0.11	17	None	None	0.5
Dinitrotoluene 2,6	606-20-2	230	20	NR	NR	NR
Dinoseb	88-85-7	7	TBD	TBD	25	0.5
Dioxane 1,4	123-91-1	3.2	TBD	TBD	500	None
Diphenylhydrazine 1,2	122-66-7	0.036	TBD	TBD	30	20
Diquat	85-00-7	15	TBD	TBD	None	7.5 (DW)
Endosulfan	115-29-7	0.056	0.2	None	None	None
Endosulfan sulfate	1031-07-8	0.056	0.2	None	0.060	None
Endosulfan, alpha	959-98-8	0.056	TBD	TBD	0.1	0.06

Compound Name	CAS #[1/]	Lowest Surface/ Groundwater Quality Std. (ug/L)[2/]	PQL-Robust (ug/L)	PQL-Minimum (ug/L)	PQL_{NN}[3/] - Robust (ug/L)	PQL_{NN} - Minimum (ug/L)
Endosulfan, beta	3321-36-59	0.056	0.05	NR	NR	NR
Endothall	145-73-3	100	TBD	TBD	None	25 (DW)
Endrin	72-20-8	0.036	0.06	None	>PQLR	None
Endrin aldehyde	7421-93-4	0.29	0.25	NR	NR	NR
Epichlorohydrin	106-89-8	3.5	TBD	TBD	None	None
Ethyl parathion	56-38-2	0.013	TBD	TBD	30	4.5
Ethylbenzene	100-41-4	530	75	NR	NR	NR
Ethylene dibromide	106-93-4	0.00041	TBD	TBD	1.5	1
Fluoranthene	206-44-0	130	25	NR	NR	NR
Fluorene	86-73-7	280	20	NR	NR	NR
Folpet	133-07-3	10	TBD	TBD	None	None
Furmecyclox	60568-05-0	1.2	TBD	TBD	None	None
Glyphosate	1071-83-6	700	TBD	TBD	7.0	NR
Guthion	86-50-0	0.01	TBD	TBD	None	4.5
Heptachlor	76-44-8	$7.8X10^{-5}$	0.03	None	>PQLR	None
Heptachlor epoxide	1024-57-3	$3.9X10^{-5}$	0.15	None	0.075	None
Hexachlorobenzene	118-74-1	0.00028	16	0.030	>PQLR	>PQLM
Hexachlorobutadiene	87-68-3	0.44	9	None	1	0.5(DW)
Hexachlorocyclohexane, Alpha	319-84-6	0.0026	0.03	None	>PQLR	None
Hexachlorocyclohexane, Beta	319-85-7	0.0091	0.06	None	>PQLR	None
Hexachlorocyclohexane, Technical	608-73-1	0.012	TBD	TBD	None	None
Hexachlorocyclopentadiene	77-47-4	5	50	None	None	0.5
Hexachloroethane	67-72-1	0.4	16	None	None	3.0
Hydrazine	302-01-2	0.012	TBD	TBD	None	50
Indeno(1,2,3-cd)pyrene	193-39-5	0.0038	20	0.5	None	0.45
Isophorone	78-59-1	130	25	NR	NR	NR
Lindane	58-89-9	0.08	0.05	NR	NR	NR
Malathion	121-75-5	0.1	TBD	TBD	0.01	None
Methoxychlor	72-43-5	0.03	TBD	TBD	0.5	0.15
Methyl Bromide	74-83-9	9.8	5	NR	NR	NR
Methylene chloride	75-09-2	4.6	4.5	NR	NR	NR
Mirex	2385-85-5	0.001	TBD	TBD	0.1	None
Naphthalene	91-20-3	140	20	NR	NR	NR
Nitrobenzene	98-95-3	3.5	19	None	None	1.5
Nitrophenol 4	100-02-7	56	25	NR	NR	NR
Nitrosodibutylamine N	924-16-3	0.0043	None	None	80	None
Nitrosodiethylamine N	55-18-5	0.00023	TBD	TBD	30	None
Nitrosodimethylamine N	62-75-9	0.00069	30	None	None	1
Nitrosodiphenylamine N	86-30-6	3.3	19	None	None	0.5
Nitrosopyrrolidine N	930-55-2	0.016	TBD	TBD	20	None
N-Nitrosodiethanolamine	1116-54-7	0.013	TBD	TBD	None	None
N-Nitrosodi-n-propylamine	621-64-7	0.005	30	None	None	0.5
N-Nitroso-N-methylethylamine	10595-95-6	0.0016	TBD	TBD	None	None
Oxamyl	23135-22-0	175	TBD	TBD	None	4

Compound Name	CAS #[1/]	Lowest Surface/ Groundwater Quality Std. (ug/L)[2/]	PQL-Robust (ug/L)	PQL-Minimum (ug/L)	PQL_{NN}[3/] - Robust (ug/L)	PQL_{NN} - Minimum (ug/L)
PCBs	1336-36-3	$6.4X10^{-5}$	2	None	>PQLR	None
Pentachlorobenzene	608-93-5	1.4	TBD	TBD	20	None
Pentachlorophenol	87-86-5	0.27	36	None	None	1.5
Phenanthrene	85-01-8	NA	25	6.5	NR	NR
Phenol	108-95-2	2100	15	NR	NR	NR
Picloram	1918-02-1	490	TBD	TBD	None	0.6
Propylene oxide	75-56-9	0.15	TBD	TBD	None	None
Pyrene	129-00-0	210	10	NR	NR	NR
Quinoline	91-22-5	0.012	TBD	TBD	20	None
Simazine	122-34-9	4	TBD	TBD	None	7.5
Styrene	100-42-5	100	TBD	TBD	3.0	NR
Tetrachlorobenzene 1,2,4,5	95-94-3	0.97	TBD	TBD	90	None
Tetrachloroethane 1,1,2,2	79-34-5	0.17	2	None	None	None
Tetrachloroethylene	127-18-4	0.69	2.3	None	1.5	0.5 (DW)
Toluene	108-88-3	1000	60	NR	NR	NR
Toxaphene	8001-35-2	0.0002	2.4	None	>PQLR	1.5 (DW)
trans-1,2-Dichloroethylene	156-60-5	100	TBD	TBD	20	NR
Trichlorobenzene 1,2,4	120-82-1	35	20	NR	NR	NR
Trichloroethane 1,1,1	71-55-6	200	5	NR	NR	NR
Trichloroethane 1,1,2	79-00-5	2.7	2.0	NR	NR	NR
Trichloroethylene	79-01-6	2.5	2.3	NR	NR	NR
Trichlorophenol 2,4,6	88-06-2	1.4	25	None	None	None
Trichlorophenoxypropionic acid (2,4,5-tp) or (Silvex)	93-72-1	50	None	None	None	4.5
Vinyl chloride	75-01-4	0.023	3	None	2	0.4 (DW)
Xylenes (total)	1330-20-7	1400	TBD	TBD	7.0	NR

1/ CAS# = Chemical Abstracts Service Registry number
2/ ug/L = micrograms per liter
3/ PQL_{NN} = Practical Quantitation Limit Derived from a non-NPDES/WQCD approved method
4/ TBD = To be determined - No Commercially available NPDES method
5/ None = Indicates no PQL is available
6/ NR – PQL Minimum value is Not Required since PQL Robust is less than or equal to lowest water quality standard.
7/ NA = Not Applicable - no standard available
8/ PQLR = PQL Robust
9/ DW = Indicates a PQL from a drinking water method
10/ PQLM = PQL Minimum

Water quality standards and detailed information on approved analytical methods are provided for each organic chemical in a separate supporting document entitled “Chemical Tables Used to Determine PQLs” which is available upon request from the Division.

DEVELOPMENT OF REMAINING PQLs

Statewide PQLs

The Division will continue to work with stakeholders, as resources allow, to reexamine PQLs, particularly those that are greater than the corresponding water quality standard. The Division will also begin to examine the methods that are not approved and consider approving such methods.

If a new statewide PQL is proposed, then the Division will notice this decision for public comment before this new PQL is added to Table 1 of the Guidance Document

Non-statewide PQLs

A Division policy (WQP No. 19), issued in September 1993, provides a means for a permittee to establish a site-specific or a discharge-specific PQL. This policy (Appendix A) has been updated to incorporate the present name and organization of the Colorado Department of Public Health and Environment, has been corrected for grammar, and will continue in use until modified by the Division.

APPENDIX A

POLICY FOR DEVELOPMENT OF A DISCHARGE/SITE SPECIFIC PQL

DEVELOPMENT OF A DISCHARGE/SITE SPECIFIC PQL

Purpose:

Some sample matrices contain chemicals that can interfere with analytical procedures near the level of detection. To identify the levels at which a chemical in an environmental matrix (e.g., surface water, groundwater, or wastewater discharge) can accurately be measured, it is necessary to establish a practical quantification level (PQL). The PQL will then represent the level at which values can be reported with an acceptable level of confidence. From a regulatory standpoint, it will also represent the compliance level with the regulatory limit (i.e., water quality standard or permit limit) for that chemical.

The following policy is established to specify a procedure for an applicant to establish a PQL for their specific sample matrix or for the Colorado Department of Public Health and Environment (CDPHE) to determine a PQL for a chemical that does not have a PQL listed in Table 1.

Policy/Procedure:

The standard practice of CDPHE will be to use the PQL listed in Table 1 as the default for demonstration of regulatory compliance, when a PQL is above the regulatory limit (i.e., water quality standard or permit limit). Certain of these PQLs represent the level of reliable identification and quantitation in a clean water sample and therefore may not provide representative results for other sample matrices. Depending on the chemicals in the water or wastewater matrix, PQLs for different parameters can change between matrices. In those cases where the applicant believes a higher PQL is appropriate for a parameter, the following procedure is established to develop a site-specific PQL. This procedure is also applicable for those cases where a PQL is not listed in Table 1 and is to be established by CDPHE as a statewide PQL. In those cases, the appropriate Division fills the role of applicant. The statewide PQL study is performed by CDPHE using an environmental matrix or matrices that would result in a PQL that is applicable to the majority of waters and wastewaters in Colorado.

The applicant schedules a meeting with the appropriate CDPHE program staff to review the regulatory limit to determine if a matrix-specific PQL is appropriate. If a PQL or other reporting standard substantially equivalent to a PQL (such as a Method Reporting Limit (MRL)), has already been established and is currently in use pursuant to a quality assurance plan that has been previously approved by the Division or an implementing agency (e.g., by the CDPHE Hazardous Materials and Waste Management Division at a site undergoing corrective action, response action, closure or post-closure activities), the Division may approve the use of such previously established PQL or equivalent. Otherwise, the procedure outlined below shall be followed. Following the applicant-CDPHE program staff meeting described above, a recommendation for determining a matrix-specific PQL will be made by the CDPHE program, which may seek technical counsel from the CDPHE Laboratory Services Division or other qualified source. If the applicant opts to proceed with the matrix-specific PQL determination, the applicant will be referred to the CDPHE Laboratory Division to discuss the actual determination.

In situations where significant variability in matrix quality is likely, the PQL determination should be performed on matrix quality that the applicant feels represents their worst-case situation. An MDL established through this process is matrix specific and may not be applied to other matrices.

All tests by all parties will be conducted on the same split sample of the effluent using the same analytical method.

A minimum of three laboratories is required to conduct the analyses. It is not necessary for the CDPHE Laboratory to be one of them. If three laboratories cannot be found employing the same analytical method or the analytical method is not commercially available, contact the appropriate CDPHE program for further guidance.

Seven spiked samples will be prepared by a single party for each lab from an original volume of “matrix” water, which can be the “regulated” water (effluent, ground water, etc.) or a blend of laboratory grade water and the compounds suspected of causing interference preventing detection at the PQL in Table 1.

Analytical results from the three laboratories will be supplied to the applicable CDPHE Program for review of acceptability and statistical analysis. The CDPHE Program may seek technical council from the CDPHE laboratory or other qualified sources as deemed appropriate. Data from all participating laboratories shall be used in developing the PQL unless data from one of the laboratories is determined to be invalid or fails an outlier test.

An MDL is then determined for each target analyte using the procedure detailed at 40 *CFR* Part 136, Appendix B. A pooled MDL is then calculated from the individual laboratory MDLs by comparing the square root of the geometric mean of the squares of the individual MDLs and multiplying the result by a ratio of t-values to adjust for the increased degrees of freedom.

The PQL will be determined by multiplying the pooled MDL by a factor of 10 unless a lower factor is justified based on the relationship of the accuracy of the recovery to the true value of the chemical spiked into the sample, inter and intra laboratory comparability, signal to noise ratios, standard deviations, outlier tests and method robustness. Such determination may be made in consultation with the CDPHE laboratory or other qualified source, as deemed appropriate by the WQCD. Consideration however, will also be given to the environmental consequences and impacts of the resulting PQL on the regulated entity.

The cost of PQL determinations will be borne by the applicant. Use of a site-specific PQL may be subject to public notice requirements.