of subpart M. The PWS is required to reply to this notice by providing information specified in the notice (e.g., retail and wholesale population served, types of water sources used, volume of water treated) by the date provided in subpart M.

Process train means some number of unit processes connected in series starting from the treatment plant influent and ending with finished water. A particular unit process may be in more than one process train.

Purchased finished water means finished water purchased by one PWS from another PWS (the wholesaler). Purchased finished water includes both purchased finished water that is redisinfected and purchased finished water that is not.

Simulated distribution system (SDS) sample means a finished water sample incubated at the temperature and detention time of a ''DSE sample'' collected from the distribution system. Analytical results of the SDS sample will be compared with the DSE sample to determine how well the SDS sample predicts disinfection byproduct formation in the actual distribution system sample.

Total finished water means the flow (volume per unit of time) of finished water obtained from all treatment plants operated by a PWS and includes purchased finished water. This flow includes water entering the distribution system and water sold to another PWS.

Treatment plant means the PWS components that have as their exclusive source of water a shared treatment plant influent and that deliver finished water to a common point which is located prior to the point at which finished water enters a distribution system or is diverted for sale to another PWS. For these components of the PWS to be considered part of one treatment plant, the PWS must be able to collect one representative treatment plant influent sample, either at a single sample point or by a composite of multiple influent samples, and there must exist a single sampling point where a representative sample of finished water can be collected. For the purpose of subpart M, a treatment plant is considered to include any site where a disinfectant or oxidant is added to water prior to the water entering the distribution system. Facilities in which ground water is disinfected prior to entering a distribution system, and facilities in which purchased finished water has a disinfectant added prior to entering a distribution system, are considered treatment plants.

Treatment plant influent means water that represents the water quality challenge to a particular plant.

Treatment system means all treatment plants operated by one PWS.

Trihalomethanes (four) (THM4) means the sum of the concentration in micrograms per liter of the trihalomethanes chloroform, bromodichloromethane, dibromochloromethane, and bromoform, rounded to two significant figures.

Unit process means a component of a treatment process train which serves any treatment purpose such as mixing or sedimentation for which design and operating information is requested in §141.142(a), Table 6c, of this subpart.

Water resource means a body of water before it passes through an intake structure. Examples of a water resource include a river, lake, or aquifer. For a PWS which purchases finished water, the water resource is the wholesale PWS which supplies the purchased finished water. Generally water resources are not under the direct control of a PWS.

Watershed control practice means protection of a water resource from microbiological contamination prior to the water entering an intake. These protective measures might include, but are not limited to, a watershed control program approved under §141.71(b)(2) of this part, or land use restrictions.

§141.141 General requirements, applicability, and schedule for information collection.

(a) *General requirements.* (1) The purpose of subpart M is to collect specified information from certain PWSs for a limited period of time. Accordingly, subpart M is of limited duration and is effective for a defined period (see §§141.6(i) and 141.141(e) of this part). Since subpart M does not establish continuing obligations, a PWS that has

completed all of its requirements at the required duration and frequency may discontinue its information collection efforts even if subpart M is still in effect.

(2) For the purpose of this subpart, a PWS shall make applicability determinations based on completion of data gathering, calculations, and treatment plant categorization specified in appendix A to paragraph (a) of this section.

(3) For the purpose of this subpart, a PWS that uses multiple wells drawing from the same aquifer and has no central treatment plant is considered to have one treatment plant for those wells and shall conduct required monitoring under this specification. A PWS with multiple wells in one or more aquifers that are treated in the same treatment plant is considered to have one treatment plant for those wells and shall conduct required monitoring under this specification.

(i) To the extent possible, the PWS should sample at the well with the largest flow and at the same well each month for the duration of required monitoring.

(ii) A PWS must report information from §141.142(a) tables 6a through 6e of this subpart for each well that the PWS sampled.

(4) For the purpose of this subpart, a PWS shall treat ground water sources that have been classified by the State as under the direct influence of surface water by May 14, 1996, as surface water sources. A PWS shall treat ground water sources that either have not been classified by the State (as under the direct influence of surface water or not) or have been classified by the State as ground water, by May 14, 1996, as ground water sources.

APPENDIX A TO 40 CFR 141.141(a)

Purpose. The purpose of this appendix is to enable the PWS to assign proportional amounts of its retail and wholesale population served to specific treatment plants. The PWS shall then use these values to determine which specific requirements in subpart M that it must comply with and on what schedule.

Period of applicability determination. For the purpose of this appendix, a PWS shall make applicability determinations based on population calculated as annual averages based on PWS records of treatment system or treatment plant operation during calendar year 1995.

—If a natural disaster made a treatment system or treatment plant inoperable for one or more calendar months in 1995, the applicability determination will be based on those months in 1995 during which the treatment system or treatment plant was in operation, plus the calendar months from 1994 that are representative of those months of 1995 during which the treatment system or treatment plant was inoperable. The total time period shall be 12 months.

—If the treatment system or treatment plant was not in operation during one or more calendar months during 1995 due to a seasonal reduction in demand for finished water, the months that the treatment system or treatment plant was not in operation are to be included in the 12 months of applicability determination with zero flow indicating no operation.

—If the treatment system or treatment plant was not in operation for one or more calendar months in 1995 due to construction and/or maintenance, the applicability determination will be based on those months in 1995 during which the treatment system or treatment plant was in operation, plus the calendar months from 1994 that correspond to those months of 1995 during which the treatment system or treatment plant was inoperable. The total time period shall be 12 months.

—Treatment systems or treatment plants whose total operational lifetime is fewer than 12 calendar months as of December 1995 are not required to comply with subpart M requirements.

—PWSs that purchase all their water from one or more other PWSs and do not further treat any of their water are not required to comply with subpart M requirements.

Applicability determination. To determine applicability, the PWS is required to collect certain operational data and perform specified mathematical operations. All operational data and calculated values will be expressed as either ''F'' (for flow) or ''P'' (for population), with a one or two character subscript. Table A–1 contains a more detailed explanation.

TABLE A–1—APPENDIX A SUBSCRIPT IDENTIFICATION PROTOCOL

General.

1. ''F'' indicates a flow value. The PWS must use million gallons per day (MGD) to express the flow throughout its calculations.
2. ''P'' indicates a population value, expressed as a number of people.

TABLE A–1—APPENDIX A SUBSCRIPT IDENTIFICATION PROTOCOL—Continued

Subscripts.

1. "P_R" is retail population, "F_W" is wholesale flow, and "F_N" is purchased finished water that is not further treated.
2. Each "F" value (in Table A–2) or "P" value (in Table A–4) will have a two character designator.
   a. The first character in the subscript indicates the source type. Possible entries are "S" (for surface water or ground water under the direct influence of surface water), "G" (for ground water not under the direct influence of surface water), "P" (for finished water purchased from another PWS and further treated at the entrance to the distribution system, such as by redisinfection), and "C" (for combined, or the sum of all water treated by the PWS, including purchased water that is further treated at the entrance to the distribution system).
   b. The second character in the subscript indicates the specific identification of the treatment plant. This will be a number (e.g., 1, 2, 3, * * *, with # being a non-specific designator) and "T" (for a Total).

Data from operational records. The PWS shall determine the following information based on operational records.

—P_R=Retail population served by the PWS
=_____ (number of people)

—F_N=treated water bought from one or more other PWSs and not further treated at the entry point to the distribution system
=_____ (MGD)

—F_W= finished water sold to one or more other PWSs, regardless of whether buying PWSs further treat the finished water
=_____ (MGD)

—Flows from specific water resources to specific treatment plants. For each treatment plant operated by the PWS, the PWS must determine the flow from each water resource that provides water to the treatment plant. In the following table, the PWS must enter flow from each type of water resource into the appropriate block, using the subscript identification protocol in table A–1.

—$F_{S\#}$=surface water treated at treatment plant "#"
=_____ (MGD) (enter into Table A–2)

—$F_{G\#}$=ground water treated at treatment plant "#"
=_____ (MGD) (enter into Table A–2)

—$F_{P\#}$=treated water bought from one or more other PWSs and further treated at treatment plant "#" prior to the entry point to the distribution system
=_____ (MGD) (enter into Table A–2)

TABLE A–2—TREATED FLOW VALUES

Water resources (by type source)	Sources of treated water (FLOW)			
	Treatment plants			
	#1	#2	#3	#4
Surface water (S)	(F_{S1})	(F_{S2})	(F_{S3})	(F_{S4})
Ground water (G)	(F_{G1})	(F_{G2})	(F_{G3})	(F_{G4})
Purchased finished water that is further treated (P)	(F_{P1})	(F_{P2})	(F_{P3})	(F_{P4})
Combined (C)	(F_{C1})	(F_{C2})	(F_{C3})	(F_{C4})

NOTE: The $F_{C\#}$ value is calculated by adding the $F_{S\#}$, $F_{G\#}$, and $F_{P\#}$ values in the column above.

—F_{CT}=finished water produced in all of the PWS's treatment plants (calculated by adding the combined flows from each treatment plant ($\Sigma(F_{C\#})$).
=_____ (MGD)

Calculated values. The PWS must calculate the following values.

—Population equivalents. Divide the flow values in Table A–2 by the conversion factor K below (a PWS-specific per capita finished water usage rate) and enter in the corresponding box in Table A–3 below. For each treatment plant operated by the PWS, the PWS must determine the population served by each type of water resource that provides water to the treatment plant.

Conversion factor=K=(F_{CT}+F_N#F_W)/P_R=_____

For Table A–3, P=F/K, using F values from Table A–2 (e.g., $P_{S1}=F_{S1}/K$).

TABLE A–3—POPULATION SERVED VALUES

Water resources (by type source)	Population served by treated water (number of people)			
	Treatment plants			
	#1	#2	#3	#4
Surface water (S)	(P_{S1})	(P_{S2})	(P_{S3})	(P_{S4})
Ground water (G)	(P_{G1})	(P_{G2})	(P_{G3})	(P_{G4})
Purchased finished water that is further treated (P)	(P_{P1})	(P_{P2})	(P_{P3})	(P_{P4})
Combined (C)	(P_{C1})	(P_{C2})	(P_{C3})	(P_{C4})

Note: The $P_{C\#}$ value is calculated by adding the $P_{S\#}$, $P_{G\#}$, and $P_{P\#}$ values in the column above.

—P_{CT}=number of people served by finished water produced in all of the PWS's treatment plants (calculated by adding the combined populations served by each treatment plant ($\Sigma(P_{C\#})$))

=_____ (people)

NOTE: A PWS that sells all its finished water and thus has no retail population must calculate the population served by the PWS by raising the PWS's average treated flow (in MGD) to the 0.95 power and multiplying the result by 7,700. As an equation, this would appear as:

PWS population served=7,700 (PWS's average treated flow in MGD)$^{0.95}$

The PWS may then calculate the population served by each of its treatment plants by multiplying the PWS population served times the average treated flow from the treatment plant divided by the average treated flow for the PWS. As an equation, this would appear as:

$$F.S. = \frac{i_c}{i} = \frac{H_c/D_b}{H/D_b} = D_b \frac{(\gamma m - \gamma w)}{H\gamma w} \quad (2)$$

Treatment plant categorization. A PWS must categorize its treatment plants to determine its specific compliance requirements by reviewing Table A–4 below.

TABLE A–4—TREATMENT PLANT CATEGORIES

Treatment plant category	P_{CT}	$P_{C\#}$	$P_{S\#}$	$P_{G\#}$
A	≥100,000	≥100,000	≥1	NA.
B	≥100,000	≥100,000	Zero	NA.
C	≥100,000	$P_{C\#}$ is <100,000 and is largest $P_{C\#}$ in PWS.	≥1	NA.
D	≥100,000	$P_{C\#}$ is <100,000 and is largest $P_{C\#}$ in PWS.	Zero	NA.
E	≥100,000	<100,000 and is not largest $P_{C\#}$ in PWS.	≥1	NA.
F	≥100,000	<100,000 and is not largest $P_{C\#}$ in PWS.	Zero	NA.
G	50,000–99,999 and P_{GT} ≥ 50,000.	NA	NA	Largest $P_{G\#}$.

NA—not applicable.

(b) *Applicability.* (1) Table 1 of this paragraph is a summary of treatment plant categorization under the provisions of appendix A to paragraph (a) of this section.

TABLE 1—TREATMENT PLANT CATEGORIES

Treatment plant category	PWS combined population served	Treatment plant combined population served	Treatment plant surface water population served	Treatment plant ground water population served
A	≥100,000	≥100,000	≥1	NA.
B	≥100,000	≥100,000	zero	NA.

TABLE 1—TREATMENT PLANT CATEGORIES—Continued

Treatment plant category	PWS combined population served	Treatment plant combined population served	Treatment plant surface water population served	Treatment plant ground water population served
C	≥100,000	Plant serves <100,000 and is largest plant.	≥1	NA.
D	≥100,000	Plant serves <100,000 and is largest plant.	zero	<100,000.
E	≥100,000	Plant serves <100,000 and is not largest plant in PWS.	≥1	NA.
F	≥100,000	Plant serves <100,000 and is not largest plant in PWS.	zero	<100,000.
G	50,000–99,999 and ≥ 50,000 served by ground water.	NA	NA	Largest ground water plant.

NA–not applicable.

(2) Table 2 of this paragraph specifies applicability for requirements contained in §§ 141.142, 141.143, and 141.144 of this part, based on treatment plant categorization determined under the provisions of appendix A to paragraph (a) of this section.

TABLE 2—SUBPART M APPLICABILITY

Subpart M Requirements	Categories of treatment plants[1]						
	A	B	C	D	E	F	G
§ 141.142.—DBP and Related Monitoring							
Table 1a and 1b	X	X	X	X	X	X	
Table 2[2]	X	X	X	X	X	X	
Table 3[2]	X	X	X	X	X	X	
Table 4a and 4b[2]	X	X	X	X	X	X	
Table 5a and 5b[2]	X	X	X	X	X	X	
Table 6	X	X	X	X	X	X	
§ 141.143—Microbiological Monitoring							
Treatment plant influent monitoring	X		X		X		
Finished water monitoring[3]	X		X		X		
§ 141.144—Applicability Monitoring and Treatment Studies							
Treatment study applicability monitoring	X	X	X	X			X
Pilot-scale treatment studies[4]	X	X					
Bench- or pilot-scale treatment studies[4]	X	X	X	X			X

[1] As determined by Appendix A to paragraph (a) of this section.
[2] Table 2 required only for treatment plants using chloramines. Table 3 required only for treatment plants using hypochlorite solution. Table 4a and 4b required only for treatment plants using ozone. Table 5a and 5b required only for treatment plants using chlorine dio xide.
[3] Only required for a PWS that, during any of the first twelve months of monitoring at the treatment plant influent, detects 10 or more *Giardia* cysts, or 10 or more *Cryptosporidium* oocysts, or one or more total culturable viruses in one liter of water; or calculates a numerical value of the *Giardia* or *Cryptosporidium* concentration equal to or greater than 1000 per 100 liters or virus concentration equal to or greater than 100 per 100 liters; or detects no pathogens in the sample and calculates a numerical value of the detection limit for *Giardia* or *Cryptosporidium* concentration equal to or greater than 1000 per 100 liters or virus concentration equal to or greater than 100 per 100 liters.
[4] Pilot-scale treatment studies are required for treatment plants that serve a population of 500,000 or greater. Bench- or pilot-scale treatment studies are required for treatment plants that serve a population of fewer than 500,000.

(c) *Disinfection Byproduct and Related Monitoring.* A PWS must comply with the monitoring requirements in § 141.142 of this subpart for treatment plants in treatment plant categories A, B, C, D, and E listed in table 1 in paragraph (b)(1) of this section. The PWS shall monitor monthly for 18 consecutive months at each treatment plant, even if a treatment plant was not used

for one or more calendar months. When the treatment plant is not operating, the PWS shall file the report required under § 141.142(c) of this subpart to indicate zero flow, and need only conduct treatment plant influent monitoring under the provisions of § 141.142 of this subpart. A PWS must comply with the monitoring requirements in § 141.142 of this subpart for treatment plants in treatment plant categories F listed in table 1 in paragraph (b)(1) of this section monthly for 18 consecutive months at each treatment plant, except if a treatment plant was not used for one or more calendar months. When the treatment plant is not operating, the PWS shall file the report required under § 141.142(c) of this subpart to indicate zero flow, and is not required to conduct treatment plant influent monitoring under the provisions of § 141.142 of this subpart.

(d) *Microbiological Monitoring.* A PWS must comply with the monitoring requirements in § 141.143 of this subpart for treatment plants in treatment plant categories A, C, and E listed in table 1 in paragraph (b)(1) of this section and table 3 of this paragraph. The PWS shall conduct 18 consecutive months of microbiological monitoring at each treatment plant, even if it is not operated each calendar month.

TABLE 3—MICROBIOLOGICAL MONITORING REQUIREMENTS FOR SUBPART M

Microbial sample	Treatment plant category	
	A, C and E	
	Treatment plant influent	Finished water [1]
Total culturable viruses	1/month [2]	1/month.
Total coliforms	1/month	1/month.
Fecal coliforms or *E. coli*	1/month	1/month.
Giardia	1/month	1/month.[3]
Cryptosporidium	1/month	1/month.[3]

[1] Only required for a PWS that, during any of the first twelve months of monitoring at the treatment plant influent, detects 10 or more *Giardia* cysts, or 10 or more *Cryptosporidium* oocysts, or one or more total culturable viruses in one liter of water; or calculates a numerical value of the *Giardia* or *Cryptosporidium* concentration equal to or greater than 1000 per 100 liters or virus concentration equal to or greater than 100 per 100 liters; or detects no pathogens in the sample and calculates a numerical value of the detection limit for *Giardia* or *Cryptosporidium* concentration equal to or greater than 1000 per 100 liters or virus concentration equal to or greater than 100 per 100 liters. The PWS shall collect one sample of finished water during each month that the treatment plant is operated at each such treatment plant beginning in the first calendar month after the PWS learns of such a result. A PWS shall continue finished water monitoring monthly until 18 months of treatment plant influent monitoring has been completed.

[2] A PWS may avoid virus monitoring if the PWS has monitored total coliforms, fecal coliforms, or *E. coli* in the source water for at least five days/week for any period of six consecutive months beginning after January 1, 1994, and 90% of all samples taken in that six-month period contained no greater than 100 total coliforms/100 ml, or 20 fecal coliforms/100 ml, or 20 *E. coli*/100 ml.

[3] A PWS may avoid the requirement for finished water monitoring of *Giardia* and *Cryptosporidium* if the PWS notifies EPA that it will comply with the alternative monitoring requirements in § 141.143(a)(2)(iii). The PWS must still conduct finished water monitoring for all other microorganisms, except that *Giardia* and *Cryptosporidium* monitoring in the finished water is not required.

(e) *Disinfection Byproduct Precursor Removal Studies (Treatment Studies).*

(1) A PWS shall comply with treatment study applicability monitoring in paragraph (e)(2) of this section at each treatment plant in treatment plant categories A, B, C, D, and G listed in table 1 in paragraph (b)(1) of this section. A PWS shall comply with the treatment study requirements in § 141.144 of this subpart at each such treatment plant, except for those treatment plants:

(i) Meeting the source water quality, disinfection practice, or disinfection byproduct precursor removal practice criteria in paragraph (e)(3) of this section, for which no treatment study is required; or

(ii) Meeting the common water resource criteria in paragraph (e)(4) of this section, for which several PWSs may conduct treatment studies jointly, in lieu of separately; or

(iii) Meeting the common water resource criteria in paragraph (e)(5) of this section, for which a PWS may contribute funds towards research, in lieu of conducting a treatment study; or

(iv) At which a previous treatment study that meets the criteria in paragraph (e)(6) of this section has already been conducted, for which a PWS may

use the results of this previous treatment study, in lieu of conducting another treatment study; or

(v) Operated by the PWS that use the same water resource, as classified by the procedure in paragraph (e)(4) of this section. The PWS is not required to conduct more than one treatment study for those treatment plants. If both pilot-scale and bench-scale treatment studies would otherwise be required for treatment plants on the same water resource, the PWS shall conduct a pilot-scale study. A PWS with multiple water resources shall conduct treatment studies for each treatment plant that uses different water resources.

(2) Treatment study applicability monitoring.

(i) PWSs shall monitor total organic carbon (TOC) monthly for 12 months. Treatment plants using surface water shall monitor treatment plant influent. Treatment plants using ground water shall monitor finished water.

(ii) Treatment study applicability monitoring for THM4 and HAA5 is only required by a PWS that intends to qualify for avoiding a treatment study under the provisions of paragraph (e)(3)(i) of this section.

(iii) Total organic halides formed under the uniform formation conditions (UFCTOX) monitoring is only required by a PWS that intends to qualify for a joint treatment study under the provisions of paragraph (e)(4)(i)(A)(*2*) of this section or for the alternative to conducting a treatment study under the provisions of paragraph (e)(5) of this section.

(3) *Criteria under which no treatment study is required.* A PWS identified in paragraph (e)(1) of this section is not required to conduct a treatment study at any treatment plant that satisfies any criteria in paragraphs (e)(3) (i) through (iv) of this section, provided that the PWS has also complied with the requirements in paragraph (e)(7)(i) of this section and EPA has approved the PWS's request to avoid the treatment study.

(i) Treatment plants that use chlorine as both the primary and residual disinfectant and have, as an annual average of four quarterly averages, levels of less than 40 μg/l for THM4 and less than 30 μg/l for HAA5. Quarterly averages are the arithmetic average of the four distribution system samples collected under the requirements of §141.142(a)(1) of this subpart.

(ii) Treatment plants using surface water that do not exceed a TOC annual average of 4.0 mg/l in the treatment plant influent, measured in accordance with §§141.141(f)(4) and 141.144(a) of this subpart and calculated by averaging the initial 12 monthly TOC samples.

(iii) Treatment plants using only ground water not under the direct influence of surface water that do not exceed a TOC annual average of 2.0 mg/l in the finished water, measured in accordance with §§141.141(f)(4) and 141.144(a) of this subpart and calculated by averaging the initial 12 monthly TOC samples.

(iv) Treatment plants that already use full scale membrane or GAC technology. For a treatment plant that already uses full-scale GAC or membrane technology capable of achieving precursor removal, a PWS shall conduct monitoring and submit full-scale plant data required for disinfection byproduct and related monitoring by §141.142(a) of this subpart, ensuring that the GAC or membrane processes are included in the process train being monitored. For a treatment plant to be considered to have membrane technology to achieve precursor removal, the PWS shall have used nanofiltration or reverse osmosis membranes. GAC capable of removing precursors is defined as GAC with an empty bed contact time (EBCT) of 15 minutes or greater, with a time between carbon reactivation or replacement of no more than nine months. PWSs that operate treatment plants that use GAC with either an EBCT of less than 15 minutes or a replacement or reactivation frequency for GAC longer than nine months may submit a request to avoid treatment studies under the provisions of paragraph (e)(7)(i) of this section by including data demonstrating effective DBP precursor removal.

(4) *Criteria under which joint treatment studies are allowed.* (i) PWSs that use common water resources and have similar treatment trains may conduct joint treatment studies. A common

water resource for all types of surface water resources requires the mean treatment plant influent TOC or UFCTOX of each of the cooperating treatment plants to be within 10% of the average of the mean treatment plant influent TOCs or UFCTOX of all the cooperating treatment plants. A common water resource for all types of ground water resources requires the mean treatment plant finished water TOC or UFCTOX of each of the cooperating treatment plants to be within 10% of the average of the mean treatment plant finished water TOCs or UFCTOX of all the cooperating treatment plants. The mean is calculated from the monthly TOC or UFCTOX monitoring data for the initial twelve months of monitoring under §141.144(a) of this subpart. Similar treatment trains means that, for example, softening plants may not conduct joint studies with conventional treatment plants. In addition, the applicable requirements in paragraphs (e)(4)(i) (A) through (C) of this section shall be met for the water resource to be considered a common water resource. If otherwise eligible, a PWS may choose to either perform a joint treatment study with other eligible systems or contribute funds to a cooperative research program, as described in paragraph (e)(5) of this section, as an alternative to conducting a treatment study.

(A) *River sources.* Treatment plants with river intakes are considered to have a common water resource if the PWS meets either criteria in paragraphs (e)(4)(i)(A) (*1*) or (*2*) of this section.

(*1*) The intakes are no more than 20 river miles apart and TOC at each treatment plant influent is within 10% of the mean TOC of all the treatment plant influents.

(*2*) The intakes are at least 20, but no more than 200, river miles apart and the PWS demonstrates that the mean water resource UFCTOX is within 10% of the mean UFCTOX of all the treatment plant influents, based on UFCTOX analytical results of the same 12 consecutive months for all cooperating treatment plants.

(B) *Lake/reservoir.* Treatment plants with lake or reservoir intakes are considered to have a common water resource if the same lake or reservoir serves all the cooperating treatment plants and TOC at each treatment plant influent is within 10% of the mean TOC of all the treatment plant influents.

(C) *Ground water not under the direct influence of surface water.* Treatment plants with intakes from a single aquifer are considered to have a common water resource if treatment plant finished water TOC at each treatment plant is within 10% of the mean finished water TOC of all the treatment plants.

(ii) PWSs that meet the requirements of paragraph (e)(4)(i) of this section shall conduct at least the number and type of joint studies noted in the following tables. Joint studies shall only be conducted among treatment plants in the same size category, i.e. a population served of either ≥500,000 or of <500,000. The maximum number of treatment plants with a population served ≥500,000 persons allowed to join together to conduct a study is three. The maximum number of treatment plants with a population served <500,000 persons allowed to join together to conduct a study is six.

JOINT STUDIES REQUIREMENT FOR TREATMENT PLANTS WITH A POPULATION SERVED OF <500,000

Number of plants	Minimum studies to be conducted
2	1 pilot (GAC or membrane).
3	1 pilot and 1 bench (GAC or membrane).
4	2 pilots (GAC and/or membrane).
5	2 pilots (GAC and/or membrane), 1 bench (GAC or membrane).
6	2 pilots and 2 bench (GAC and/or membrane).

JOINT STUDIES REQUIREMENT FOR TREATMENT PLANTS WITH A POPULATION SERVED OF ≥500,000

Number of plants	Minimum studies to be conducted
2	1 pilot (GAC or membrane), 2 bench (GAC and/or membrane).
3	2 pilots (GAC and/or membrane).

(5) *Criteria under which an alternative to conducting a treatment study is allowed.* In lieu of conducting the required treatment study, a PWS may apply to EPA to contribute funds to a cooperative research effort. The PWS

shall submit an application to EPA Technical Support Division, ICR Precursor Removal Studies Coordinator, 26 W. Martin Luther King Drive, Cincinnati, OH 45268. The application shall show that the treatment plant for which the waiver of the treatment study is sought uses a common water resource, as described in paragraph (e)(4) of this section, that is being studied by another PWS or cooperative of PWSs operating treatment plants in the same size category. A PWS operating treatment plants serving a population of fewer than 500,000 may also contribute to this fund if there is a common water resource (as defined in paragraph (e)(4) of this section) treatment plant serving 500,000 or more conducting a treatment study. If EPA approves the application, the PWS shall contribute funds in the amount specified in paragraph (e)(5)(i) of this section to the Disinfection Byproducts/Microbial Research Fund, to be administered by the American Water Works Association Research Foundation (AWWARF) under the direction of an independent research council, for use in a dedicated cooperative research program related to disinfectants, disinfection byproducts, and enhanced surface water treatment.

(i) The PWS shall contribute $300,000 for a treatment plant with a population served of 500,000 or more. The PWS shall contribute $100,000 for a treatment plant with a population served of fewer than 500,000.

(ii) The PWS shall send the contribution to the address specified in EPA's approval letter not later than 90 days after EPA approves the PWS application for waiver of the treatment study.

(6) *Criteria under which a previous treatment study is acceptable (grandfathered studies).* A PWS that has conducted studies of precursor removal that meet all the criteria in paragraphs (e)(6) (i) and (ii) of this section may use the results of that study in lieu of conducting another treatment study.

(i) The PWS used analytical methods specified in table 7 of §141.142(b)(1) of this subpart and used the analytical and quality control procedures described in ''DBP/ICR Analytical Methods Manual'', EPA 814–B–96–002.

(ii) The PWS followed a protocol similar to that specified and supplies the data specified in ''ICR Bench- and Pilot-scale Treatment Study Manual'' (EPA 814–B–96–003, April 1996).

(7) *Process for a PWS to obtain EPA approval of criteria applicability.* A PWS wanting to avoid the requirements for a treatment study under the provisions of paragraphs (e) (3) through (6) of this section shall submit the applicable information in paragraphs (e)(7) (i) through (iv) of this section and in ''ICR Bench- and Pilot-scale Treatment Study Manual'' (EPA 814–B–96–003, April 1996) and all monitoring data required under §§141.142(a) and 141.143(a) of this subpart to EPA, Technical Support Division, ICR Precursor Removal Studies Coordinator, 26 W. Martin Luther King Drive, Cincinnati, OH 45268.

(i) *Approval of request to avoid treatment studies.* A PWS that believes it qualifies to avoid the requirements for a treatment study under the provisions of paragraph (e)(3) (i) through (iii) of this section shall submit the information showing the applicable criterion for not conducting the study has been met not later than November 14, 1997. A PWS wanting to avoid the requirements for a treatment study under the provisions of paragraph (e)(3)(iv) of this section shall submit the supporting information, including any pilot- or full-scale data showing effective precursor removal, not later than November 14, 1997. A PWS that applies to avoid a treatment study under the provisions of paragraph (e) (4) through (6) of this section and subsequently qualifies to avoid a treatment study under the provisions of paragraph (e)(3) (i) through (iii) of this section may elect to avoid a treatment study under the provisions of paragraph (e)(3) (i) through (iii) of this section. If the PWS elects to avoid a treatment study under the provisions of paragraph (e)(3) (i) through (iii) of this section, the PWS shall notify all PWSs that were associated with the application to avoid a treatment study under the provisions of paragraph (e) (4) through (6) of this section.

(ii) *Approval of request to conduct joint studies.* A PWS that believes it qualifies

to avoid the requirements for a treatment study under the joint study provisions of paragraph (e)(4) of this section shall submit a letter of intent to EPA with the information in paragraphs (e)(7)(ii) (A) through (F) of this section for all treatment plants to be included in the joint study not later than May 14, 1997. The letter shall be signed by all PWSs planning to participate in the joint study. All PWSs shall submit a combined application for joint studies approval to EPA (including 12 months of treatment plant influent TOC or finished water TOC results or UFCTOX results, as appropriate, for each treatment plant to be included in the joint study) not later than November 14, 1997.

(A) Data to support their common water resource designation.

(B) Information to demonstrate that treatment plants have similar treatment trains.

(C) Information that treatment plants are in the same size category.

(D) The treatment plant influent TOC or finished water TOC results, or UFCTOX results, as appropriate, from the first six months of monitoring.

(E) What studies will be conducted (i.e., combination of bench/pilot and GAC/membrane).

(F) Any additional supporting data.

(iii) *Approval of request for alternative to treatment studies.* A PWS that believes it qualifies to avoid the requirements for a treatment study under the provisions for an alternative in paragraph (e)(5) of this section shall submit a letter of intent expressing its intention to contribute funds to the cooperative research effort not later than May 14, 1997. The letter shall identify the other treatment plants using the same water resource which will be conducting studies. Each PWS shall submit an application for approval of alternative to treatment studies to EPA (including 12 months of treatment plant influent TOC or finished water TOC results or UFCTOX results, as appropriate) not later than November 14, 1997. EPA shall notify the PWS whether a treatment study is required (because there is no other appropriately sized treatment plant using the same water resource conducting a treatment study) or if the PWS can avoid the study by contributing funds to the cooperative research effort specified in paragraph (e)(5) of this section.

(iv) *Approval of request to use grandfathered studies.* A PWS that believes it qualifies to avoid the requirements for a treatment study under the grandfathered study provisions of paragraph (e)(6) of this section shall submit the following information not later than February 14, 1997: a description of the study, the equipment used, the experimental protocol, the analytical methods, the quality assurance plan, and any reports resulting from the study. EPA shall review the information and inform the PWS whether or not the prior study meets the ICR requirements. Not later than November 14, 1997, the PWS must submit study data in the format specified in ''ICR Manual for Bench- and Pilot-scale Treatment Studies'', EPA 814–B–96–003, April 1996. An approved grandfathered study can be justification for common water resource PWSs contributing to the cooperative research effort under the provisions of paragraph (e)(5) of this section, but may not be used as joint treatment studies unless it incorporates the requirements listed in §141.141(e)(4) of this section and the PWS submits written concurrence of the PWS which conducted the study.

(f) *Effective dates.* (1) A PWS shall respond to the Notice of Applicability sent by EPA within 35 calendar days of receipt of that notice. The PWS's response to the Notice shall indicate what requirements in subpart M apply to each treatment plant operated by the PWS. If a PWS meets the applicability criteria in paragraph (b) of this section and has not received a Notice of Applicability from EPA by June 28, 1996, that PWS must request a Notice of Applicability from EPA by contacting the ICR Utilities Coordinator, TSD, USEPA, 26 West Martin Luther King Drive, Cincinnati, OH 45268, not later than July 15, 1996.

(2) A PWS required to monitor under both paragraphs (c) and (d) of this section shall begin monitoring to comply with the provisions of §141.142 (Disinfection Byproduct and Related Monitoring) and §141.143 (Microbiological Monitoring) of this subpart in the same

month. The PWS must submit the sampling plans required by §§ 141.142(c)(2)(ii) and 141.143(c)(3)(ii) of this subpart at the same time.

(3) *Disinfection Byproduct and Related Monitoring.* A PWS operating a treatment plant required to comply with § 141.142 of this subpart shall begin monitoring in the calendar month following approval of the DBP and related monitoring sampling plan submitted under the provisions of § 141.142(c)(2)(ii) of this subpart. Once a PWS has begun monitoring, it shall continue to monitor for 18 consecutive months.

(4) *Microbiological Monitoring.* A PWS operating a treatment plant identified in paragraph (d) of this section shall begin monitoring under the provisions of § 141.143 of this subpart in the calendar month following approval of the sampling plan submitted under the provisions of § 141.143(c)(3)(ii) of this subpart. Once a PWS has begun monitoring, it shall continue to monitor for 18 consecutive months.

(5) DBP precursor removal studies. (i) *TOC, UFCTOX, THM4, and HAA5 monitoring.* A PWS required to comply with § 141.144 of this subpart shall begin TOC, UFCTOX, THM4, and HAA5 monitoring specified in paragraph (e)(2) of this section not later than August 14, 1996 and continue this monitoring for 12 consecutive months for TOC and UFCTOX and four consecutive quarters for THM4 and HAA5.

(ii) A PWS required to conduct a disinfection byproduct precursor removal study (treatment study) under the provisions of paragraph (e)(1) of this section shall begin conducting such treatment studies not later than April 14, 1998 and submit the report(s) of the completed study to EPA not later than July 14, 1999.

§ 141.142 Disinfection byproduct and related monitoring.

(a) *Monitoring requirements.* Samples taken under the provisions of this section shall be taken according to the procedures described in the ''ICR Sampling Manual,'' EPA 814–B–96–001, April 1996. If a treatment plant configuration results in two required sampling points from any table in this section when in fact it is a single location, duplicate analyses are not required for the same location and time. A PWS that uses purchased finished water shall determine whether any monitoring of treatment plant influent is required under paragraphs (a) (2) through (5) of this section because of certain treatment (e.g., use of hypochlorite or chlorine dioxide) of the water provided by the selling PWS.

(1) A PWS shall obtain a complete set of samples at the frequency and location noted in tables 1a and 1b of this section for treatment plants required to test under § 141.141(b) of this subpart. Samples shall be taken according to the sampling plan approved under the provisions of paragraph (c)(2)(ii) of this section.

(i) Samples of finished water shall be collected at a point after which all treatment processes for a particular treatment plant are complete (including the clearwell and final point of chlorination) and before the distribution system begins. A PWS that purchases finished water shall collect a sample before additional disinfectant is added to the purchased finished water. A PWS shall collect a sample of purchased finished water only if the PWS redisinfects the purchased finished water. A sample of finished water is a sample representing the final product water from a particular treatment plant.

(ii) A sample of treatment plant influent for a PWS that treats untreated water shall be taken at a location at the upstream end of a treatment plant where waters from all intakes are blended prior to any treatment or chemical addition. For treatment plants that have multiple intakes and add chemicals at the intake, the sample of treatment plant influent shall be a flow proportional composite of intake samples collected before chemical addition and before pretreatment. If the intakes are expected to have the same source water quality, one representative intake sample may be taken. If a disinfectant is added at or before the intake (e.g., for zebra mussel control), the sample shall be taken in the vicinity of the intake so that the sample is not contaminated by the disinfectant. A sample of treatment plant