

CHAPTER 24

**Class VI Injection Wells and Facilities
Underground Injection Control Program**

Section 1. Authority and Purpose. These regulations are promulgated pursuant to Wyoming Statutes (W.S.) § § 35-11-101 through ~~1904~~ 2005, specifically § 313, and no person shall sequester carbon dioxide unless authorized by an Underground Injection Control (UIC) permit issued by the Department of Environmental Quality (DEQ). The injection of carbon dioxide for purposes of a project for enhanced recovery of oil or other minerals approved by the Wyoming Oil and Gas Conservation Commission shall not be subject to the provisions of this regulation unless the operator converts to geologic sequestration upon the cessation of oil and gas recovery operations or as otherwise required by the Commission or ~~e~~Director.

These rules and regulations also provide financial assurance for the purposes specified in 35-11-313.

Section 2. Definitions. The following definitions supplement those definitions contained in Section § 35-11-103 of the Wyoming Environmental Quality Act.

~~(a) —“Administrator” means the administrator of the Water Quality Division of the Department of Environmental Quality.~~

(a) “Abandoned well” means a well whose use has been permanently discontinued or that is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

(b) "Aquifer" means a zone, stratum, or group of strata that can store and transmit water in sufficient quantities for a specific use.

(c) “Area of review” means the subsurface three-dimensional extent of the carbon dioxide plume, associated pressure front, and displaced fluids, as well as the overlying formations, and surface area above that delineated region. The area of review is based on available site characterization, monitoring, and operational data as set forth in Section 8 of this chapter.

(d) "Background" means the constituents or parameters and the concentrations or measurements ~~which that~~ describe water quality and water quality variability prior to the subsurface discharge.

(e) “Bore/casing annulus” means the space between the ~~well-bore~~ wellbore and the well casing.

(f) “Carbon dioxide plume” means the underground extent, in three dimensions, of an injected carbon dioxide stream.

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48 (g) “Carbon dioxide stream” means carbon dioxide, plus associated substances
49 derived from the source materials and any processing, and any substances added to the stream to
50 enable or improve the injection process. This chapter does not apply to any carbon dioxide
51 stream that meets the definition of a hazardous waste under 40 CFR Part 261.

52
53 (h) “Casing” means a pipe or tubing of appropriate material, of varying diameter and
54 weight, lowered into a borehole during or after drilling in order to support the sides of the hole
55 and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to
56 prevent water, gas, or other fluid from entering or leaving the hole.

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58 ~~(h)~~(i) “Casing/tubing annulus” means the space between the well casing and the tubing.

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60 ~~(h)~~(j) “Cementing” means to seal the annular space around the outside of a casing string
61 using a specially formulated mixture to hold the casing in place and prevent any movement of
62 fluid in this annular space. Cementing also includes operations to seal the well at the time of
63 abandonment.

64
65 (k) “Class II Well” shall mean any non-commercial well used to dispose of water
66 and/or fluids directly associated with the production of oil and/or gas, any well used to inject
67 fluids or gas for enhanced oil recovery, or any well used for the storage of liquid hydrocarbons.
68 Non-hazardous gas plant wastes may be disposed of in a Class II well pending Environmental
69 Protection Agency co-approval, as defined in Wyoming Oil and Gas Conservation Commission
70 Rules and Regulations, Chapter 1, Section 2.

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72 (l) “Class V facility” means any property that contains an injection well, drywell, or
73 subsurface fluid distribution system that is not defined as a Class I, II, III, IV, or VI well in this
74 chapter. The Class V facility includes all systems of collection, treatment, and control that are
75 associated with the subsurface disposal. Class V injection wells are described in Water Quality
76 Rules and Regulations Chapter 27.

77
78 ~~(h)~~(m) “Class VI well” means a well injecting a carbon dioxide stream for geologic
79 sequestration, beneath the lowermost formation containing a USDW; or a well used for geologic
80 sequestration of carbon dioxide that has been granted a waiver of the injection depth
81 requirements pursuant to requirements of Section 10 of this chapter; or, a well used for geologic
82 sequestration of carbon dioxide that has received an expansion to the areal extent of an existing
83 Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to
84 ~~Wyoming Oil and Gas Conservation Commission Rules and Regulations, Chapter 4, Section 12~~
85 ~~and federal regulation §144.7(d)~~ Section 5 of this chapter. Class VI wells are regulated under this
86 chapter.

87
88 ~~(k)~~(n) “Confining zone” means a geological formation, group of formations, or part of a
89 formation stratigraphically overlying the injection zone(s) that acts as barrier to fluid movement.
90 For Class VI wells operating under an injection depth waiver, confining zone means a geologic
91 formation, group of formations, or part of a formation stratigraphically overlying and underlying
92 the injection zone(s).

93
94 (o) “Contaminant” means any physical, chemical, biological, or radiological
95 substance or matter in water.

96
97 ~~(+)~~(p) “Corrective action” means the use of ~~a~~A administrator-approved methods to ensure
98 that wells within the area of review do not serve as conduits for the movement of fluids into
99 geologic formations other than those to be authorized under the permit.

100
101 ~~(m)~~ ~~“Director” means the director of the Department of Environmental Quality.~~

102
103 ~~(+)~~(q) "Draft permit" means a document indicating the tentative decision by the
104 ~~d~~Department to issue or deny, modify, revoke and reissue, or terminate a permit. A notice of
105 intent to terminate a permit and a notice of intent to deny a permit are types of draft permits. A
106 denial of a request for modification, revocation and reissuance, or termination is not a draft
107 permit. A draft permit for issuance shall contain all conditions and content, compliance sched-
108 ules and monitoring requirements required by this chapter.

109
110 ~~(+)~~(r) "Duly authorized representative" means a specific individual or a position having
111 responsibility for the overall operation of the regulated facility or activity. The authorization
112 shall be made in writing by a responsible corporate officer and shall be submitted to the
113 ~~a~~AAdministrator.

114
115 ~~(+)~~(s) “Endangerment” means exposure to actions or activities ~~which~~ that could pollute
116 an Underground Source of Drinking Water (USDW).

117
118 ~~(q)~~ ~~“Excursion detection” means the detection of migrating carbon dioxide at or~~
119 ~~beyond the boundary of the geologic sequestration site.~~

120
121 (t) “Exempted aquifer” means an “aquifer” or a portion thereof that meets the criteria
122 in the definition of “underground source of drinking water” but that has been exempted
123 according to the procedures in Section 5(c) of this chapter.

124
125 (u) “Experimental technology” means a technology that has not been proven feasible
126 under the conditions in which it is being tested.

127
128 ~~(+)~~(v) “Fact sheet” means a document briefly setting forth the principal facts and the
129 significant factual, legal, methodological, and policy questions considered in preparing the draft
130 permit. Fact sheets for Class VI wells are incorporated into the public notice.

131
132 (w) “Fault” means a surface or zone of rock fracture along which there has been
133 displacement.

134
135 (x) “Flow rate” means the volume per time unit given to the flow of gases or other
136 fluid substance that emerges from an orifice, pump, turbine or passes along a conduit or channel.

137

138 ~~(s)~~(y) “Fluid” means any material ~~which~~ that flows or moves, whether semisolid, liquid,
139 sludge, gas or any other form or state.

140
141 (z) “Formation” means a body of consolidated or unconsolidated rock characterized
142 by a degree of lithologic homogeneity that is prevailingly, but not necessarily, tabular and is
143 mappable on the earth’s surface or traceable in the subsurface.

144
145 (aa) “Formation fluid” means fluid present in a formation under natural conditions as
146 opposed to introduced fluids, such as drilling mud.

147
148 ~~(t)~~(bb) “Geologic sequestration project” means an injection well or wells used to emplace
149 a carbon dioxide stream into an injection zone for geologic sequestration. It includes the subsurface
150 three-dimensional extent of the carbon dioxide plume, associated pressure front, and displaced
151 ~~brine~~ fluid, as well as the surface area above that delineated region. (Reference Section
152 35-11-103(c) of the Wyoming Environmental Quality Act for definitions of *geologic*
153 *sequestration*, *geologic sequestration site*, and *geologic sequestration facilities*.)

154
155 ~~(h)~~(cc) “Groundwater” means subsurface water that fills available openings in rock or
156 soil materials such that they may be considered water saturated under hydrostatic pressure.

157
158 ~~(v)~~(dd) “Groundwaters of the ~~s~~State” are all bodies of underground water ~~which~~ that are
159 wholly or partially within the boundaries of the ~~s~~State.

160
161 ~~(w)~~(ee) “Hazardous waste” means a hazardous waste as defined in 40 CFR § 261.3.

162
163 ~~(x)~~(ff) “Individual permit” means a permit issued for a specific facility operated by an
164 individual operator, company, municipality, or agency. An individual permit may be established
165 as an area permit and include multiple points of discharge that are all operated by the same
166 person.

167
168 ~~(y)~~(gg) “Injectate” means the material ~~being disposed of~~ injected through any
169 underground injection facility after it has received whatever pretreatment is done.

170
171 ~~(z)~~(hh) “Injection zone” means a geologic formation, group of formations, or part of a
172 formation that is of sufficient areal extent, thickness, porosity, and permeability to receive carbon
173 dioxide through a well or wells associated with a geologic sequestration project.

174
175 ~~(aa)~~(ii) “Lithology” means the description of rocks on the basis of their physical and
176 chemical characteristics.

177
178 ~~(bb)~~(jj) “Log” means to make a written record progressively describing the strata and
179 geologic and hydrologic character thereof to include electrical, radioactivity, radioactive tracer,
180 temperature, cement bond and similar surveys, a lithologic description of all cores, and test data.

181
182 ~~(ee)~~(kk) “Long string casing” means a casing that is continuous from at least the
183 top of the injection interval to the surface and that is cemented in place.

184
185 ~~(dd)~~(ll) “Long-term stewardship” means after release of financial assurance, upon site
186 closure, where the sequestration site may require periodic monitoring, measurement, or
187 verification of plume stabilization over an indefinite period of time.

188
189 ~~(ee)~~(mm) “Mechanical integrity” means the sound and unimpaired condition of all
190 components of the well or facility or system for control of a subsurface discharge and associated
191 activities.

192
193 (nn) “Owner or operator” means the owner or operator of any facility or activity
194 subject to regulation under the Resource Conservation Recovery Act (RCRA) or an approved
195 state program; the Safe Drinking Water Act Underground Injection Control (UIC) program
196 administered by the US EPA or a state; the National Pollutant Discharge Elimination System
197 (NPDES) or an authorized state program; or the Clean Water Act Section 404 Dredge and Fill
198 permit program.

199
200 (oo) “Packer” means a device lowered into a well to produce a fluid-tight seal.

201
202 ~~(ff)~~(pp) “Permit” means a Wyoming Underground Injection Control permit, unless
203 otherwise specified.

204
205 ~~(gg)~~(qq) “Permittee” means the named permit holder.

206
207 (rr) “Plugging” means the act or process of stopping the flow of water, oil or gas into
208 or out of a formation through a borehole or well penetrating that formation.

209
210 (ss) “Plugging record” means a systematic listing of permanent or temporary
211 abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a
212 well log, description of amounts and types of plugging material used, the method employed for
213 plugging, a description of formations that are sealed and a graphic log of the well showing
214 formation location, formation thickness, and location of plugging structures.

215
216 ~~(hh)~~(tt) “Plume stabilization” means the carbon dioxide that has been injected subsurface
217 essentially no longer expands vertically or horizontally and poses no threat to USDWs, human
218 health, safety, or the environment, as demonstrated by a minimum of three (3) consecutive years
219 of monitoring data.

220
221 ~~(ii)~~(uu) “Point of compliance” means a point at which the permittee shall meet all permit
222 and regulatory requirements.

223
224 ~~(jj)~~(vv) “Point of injection” means the last accessible sampling point prior to a fluid being
225 released into the subsurface environment through a Class VI injection well.

226
227 ~~(kk)~~(ww) “Post-injection site care” means the monitoring, measurement,
228 verification, and other actions (including corrective action) needed to ensure that USDW’s are
229 not endangered, following the closure of injection wells until plume stabilization has been

230 achieved, and certified by the Administrator, as required under Section 17 of this chapter.

231

232 (xx) “Pressure” means the total load or force per unit area acting on a surface.

233

234 (H)(yy) “Pressure front” means the zone of elevated pressure that is created by the
235 injection of the carbon dioxide stream into the subsurface. The pressure front of a carbon dioxide
236 plume refers to a zone where there is a pressure differential sufficient to cause movement of
237 injected fluids or formation fluid if a migration pathway or conduit were to exist.

238

239 (mm)(zz) “Public hearing” means a non-adversary hearing held by the
240 aAdministrator or dDirector of the dDepartment. The hearing is conducted pursuant to Chapter 3
241 9 of the Wyoming Department of Environmental Quality Rules of Practice and Procedure.

242

243 (nn)(aaa) “Radioactive waste” means any waste that contains radioactive material in
244 concentrations that exceed those listed in 10 CFR Part 20, Appendix B, Table II, Column 2 as of
245 ~~December 22, 1993~~ March 27, 2006.

246

247 (oo)(bbb) “Receiver” means any zone, interval, formation, or unit in the subsurface
248 into which a carbon dioxide stream is injected.

249

250 (pp)(ccc) “Responsible corporate officer” means a president, secretary, treasurer, or
251 vice president of the corporation in charge of a principal business function, or any other person
252 who performs similar policy- or decision-making functions for the corporation.

253

254 (qq)(ddd) “Secondarily affected aquifer” means any aquifer affected by migration of
255 fluids from an injection facility, when the aquifer is not directly discharged into.

256

257 (rr)(eee) “Site closure” means the point/time, as certified by the
258 aAdministrator following the requirements of Section 17 of this chapter, at which time the owner
259 or operator of a geologic sequestration project is released from post-injection site care
260 responsibilities.

261

262 (vv)(fff) “Stratum” (plural strata) means a single sedimentary bed or layer,
263 regardless of thickness, that consists of generally the same kind of rock material.

264

265 (ss)(ggg) “Subsurface discharge” means a discharge into a receiver.

266

267 (hhh) “Surface casing” means the first string of well casing to be installed in the well.

268

269 (tt)(iii) “Transmissive fault or fracture” means a fault or fracture that has sufficient
270 permeability and vertical extent to allow fluids to move beyond the confining zone.

271

272 (yy)(jjj) “Underground injection” means a well injection.

273

274 (uu)(kkk) “USDW” or “Underground source of drinking water” means those
275 aquifers or portions thereof ~~that have a total dissolved solids content of less than 10,000 mg/L,~~

276 ~~and are classified as either Class I, II, III, IV (a), or Special (A), pursuant to Chapter 8, Quality~~
277 ~~Standards for Wyoming Groundwaters, Water Quality Rules and Regulations. that meet the~~
278 ~~definition at 40 CFR 144.3 as of November 15, 1984.~~

279
280 (lll) “US EPA Administrator” means the Administrator of US EPA in Washington,
281 D.C.

282
283 ~~(vv) “US EPA regional administrator” means the regional administrator of the US~~
284 ~~EPA’s Region 8 office in Denver, Colorado.~~

285
286 ~~(ww)(mmm)~~ “Vadose Zone” means the unsaturated zone in the earth, between the land
287 surface and the top of the first saturated aquifer. The vadose zone contains water at less than
288 saturated conditions.

289
290 ~~(xx)(nnn)~~ “Water quality management area” means the area delineated for the
291 protection of water quality under a ~~d~~Department-approved plan developed under Sections 303,
292 208 and/or 201 of the Federal Clean Water Act, as amended.

293
294 ~~(yy)(ooo)~~ “Well” means an opening, excavation, shaft, or hole in the ground
295 allowing or used for an underground injection, or for monitoring, or an improved sinkhole; or a
296 subsurface fluid distribution system.

297
298 (ppp) “Well injection” means the subsurface emplacement of fluids through a well.

299
300 (qqq) “Well plug” means a watertight and gastight seal installed in a borehole or well to
301 prevent movement of fluids.

302
303 (rrr) “Well stimulation” means several processes used to clean the wellbore, enlarge
304 channels, and increase pore space in the interval to be injected and includes surging, jetting,
305 blasting, acidizing, hydraulic fracturing.

306
307 (sss) “Well monitoring” means the measurement by on-site instruments or laboratory
308 methods, of the quality of water in a well.

309
310 ~~(zz)(ttt)~~ “Workover” means to pull the tubing, packer, or any downhole hardware
311 from the well and inspect, replace, or refurbish it prior to placing that hardware back in service,
312 or to enter the hole with any drilling tool.

313
314 ~~(aaa)(uuu)~~ “Wellhead protection area” means the area delineated for the protection of
315 a public water supply utilizing a groundwater source under a ~~d~~Department-approved plan
316 developed pursuant to Section 1528 of the federal Safe Drinking Water Act.

317 **Section 3. Applicability.**

318
319 (a) These regulations shall apply to all Class VI wells used to inject carbon dioxide
320 streams for the purpose of geologic sequestration.

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(b) In addition, these regulations shall apply to owners and operators of Class I industrial, Class II, or Class V experimental or demonstration carbon dioxide injection projects who seek to apply for a Class VI geologic sequestration permit for their well or wells.

(i) Owners and/or operators of permitted Class I, ~~Class II~~, or Class V injection well(s) seeking to convert their well(s) to a Class VI well shall apply for a Class VI permit and shall demonstrate to the ~~a~~Administrator that the well(s) was/were engineered and constructed to meet the requirements outlined in Section 9(a) of these regulations and ensure protection of USDWs, in lieu of requirements of Section 9(b) and Section 11(a) of this chapter. By December 10, 2011, owners or operators of either Class I wells previously permitted for the purpose of geologic sequestration or Class V experimental technology wells no longer being used for experimental purposes that will continue injection of carbon dioxide for the purpose of geologic sequestration must apply for a Class VI permit.

~~(A)—By December 10, 2011, owners or operators of either Class I wells previously permitted for the purpose of geologic sequestration or Class V experimental technology wells no longer being used for experimental purposes that will continue injection of carbon dioxide for the purpose of geologic sequestration must apply for a Class VI permit.~~

(ii) If the ~~a~~Administrator determines that USDWs will not be endangered, such wells are exempt, at the ~~a~~Administrator’s discretion, from the ~~easing and cementing~~ requirements of Section 9(b)(i) through (vii) and Section 11(a)(i)(~~A~~) through (~~C~~) through (v) of this chapter.

(c) ~~For owners and/or operators of permitted Class II injection well(s) seeking to convert their well(s) to a Class VI well, the following shall apply~~ For owners and operators of Class II operations described in W.S. § 35-11-313(c):

(i) ~~An owner and/or operator of a Class II enhanced recovery well that injects carbon dioxide for the primary purpose of long term storage that results in an increased risk to a USDW as compared to enhanced oil recovery operations shall apply for a Class VI permit.~~ The ~~d~~Director’s determination of primary purpose and increased risk to a USDW shall include, at a minimum, an evaluation of the following criteria:

- (A) Increase in reservoir pressure within the injection zone(s).
- (B) Increase in carbon dioxide injection rates.
- (C) Decrease in reservoir production rates.
- (D) Distance between the injection zone(s) and USDWs.
- (E) Suitability of the Class II area of review delineation.
- (F) Quality of abandoned well plugs within the area of review.

367
368 (G) The owner's and/or operator's plan for recovery of carbon dioxide
369 at the cessation of injection.

370
371 (H) The source and properties of the injected carbon dioxide.

372
373 (I) Any additional site-specific factors as determined by the
374 ~~a~~Administrator.

375
376 (ii) An owner and/or operator may apply for a Class VI permit upon
377 recommendation by the Oil and Gas Conservation Commission supervisor, or by the
378 Commission, that regulation of a Class II enhanced recovery operation be transferred to the
379 ~~d~~Department.

380
381 (iii) An owner and/or operator of a Class II enhanced recovery operation shall
382 apply for a Class VI permit within thirty (30) days of receipt of written notice from the ~~d~~Director
383 that a Class VI permit is required.

384
385 (d) These regulations do not apply to the injection of any carbon ~~dio-xide~~ dioxide
386 stream that meets the definition of a hazardous waste.

387
388 (e) Compliance with a permit during its term constitutes compliance, for purposes of
389 enforcement, with Part C of the SDWA. However, a permit may be modified, revoked and
390 reissued, or terminated during its term for cause as set forth in Section 4 of this chapter.

391
392 (f) The requirements to maintain and implement approved plans, and maintain
393 adequate financial responsibility, are directly enforceable regardless of whether the requirements
394 are conditions of the permit.

395 **Section 4. Permits ~~r~~Required; ~~p~~Processing of ~~p~~Permits; and ~~r~~Requirements**
396 **~~a~~Applicable to ~~a~~All ~~p~~Permits.**

397
398 (a) Permits required.

399
400 (i) Owners or operators of Class VI wells must obtain a permit in accordance
401 with these regulations. Class VI wells are not authorized by rule to inject.

402
403 (ii) Construction, installation, operation, monitoring, testing, plugging, post-
404 injection site care, and modification to, or of, any Class VI well shall be allowed only in
405 accordance with these regulations.

406
407 (iii) Injections from Class VI wells shall be restricted to those receivers
408 defined as Class V (Hydrocarbon Commercial) or Class VI groundwaters by the ~~d~~Department
409 pursuant to Water Quality Rules and Regulations Chapter 8, ~~Quality Standards for Wyoming~~
410 ~~Groundwaters, Water Quality Rules and Regulations.~~

411

412 (iv) A separate permit to construct is not required under Water Quality Rules
413 and Regulations Chapter 3, ~~Water Quality Rules and Regulations~~ for any Class VI facility.

414
415 (v) Permits for Class VI wells shall be issued for the operating life of the
416 facility and extend through the post-injection site care period until the geologic sequestration
417 project is closed in accordance with ~~d~~Department rules and regulations.

418
419 (vi) Permits may be issued for individual Class VI wells and shall not be
420 issued on an area basis for multiple points of discharge operated by the same person.

421
422 (vii) Each permit shall be reviewed by the ~~d~~Department at least once every five
423 (5) years ~~for continued validity of all permit conditions and contents. to determine whether it~~
424 ~~should be modified, revoked and reissued, terminated or a minor modification made~~ Permits that
425 ~~do not satisfy the requirements of these regulations are subject to modification, revocation and~~
426 ~~reissuance, or termination~~ pursuant to this chapter.

427
428 (viii) Sections of permit applications filed under this chapter that represent
429 engineering work shall be sealed, signed, and dated by a licensed professional engineer as
430 required by ~~Wyoming Statutes, Title 33, Chapter 29~~ W.S. § 33-29-601.

431
432 (ix) Sections of permit applications filed under this chapter that represent
433 geologic work shall be sealed, signed, and dated by a licensed professional geologist as required
434 by ~~Wyoming Statutes, Title 33, Chapter 41~~ W.S. § 33-41-115.

435
436 (b) Permit processing procedures applicable to all Class VI facilities, individual, and
437 general permits:

438
439 (i) The applicant shall submit ~~five (5) copies of~~ the permit application to the
440 ~~d~~Division in a format required by the Administrator.

441
442 (ii) Within sixty (60) days of submission of the application, the
443 ~~a~~AAdministrator shall make an initial determination of completeness. An application shall be
444 determined complete when the ~~a~~AAdministrator receives an application and any supplemental
445 information necessary to determine compliance with these regulations. The completeness of any
446 application for a permit shall be judged independently of the status of any other permit
447 application or permit for the same facility or activity.

448
449 (iii) Re-submittal of information by an applicant for an incomplete application
450 will begin the process described in ~~paragraph (b) of~~ this section.

451
452 (iv) ~~During~~ At the end of any 60-day review period where an application is
453 determined complete, the ~~a~~AAdministrator shall prepare a draft permit for issuance or denial,
454 prepare a fact sheet on the proposed operation, and provide public notice pursuant to Section 20
455 of this chapter.

456

457 (A) If the Administrator tentatively decides to deny the permit
458 application, he or she shall issue a notice of intent to deny. A notice of intent to deny the permit
459 application is a type of draft permit that follows the same procedures as any draft permit
460 prepared under this section.

461
462 (B) If the Administrator's final decision is that the tentative decision to
463 deny the permit application was incorrect, he or she shall withdraw the notice of intent to deny
464 and proceed to prepare a draft permit under Section 20(b) of this chapter.

465
466
467 (v) The ~~a~~Administrator may deny an individual permit for any of the
468 following reasons:

469 (A) The application is incomplete;

470 (B) The project, if constructed and/or operated, will ~~cause violation of~~
471 violate applicable state surface or groundwater standards;

472 (C) The application ~~contains a proposed construction or operation~~
473 proposes the construction or operation of a project that does not meet the requirements of this
474 chapter;

475 (D) The permitted facility would be in conflict with or is in conflict
476 with a ~~s~~State-approved local wellhead protection plan, ~~s~~State-approved local source water
477 protection plan, or ~~s~~State-approved water quality management plan; or

478 (E) Other justifiable reasons necessary to carry out the provisions of
479 the Wyoming Environmental Quality Act.

480 ~~(vi) If the administrator intends to deny an individual permit for any reason~~
481 ~~other than an incomplete or deficient application, a draft permit shall be prepared and public~~
482 ~~notice issued pursuant to Section 20 of this chapter.~~

483 ~~(vii) A denial of a permit by the department is appealable by the applicant to~~
484 ~~the Environmental Quality Council in accordance with Rules of Practice and Procedure.~~
485 ~~Requests for appeal must be in writing, state the reasons for appeal, and be made to both the~~
486 ~~director and the chairman of the Environmental Quality Council.~~

487 ~~(viii)~~(vi) Permits may be modified, revoked and reissued, or terminated
488 either in response to a petition from any interested person (including the permittee) or upon the
489 ~~a~~Administrator's initiative. However, permits may only be modified, revoked and reissued, or
490 terminated for the reasons specified in Section 4(b) of this chapter. All requests shall be in
491 writing and shall contain facts or reasons supporting the request.

492 (A) If the ~~a~~Administrator decides the petition is not justified, the
493 petitioner shall be sent a brief written response giving the reason for the decision. A request for

503 modification, revocation and reissuance, or termination shall be considered denied if the
504 ~~a~~Administrator takes no action within sixty (60) days after receiving the written request. Denials
505 of requests for modification, revocation and reissuance, or termination are not subject to public
506 notice and comment. Denials by the ~~a~~Administrator may be appealed for hearing to the
507 Environmental Quality Council by a letter briefly setting forth the relevant facts.

508

509 ~~(ix)~~(vii) The ~~a~~Administrator may modify a permit when:

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511 (A) Any material or substantial alterations or additions to the facility
512 occur after permitting or licensing; that justify the application of permit conditions that are
513 different or absent in the existing permit;

514

515 (B) Any modification in the operation of the facility is capable of
516 causing or increasing pollution in excess of applicable standards or permit conditions;

517

518 (C) Information warranting modification is discovered after the
519 operation has begun that would have justified the application of different permit conditions at the
520 time of permit issuance;

521

522 (D) Regulations or standards upon which the permit was based have
523 changed by promulgation of amended standards or regulations; or by judicial decision after the
524 permit was issued;

525

526 (E) Cause exists for termination, as described in this section, but the
527 ~~d~~Department determines that modification is appropriate; or

528

529 (F) Modification is necessary to comply with applicable statutes,
530 standards, or regulations.

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532 ~~(x)~~(viii) ~~Additionally~~ The Administrator may modify a permit whenever the
533 ~~a~~Administrator determines that permit changes are necessary based on:

534

535 (A) Area of review reevaluations under Section ~~8(e)~~ 8(d)(i) of this
536 chapter; ~~or~~

537

538 (B) Any amendments to the testing and monitoring plan under Section
539 14(b)(xii) of this chapter; ~~or~~

540

541 (C) Any amendments to the injection well-plugging plan under Section
542 16(c) of this chapter; ~~or~~

543

544 (D) Any amendments to the post-injection site care and site closure
545 plan under Section ~~17(a)(iii)~~ 17(a)(iv) of this chapter; ~~or~~

546

547 (E) Any amendments to the emergency and remedial response plan
548 under Section ~~18(d)~~ 18(a)(i) of this chapter; ~~or~~

- 549
550 (F) A review of monitoring and/or testing results conducted in
551 accordance with permit requirements; ~~or~~
552
553 (G) A determination that the injectate is a hazardous waste as defined
554 in 40 CFR § 261.3 either because the definition has been revised, or because a previous
555 determination has been changed.
556
557 (ix) Suitability of the facility location will not be considered at the time of
558 permit modification or revocation and reissuance unless new information or standards indicate
559 that a threat to human health or the environment exists that was unknown at the time of permit
560 issuance.
561
562 ~~(xi)(x)~~ Minor modifications of permits may occur with the consent of the
563 permittee without following the public notice requirements. Minor modifications will become
564 final twenty (20) days from the date of receipt of such notice. For the purposes of this chapter,
565 minor modifications may only:
566
567 (A) Correct typographical errors;
568
569 (B) Require more frequent monitoring or reporting by the permittee;
570
571 (C) Change an interim compliance date in a schedule of compliance,
572 provided the new date is not more than 120 days after the date specified in the existing permit
573 and does not interfere with attainment of the final compliance date requirement;
574
575 (D) Allow for a change in ownership or operational control of a facility
576 where the ~~a~~AAdministrator determines that no other change in the permit is necessary, provided
577 that a written agreement containing a specific date for transfer of permit responsibility, coverage,
578 and liability between the current and new permittees have been submitted to the ~~a~~AAdministrator;
579
580 (E) Change quantities or types of fluids injected ~~which~~ that are within
581 the capacity of the facility as permitted and, in the judgment of the ~~a~~AAdministrator, would not
582 interfere with the operation of the facility or its ability to meet conditions described in the permit
583 and would not change its classification; ~~or~~
584
585 (F) Change construction requirements approved by the ~~a~~AAdministrator
586 pursuant to ~~department rules and regulations~~ subparagraphs (c)(i)(BB)(I) through (III) of this
587 section provided that any such alteration shall comply with the requirements of this chapter; ~~or~~
588
589 (G) Amend a plugging and abandonment plan ~~which~~ that has been
590 updated under Section 16 of this chapter; ~~or~~
591
592 (H) Amend a Class VI injection well testing and monitoring plan,
593 plugging plan, post-injection site care and site closure plan, or emergency and remedial response

594 plan where the modifications merely clarify or correct the plan, as determined by the
595 aAdministrator.

596
597 ~~(xii)~~(xi) The aAdministrator may revoke and reissue or terminate a permit
598 for any of the following reasons:

599
600 (A) Noncompliance with terms and conditions of the permit;

601
602 (B) Failure in the application or during the issuance process to disclose
603 fully all relevant facts, or ~~misrepresenting~~ misrepresentation of any relevant facts at any time; or

604
605 (C) A determination that the activity endangers human health or the
606 environment and can only be regulated to acceptable levels by a permit modification or
607 termination.

608
609 ~~(xiii)~~(xii) The aAdministrator may modify a permit to resolve issues that
610 could lead to the revocation of the permit under Section ~~54~~54(b) of this chapter. The
611 aAdministrator, as part of any notification of intent to terminate a permit, shall order the
612 permittee to proceed with reclamation on a reasonable time period.

613
614 ~~(A) If the administrator tentatively decides to modify or revoke~~
615 ~~and reissue a permit, a draft permit incorporating the proposed changes shall be prepared. The~~
616 ~~administrator may request additional information and, in the case of a modified permit, may~~
617 ~~require the submission of an updated application. In the case of revoked and reissued permits, the~~
618 ~~administrator shall require the submission of a new application~~

619
620 (xiii) If the Administrator tentatively decides to modify or revoke and reissue a
621 permit, a draft permit incorporating the proposed changes shall be prepared. The Administrator
622 may request additional information and, in the case of a modified permit, may require the
623 submission of an updated application. In the case of revoked and reissued permits, the
624 Administrator shall require the submission of a new application.

625
626 (xiv) In a permit modification under Section 4(b) of this chapter, only those
627 conditions to be modified shall be reopened when a new draft permit is prepared. All other
628 aspects of the existing permit shall remain in effect for the duration of the unmodified permit and
629 the modified permit shall expire on the date when the original permit would have expired. When
630 a permit is revoked and reissued under this section, the entire permit is reopened as if the permit
631 has expired and is being reissued. During any revocation and reissuance proceeding, the
632 permittee shall comply with all conditions of the existing permit until a new final permit is
633 issued.

634
635 (xv) Permit modifications, revocations, or terminations shall be developed as a
636 draft permit and are subject to the public notice and hearing requirements outlined in Section 20
637 of this chapter.

638

639 (xvi) Transfer of a permit is allowed only upon approval by the ~~a~~Administrator.
640 When a permit transfer occurs pursuant to this section, the permit rights of the previous permittee
641 will automatically terminate.

642
643 (A) The proposed permit holder shall apply in writing as though that
644 person was the original applicant for the permit and shall further agree to be bound by all of the
645 terms and conditions of the permit; ~~and~~.

646
647 (B) Transfer will not be allowed if the permittee is in noncompliance
648 with any term and conditions of the permit, unless the transferee agrees to bring the facility back
649 into compliance with the permit.

650
651 (C) When a permit transfer occurs, the ~~a~~Administrator may modify a
652 permit pursuant to this section. The ~~a~~Administrator shall provide public notice pursuant to
653 Section 20 of this chapter for any modification other than a minor modification defined by this
654 section.

655
656 (D) A permit may be transferred by the permittee to a new owner or
657 operator only if the permit has been modified or revoked and reissued (under paragraph (xiii) of
658 this subsection), or a minor modification made (under paragraph (xii) of this subsection), to
659 identify the new permittee and incorporate such other requirements as may be necessary under
660 the Safe Drinking Water Act.

661
662 (c) Permit conditions.

663
664 (i) Permit conditions shall be incorporated either expressly or by reference. If
665 incorporated by reference, a specific citation to the incorporated conditions must be given in the
666 permit. All individual permits issued under this chapter shall contain the following conditions:

667
668 (A) A requirement that the permittee comply with all conditions of the
669 permit, and any permit noncompliance constitutes a violation of these regulations and is grounds
670 for enforcement action, permit termination, revocation and reissuance, or modification; ~~;~~ or for
671 denial of a permit renewal application;

672
673 (B) A requirement that if the permittee wishes to continue injection
674 activity after the expiration date of the permit, the permittee must apply to the ~~a~~Administrator
675 for, and obtain, a new permit prior to expiration of the existing permit;

676
677 (C) A stipulation that it shall not be a defense for a permittee in an
678 enforcement action that it would have been necessary to halt or reduce the permitted activity in
679 order to maintain compliance with the conditions of this permit;

680
681 (D) A requirement that the permittee shall take all reasonable steps to
682 minimize or correct any adverse impact on the environment resulting from noncompliance with
683 this permit;

684

685 (E) A requirement that the permittee properly operate and maintain all
686 facilities and systems of treatment and control, and related appurtenances, that are installed or
687 used by the permittee to achieve compliance with the conditions of this permit. Proper operation
688 and maintenance includes effective performance, adequate funding and operator staffing and
689 training, and adequate laboratory and process controls including appropriate quality assurance
690 procedures. This provision requires the operation of back-up or auxiliary facilities or similar
691 systems only when necessary to achieve compliance with the conditions of the permit;

692
693 (F) A stipulation that the filing of a request by the permittee, or at the
694 instigation of the ~~a~~A administrator, for a permit modification, revocation, termination, or
695 notification of planned changes or anticipated non-compliance, shall not stay any permit
696 condition;

697
698 (G) A stipulation that this permit does not convey any property rights
699 of any sort, or any exclusive privilege;

700
701 (H) A stipulation that the permittee shall furnish to the ~~a~~A administrator,
702 within a specified time, any information ~~which~~ that the ~~a~~A administrator may request to determine
703 whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to
704 determine compliance with the permit. The permittee shall also furnish to the ~~a~~A administrator,
705 upon request, copies of records required to be kept by the permit;

706
707 (I) A requirement that the permittee shall allow the ~~a~~A administrator, or
708 an authorized representative of the ~~a~~A administrator, upon the presentation of credentials, during
709 normal working hours, to enter the premises where a regulated facility is located, or where
710 records are kept under the conditions of this permit, and ~~inspect the discharge and related~~
711 ~~facilities, review and copy reports and records required by the permit, collect fluid samples for~~
712 ~~analysis, measure and record water levels, and perform any other function authorized by law or~~
713 ~~regulation;~~

714
715 ~~(Formerly (I))(1.)~~ iInspect the discharge and related facilities,
716 practices, or operations regulated or required under this permit;

717
718 ~~(Formerly (I))(2.)~~ rReview and copy reports and records
719 required by the permit;

720
721 ~~(Formerly (I))(3.)~~ eCollect fluid samples for analysis, for the
722 purposes of assuring permit compliance or as otherwise authorized by the SDWA, any
723 substances or parameters at any location;

724
725 ~~(Formerly (I))(4.)~~ mMeasure and record water levels; and

726
727 ~~(Formerly (I))(5.)~~ pPerform any other function authorized by
728 law or regulation;

729

730 (J) A requirement that the permittee furnish any information necessary
731 to establish a monitoring program pursuant to Section 14 of this chapter; ~~Conditions shall~~
732 specify:

733
734 (1.) Required monitoring including type, intervals, and
735 frequency sufficient to yield data that are representative of the monitored activity including when
736 appropriate, continuous monitoring;

737
738 (2.) Requirements concerning the proper use, maintenance, and
739 installation, when appropriate, of monitoring equipment or methods, including biological
740 monitoring methods when appropriate; and

741
742 (3.) Applicable reporting requirements based upon the impact
743 of the regulated activity and as specified in Section 15 of this chapter. Reporting shall be no less
744 frequent than specified in the above regulations.

745
746 (K) A requirement that all samples and measurements taken for the
747 purpose of monitoring shall be representative of the monitored activity; ~~and records of all~~
748 monitoring information be retained by the permittee. The monitoring information to be retained
749 shall be that information stipulated in the monitoring program established pursuant to the criteria
750 in Section 14 of this chapter;

751
752 (L) A requirement that all applications, reports, and other information
753 submitted to the ~~a~~A administrator contain certifications as required in Section 5(~~d~~)(i) of this
754 chapter, and be signed by a person who meets the requirements to sign permit applications found
755 in Section 5(~~e~~)(h), or for routine reports, a duly authorized representative;

756
757 (M) A requirement that the permittee give advance notice to the
758 ~~a~~A administrator as soon as possible of any planned physical alteration or additions, other than
759 authorized operation and maintenance, to the permitted facility and receive authorization prior to
760 implementing the proposed alteration or addition;

761
762 (N) A requirement that any modification that may result in a violation
763 of a permit condition shall be reported to the ~~a~~A administrator, and any modification that will
764 result in a violation of a permit condition shall be reported to the ~~a~~A administrator through the
765 submission of a new or amended permit application;

766
767 (O) A requirement that any transfer of a permit must first be approved
768 by the ~~a~~A administrator, and that no transfer will be approved if the facility is not in compliance
769 with the existing permit unless the proposed permittee agrees to bring the facility into
770 compliance;

771
772 (P) A requirement that monitoring results shall be reported at the
773 intervals specified elsewhere in the permit;

774

775 (Q) A requirement that reports of compliance or non-compliance ~~with~~,
776 or any progress reports on interim and final requirements contained in any compliance schedule,
777 if one is required by the ~~a~~Administrator, shall be submitted no later than thirty (30) days
778 following each schedule date;

779
780 (R) A requirement that the permittee shall report:

781
782 (I) Any monitoring or other information that indicates that any
783 contaminant may cause an endangerment to a USDW or indicates that the injected carbon
784 dioxide stream, displaced formation fluids, or associated pressure front may endanger a USDW
785 or threaten human health, safety, or the environment. In addition, the owner or operator shall:

786
787 (1.) Immediately cease injection;

788
789 (2.) Take all steps reasonably necessary to identify and
790 characterize any release; and

791
792 (3.) Notify the Administrator within twenty-four (24)
793 hours.

794
795 ~~(formerly (R))~~(II) Any noncompliance with a permit condition or malfunction
796 of the injection system ~~which that~~ may cause fluid migration into or between USDWs or if an
797 excursion is discovered. It shall be ~~must be~~ orally reported to the ~~a~~Administrator within twenty-
798 four (24) hours from the time the permittee becomes aware of the circumstances, and a written
799 submission shall be provided within five (5) days of the time the permittee becomes aware of ~~the~~
800 any excursion or indication that a contaminant may cause an endangerment to a USDW. The
801 written submission shall contain:

802
803 ~~(1.)~~ (1.) A description of the noncompliance and its cause;

804
805 ~~(2.)~~ (2.) The period of noncompliance, including exact dates
806 and times, and, if the noncompliance has not been controlled, the anticipated time it is expected
807 to continue; and

808
809 ~~(3.)~~ (3.) Steps taken or planned to reduce, eliminate,
810 and prevent reoccurrence of the noncompliance.

811 .
812 (III) In addition, if an excursion is discovered the owner or
813 operator shall provide written notice to all surface owners, mineral claimants, mineral owners,
814 lessees and other owners of record of subsurface interests within thirty (30) days of discovery.

815
816 (S) A requirement that the permittee report all instances of
817 noncompliance not already required to be reported under paragraphs (c)(i)(Q) through (R) of this
818 section, at the time monitoring reports are submitted. The reports shall contain the information
819 listed in paragraph (c)(i)(R) of this section;

820

821 (T) A requirement that ~~in the situation where~~ if the permittee becomes
822 aware that it failed to submit any relevant facts in a permit application, or submitted incorrect
823 information in a permit application or in any report to the ~~a~~AAdministrator, the permittee shall
824 promptly submit such facts or information;

825
826 (U) A requirement that the injection facility meet construction
827 requirements outlined in Section 9 of this chapter, and that the permittee submit a notice of
828 completion of construction to the ~~a~~AAdministrator; and allow for inspection of the facility upon
829 completion of construction, prior to commencing any injection activity;

830
831 (V) A requirement that the permittee notify the ~~a~~AAdministrator at such
832 times as the permit requires before conversion or abandonment of the facility; ~~and~~

833
834 (W) A requirement that injection may not commence until construction
835 is complete. Construction is complete when:

836
837 (I) The permittee has submitted a notice of completion of
838 construction to the Administrator; and

839
840 (II) The Administrator has inspected or otherwise reviewed the
841 injection well and finds it is in compliance with the conditions of the permit, or the permittee has
842 not received notice from the Administrator of their intent to inspect or otherwise review the
843 injection well within thirteen (13) days of the date of the notice in subparagraph (U) of this
844 paragraph, in which case prior inspection or review is waived and the permittee may commence
845 injection. The Administrator shall include in his notice a reasonable time period in which they
846 shall inspect the well.

847
848 (X) A requirement that the owner or operator of a Class VI well
849 permitted under this part shall establish mechanical integrity prior to commencing injection or on
850 a schedule determined by the ~~a~~AAdministrator. Thereafter, the owner or operator of Class VI wells
851 must maintain mechanical integrity as defined in Section 13 of this chapter.;

852
853 (Y) A requirement that when the ~~a~~AAdministrator determines that a
854 Class VI well lacks mechanical integrity pursuant to Section 13 of this chapter, he/she shall give
855 written notice of his/her determination to the owner or operator.

856
857 (I) Unless the Administrator requires immediate cessation, the
858 owner or operator shall cease injection into the well within forty-eight (48) hours of receipt of
859 the Administrator's determination.

860
861 (II) The Administrator may allow plugging of the well pursuant
862 to the requirements of Section 16 of this chapter or require the permittee to perform such
863 additional construction, operation, monitoring, reporting, and corrective action as is necessary to
864 prevent the movement of fluid into or between USDWs caused by the lack of mechanical
865 integrity. The owner or operator may resume injection upon written notification from the
866

867 Administrator that the owner or operator has demonstrated mechanical integrity pursuant to
868 Section 13 of this chapter.

869
870 (Z) A requirement that, for any Class VI well that lacks mechanical
871 integrity, injection operations are prohibited until the permittee shows to the satisfaction of the
872 ~~a~~Administrator under Section 13 of this chapter that the well has mechanical integrity.

873
874 (AA) A Class VI permit shall include conditions ~~which~~ that meet the
875 requirements set forth in Section 16 of this chapter. Where the plan meets the requirements of
876 Section 16 of this chapter, the ~~a~~Administrator shall incorporate it into the permit as a permit
877 condition. Temporary or intermittent cessation of injection operations is not abandonment.

878
879 ~~(I) — For purposes of the above subparagraph, temporary or~~
880 ~~intermittent cessation of injection operations is not abandonment.~~

881
882 (BB) Class VI injection well permits shall include conditions meeting
883 the requirements of Section 9 of this chapter. Permits shall contain the following requirements
884 when applicable:

885
886 (I) All wells shall achieve compliance with such requirements
887 according to a compliance schedule established as a permit condition. The owner or operator of a
888 proposed new injection well shall submit plans for testing, drilling, and construction as part of
889 the permit application.

890
891 (II) No construction may commence until a permit has been
892 issued containing construction requirements.

893
894 (III) All wells shall be in compliance with these requirements
895 prior to commencing injection operations. Changes in construction plans during construction
896 may be approved by the Administrator as minor modifications. No such changes may be
897 physically incorporated into construction of the well prior to approval of the modification by the
898 Administrator.

899
900 (IV) Corrective action as set forth in Section 8 of this chapter.

901
902 (V) Operation requirements as set forth in Section 9 of this
903 chapter; the permit shall establish any maximum injection volumes and/or pressures necessary to
904 ensure that fractures are not initiated in the confining zone, that injected fluids do not migrate
905 into any underground source of drinking water, that formation fluids are not displaced into any
906 underground source of drinking water, and to ensure compliance with the operating
907 requirements.

908
909 (VI) Monitoring and reporting requirements as set forth in
910 Sections 14 and 15 of this chapter. The permittee shall be required to identify types of tests and
911 methods used to generate the monitoring data.

912

913 (VII) The owner or operator of a Class VI well must comply with
914 the financial responsibility requirements set forth in Section 19 of this chapter.

915
916 (CC) The permit may, when appropriate, specify a schedule of
917 compliance leading to compliance with the SDWA and 40 CFR Parts 144, 145, 146, and 124.

918
919 (I) Any schedules of compliance shall require compliance as
920 soon as possible, and in no case later than three (3) years after the effective date of the permit.

921
922 (II) If a permit establishes a schedule of compliance that
923 exceeds one (1) year from the date of permit issuance, the schedule shall set forth interim
924 requirements and the dates for their achievement.

925
926 (1.) The time between interim dates shall not exceed one
927 (1) year unless,

928
929 (2.) The time necessary for completion of any interim
930 requirement is more than one (1) year and is not readily divisible into stages for completion, the
931 permit shall specify interim dates for the submission of reports of progress toward completion of
932 the interim requirements and indicate a projected completion date.

933
934 (III) The permit shall be written to require that if paragraph
935 (c)(i)(CC)(I) of this section is applicable, progress reports be submitted no later than thirty (30)
936 days following each interim date and the final date of compliance.

937
938 (ii) In addition to the conditions required of all permits, the Administrator
939 shall establish, on a case-by-case basis, conditions as required for monitoring, schedules of
940 compliance, and such additional conditions as are necessary to prevent the migration of fluids
941 into underground sources of drinking water. In the case of wells authorized by permit, these
942 additional requirements shall be imposed by modifying the permit in accordance with this
943 section, or the permit may be terminated under this section if cause exists, or appropriate
944 enforcement action may be taken if the permit has been violated.

945
946
947 (iii) In addition to conditions required in all permits the Administrator shall
948 establish conditions in permits as required on a case-by-case basis, to provide for and ensure
949 compliance with all applicable requirements of the SDWA and 40 CFR Parts 144, 145, 146, and
950 124.

951
952 (iv) New permits, and to the extent allowed under Section 4 modified or
953 revoked and reissued permits, shall incorporate each of the applicable requirements referenced in
954 this section. An applicable requirement is a State statutory or regulatory requirement that takes
955 effect prior to final administrative disposition of the permit. An applicable requirement is also
956 any requirement that takes effect prior to the modification or revocation and reissuance of a
957 permit, to the extent allowed in Section 4.

958

959 (d) The issuance of a permit does not authorize any injury to persons or property or
960 invasion of other private rights, or any infringement of State or local law or regulations.

961 **Section 5. Permit ~~a~~Application.**

962
963 (a) It is the operator's responsibility to make application for and obtain a permit in
964 accordance with these regulations. Each application must be submitted with all supporting data.
965

966 (b) A complete application for a Class VI well shall include:

967
968 (i) A brief description of the nature of the business and the activities to be
969 conducted that require the applicant to obtain a permit under this chapter.
970

971 (ii) The name, address and telephone number of the operator, and the
972 operator's ownership status and status as a Federal, State, private, public, or other entity.
973

974 (iii) Up to four SIC (Standard Industrial Classification) codes that best reflect
975 the principal products or services provided by the facility.
976

977 (iv) The name, address, and telephone number of the facility. Additionally, the
978 location of the geologic sequestration project shall be identified by section, township, range and
979 county, noting which, if any, sections include Indian lands.
980

981 (v) Within the area of review, a listing and status of all permits or construction
982 approvals associated with the geologic sequestration project received or applied for by the
983 applicant under any of the following programs:
984

985 (A) Hazardous Waste Management under the Resource Conservation
986 and Recovery Act (RCRA).
987

988 (B) UIC Program under the Safe Drinking Water Act.
989

990 (C) National Pollutant Discharge Elimination System (NPDES) under
991 the Clean Water Act.
992

993 (D) Prevention of Significant Deterioration (PSD) program under the
994 Clean Air Act.
995

996 (E) Nonattainment program under the Clean Air Act.
997

998 ~~(E)~~(F) National Emissions Standards for Hazardous Air Pollutants
999 (NESHAPs) pre-construction approval under the Clean Air Act.
1000

1001 ~~(E)~~(G) Dredge and fill ~~permits~~ permitting program under section
1002 404 of the Clean Water Act.
1003

1004 ~~(G)~~(vi) Within the area of review, a list of other relevant permits, whether federal
1005 or state, associated with the geologic sequestration project that the applicant has been required to
1006 obtain, such as construction permits. This includes a statement as to whether or not the facility is
1007 within a state approved water quality management plan area, a state approved wellhead
1008 protection area or a state approved source water protection area.

1009
1010 ~~(vi)~~(vii) A map showing the injection well(s) for which a permit is sought
1011 and the applicable area of review, consistent with Section 8 of this chapter.

1012
1013 (A) Within the area of review, the map must show the number, or name
1014 and location of all known injection wells, producing wells, abandoned wells, plugged wells or
1015 dry holes, deep stratigraphic boreholes, state or EPA-approved subsurface cleanup sites, public
1016 drinking water supply wellhead or source water protection areas, surface bodies of water,
1017 springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features
1018 including structures intended for human occupancy, state, tribal, and territory boundaries, and
1019 roads.

1020
1021 (B) Only information of public record is required to be included on this
1022 map.

1023
1024 (C) The map should also show faults, if known or suspected.

1025
1026 ~~(vii)~~(viii) A map delineating the area of review based upon modeling, using
1027 all available data including data available from any logging and testing of wells within and
1028 adjacent (within one (1) mile) to the area of review;

1029
1030 (A) A Class VI area of review shall never be less than the area of
1031 potentially affected groundwater.

1032
1033 (B) All areas of review shall be legally described by township, range,
1034 and section to the nearest ten (10) acres as described under the general land survey system.

1035
1036 ~~(viii)~~(ix) A description of the general geology of the area to be affected by
1037 the injection of carbon dioxide including geochemistry, structure and faulting, fracturing and
1038 seals, and stratigraphy and lithology including petrophysical attributes. The description shall also
1039 include sufficient information on the geologic structure and reservoir properties of the proposed
1040 storage site and overlying formations, including:

1041
1042 (A) Isopach maps of the proposed injection and confining zone(s), a
1043 structural contour map aligned with the top of the proposed injection zone, and at least two (2)
1044 geologic cross-sections of the area of review reasonably perpendicular to each other and showing
1045 the geologic formations from the surface to total depth;

1046
1047 (B) Location, orientation, and properties of known or suspected faults
1048 and fractures that may transect the confining zone(s) in the area of review and a determination
1049 that they would not interfere with containment;

1050
1051 (C) Information on seismic history that have affected the proposed area
1052 of review including knowledge of previous seismic events and history of these events, the presence
1053 and depth of seismic sources, and a determination that the seismicity would not compromise
1054 containment;

1055
1056 (D) Data sufficient to demonstrate the effectiveness of the injection and
1057 confining zone(s), including data on the depth, areal extent, thickness, mineralogy, porosity,
1058 vertical permeability, and ~~reservoir~~ capillary pressure of the injection and confining zone(s) within
1059 the area of review, and geologic changes based on field data ~~which~~ that may include geologic
1060 cores, outcrop data, seismic surveys, well logs, ~~capillary pressure tests~~ and names and lithologic
1061 descriptions;

1062
1063 (E) Geomechanical information on fractures, stress, ductility, rock
1064 strength, and in situ fluid pressures within the confining zone; and

1065
1066 (F) Geologic and topographic maps and cross-sections illustrating
1067 regional geology, hydrogeology, and the geologic structure of the local area.

1068
1069 ~~(ix)~~(x) A compilation of all wells and other drill holes within, and adjacent
1070 (within one (1) mile) to the area of review. Such data must include a description of each well and
1071 drill hole type, construction, date drilled, location, depth, record of plugging and/or completion,
1072 and any additional information the aAdministrator may require.

1073
1074 (A) Applicants shall also identify the location of all known wells
1075 within, and adjacent (within one (1) mile) to the area of review that penetrate the confining or
1076 injection zone.

1077
1078 (B) Applicants shall perform mapping with sufficient resolution as to
1079 make a comprehensive effort to identify wells that are not in the public record using aerial
1080 photography, aerial survey, physical traverse, or other methods acceptable to the aAdministrator.

1081
1082 (C) Applicants shall perform corrective action as specified in Section 8
1083 of this chapter.

1084
1085 ~~(x)~~(xi) Maps and stratigraphic cross-sections indicating the general vertical and
1086 lateral limits of all USDWs, the location of water wells and springs within the area of review,
1087 their positions relative to the injection zone(s), and the direction of water movement, where
1088 known;

1089
1090 ~~(xi)~~(xii) A characterization of the injection zone and aquifers above and
1091 below the injection zone ~~which~~ that may be affected, including applicable pressure and fluid
1092 chemistry data to describe the projected effects of injection activities, and background water
1093 quality data ~~which~~ that will facilitate the classification of any groundwaters ~~which~~ that may be
1094 affected by the proposed discharge. This must include information necessary for the dDivision to

1095 classify the receiver and any secondarily affected aquifers under [Water Quality Rules and](#)
1096 [Regulations](#) Chapter 8, ~~Wyoming Water Quality Rules and Regulations~~;

1097
1098 ~~(xii)~~[\(xiii\)](#) Baseline geochemical data on subsurface formations, including all
1099 USDWs in the area of review;

1100
1101 ~~(xiii)~~[\(xiv\)](#) Proposed operating data:

1102
1103 (A) Average and maximum daily rate and volume and/or mass and
1104 total anticipated volume and/or mass of the carbon dioxide stream;

1105
1106 (B) Average and maximum surface injection pressure;

1107
1108 (C) The source of the carbon dioxide stream; and

1109
1110 (D) An analysis of the chemical and physical characteristics of the
1111 carbon dioxide stream and any other substance(s) proposed for inclusion in the injectate stream;
1112 and

1113
1114 (E) Anticipated duration of the proposed injection period(s).

1115
1116 ~~(xiv)~~[\(xv\)](#) The compatibility of the carbon dioxide stream with fluids in the
1117 injection zone and minerals in both the injection and the confining zone(s), based on the results
1118 of the formation testing program, and with the materials used to construct the well;

1119
1120 ~~(xv)~~[\(xvi\)](#) An assessment of the impact to fluid resources, on subsurface
1121 structures and the surface of lands that may reasonably be expected to be impacted, and the
1122 measures required to mitigate such impacts;

1123
1124 ~~(xvi)~~[\(xvii\)](#) Proposed formation testing program to obtain an analysis of the
1125 chemical and physical characteristics of the injection zone and confining zone and that meets the
1126 requirements of Section 11 of this chapter;

1127
1128 ~~(xvii)~~[\(xviii\)](#) Proposed stimulation program, a description of stimulation fluids
1129 to be used, and a determination that stimulation will not compromise containment; [All](#)
1130 [stimulation programs must be approved by the Administrator as part of the permit application](#)
1131 [and incorporated into the permit](#);

1132
1133 ~~(A) All stimulation programs must be approved by the administrator as~~
1134 ~~part of the permit application and incorporated into the permit.~~

1135
1136 ~~(xviii)~~[\(xix\)](#) Proposed procedure ~~to~~ [that](#) outlines steps ~~necessary~~ to conduct
1137 injection operation;

1138
1139 ~~(xix)~~[\(xx\)](#) A wellbore schematic of the subsurface construction details and
1140 surface wellhead construction of the injection and monitoring wells;

1141
1142 ~~(xx)~~(xxi) Injection well design and construction procedures that meet the
1143 requirements of Section 9 of this chapter;

1144
1145 ~~(xxi)~~(xxii) Proposed area of review and corrective action plan that meets the
1146 requirements under Section 8 of this chapter;

1147
1148 ~~(xxii)~~(xxiii) The status of corrective action on wells in the area of review;

1149
1150 ~~(xxiii)~~(xxiv) All available logging and testing program data on the well(s)
1151 required by Section 11 of this chapter;

1152
1153 ~~(xxiv)~~(xxv) A demonstration of mechanical integrity pursuant to Section 13 of
1154 this chapter;

1155
1156 ~~(xxv)~~(xxvi) A demonstration, satisfactory to the ~~a~~Administrator, that the
1157 applicant has met the financial responsibility requirements under Section 19 of this chapter;

1158
1159 ~~(xxvi)~~(xxvii) Proposed testing and monitoring plan required by Section 14 of
1160 this chapter;

1161
1162 ~~(xxvii)~~(xxviii) Proposed injection and monitoring well(s) plugging plan required
1163 by Section 16(b) of this chapter; where the plan meets the requirements of Section 16(b) of this
1164 chapter, the Administrator shall incorporate it into the permit as a permit condition.

1165
1166 ~~(A)——Where the plan meets the requirements of Section 16(b) of this~~
1167 ~~chapter, the administrator shall incorporate it into the permit as a permit condition.~~

1168
1169 ~~(I)——For purposes of this subparagraph, temporary or~~
1170 ~~intermittent cessation of injection operations is not abandonment.~~

1171
1172 ~~(xxviii)~~(xxix) Proposed post-injection site care plan required by Section 17(a) of
1173 this chapter;

1174
1175 ~~(xxix)——At the administrator’s discretion, a demonstration of an alternative post-~~
1176 ~~injection site care timeframe required by Section 17 of this chapter;~~

1177
1178 (xxx) Proposed emergency and remedial response plan required by Section 18 of
1179 this chapter;

1180
1181 (xxxi) A site and facilities description, including a description of the proposed
1182 geologic sequestration facilities;

1183
1184 (xxxii) Documentation sufficient to demonstrate that the applicant has all legal
1185 rights, including but not limited to the right to surface use, necessary to sequester carbon dioxide
1186 and associated constituents;

1187
1188 (xxxiii) Proof of notice to surface owners, mineral claimants, mineral
1189 owners, lessees, and other owners of record of subsurface interests as to the contents of such
1190 notice. Notice requirements shall at a minimum require:

1191
1192 (A) The publishing of notice of the application in a newspaper
1193 of general circulation in each county of the proposed operation at weekly intervals for four (4)
1194 consecutive weeks; and

1195
1196 (B) A copy of the notice shall also be mailed to all surface
1197 owners, mineral claimants, mineral owners, lessees and other owners of record of subsurface
1198 interests that are located within one (1) mile of the proposed boundary of the geologic
1199 sequestration site as defined by W.S. § 35-11-103(c)(xxi).

1200
1201 (xxxiv) A list of contacts, submitted to the ~~a~~Administrator, for those Tribes
1202 identified to be within the area of review of the ~~Class VI project~~ geologic sequestration project
1203 based on information provided in subparagraphs ~~(b)(vi), (b)(vi)(A), (b)(vi)(B)~~ (b)(vii),
1204 (b)(vii)(A), (b)(vii)(B) of this section; and

1205
1206 (xxxv) Any other information requested by the ~~a~~Administrator.

1207
1208 (c) Expansion to the Areal Extent of Existing Class II Aquifer Exemptions for Class
1209 VI Wells.

1210
1211 (i) The Administrator may consider a request from owners and/or operators
1212 of permitted Class II injection well(s) that are seeking to convert their well(s) to a Class VI well
1213 and are seeking an expansion to the areal extent of an existing Class II enhanced oil recovery or
1214 enhanced gas recovery aquifer exemption for the exclusive purpose of Class VI injection for
1215 geologic sequestration if the existing aquifer exemption and the affected wells meet the
1216 following conditions:

1217
1218 (A) It does not currently serve as a source of drinking water; and

1219
1220 (B) The total dissolved solids content of the groundwater is more than
1221 3,000 mg/L and less than 10,000 mg/L; and

1222
1223 (C) It is not reasonably expected to supply a public water system.

1224
1225 (ii) Such requests will not be final until the Administrator submits the request
1226 as a revision to the applicable Federal UIC program under 40 CFR Part 147 or as a substantial
1227 program revision to an approved State UIC program under 40 CFR § 145.32 and EPA approves
1228 the request.

1229
1230 (A) The owner or operator of a Class II enhanced oil recovery or
1231 enhanced gas recovery well that requests an expansion of the areal extent of an existing aquifer
1232 exemption for the exclusive purpose of Class VI injection for geologic sequestration must define

1233 (by narrative description, illustrations, maps, or other means) and describe in geographic and/or
1234 geometric terms (such as vertical and lateral limits and gradient) that are clear and definite, all
1235 aquifers or parts thereof that are requested to be designated as exempted using the criteria in
1236 subparagraphs (d)(i)(A-C) of this section.

1237
1238 (B) In evaluating a request to expand the areal extent of an aquifer
1239 exemption of a Class II enhanced oil recovery or enhanced gas recovery well for the purpose of
1240 Class VI injection, the Administrator must determine that the request meets the criteria for
1241 exemptions in subparagraphs (d)(i)(A-C) of this section. In making the determination, the
1242 Administrator shall consider:

1243
1244 (I) Current and potential future use of the USDWs to be
1245 exempted as drinking water resources;

1246
1247 (II) The predicted extent of the injected carbon dioxide plume,
1248 and any mobilized fluids that may result in degradation of water quality, over the lifetime of the
1249 geologic sequestration project, as informed by computational modeling performed pursuant to
1250 Section 8(c)(i) of this chapter, in order to ensure that the proposed injection operation will not at
1251 any time endanger USDWs including non-exempted portions of the injection formation;

1252
1253 (III) Whether the areal extent of the expanded aquifer exemption
1254 is of sufficient size to account for any possible revisions to the computational model during
1255 reevaluation of the area of review, pursuant to Section 8(e) of this chapter; and

1256
1257 (IV) Any information submitted to support a waiver request
1258 made by the owner or operator under Section 10 of this chapter, if appropriate.

1259
1260 ~~(e)~~(d) The ~~a~~Administrator shall notify, in writing, any Tribes within the area of review
1261 of the ~~Class VI~~ geologic sequestration project based on information provided in subparagraphs
1262 ~~(b)(vi), (b)(vi)(A), (b)(vi)(B)~~ (b)(vii), (b)(vii)(A), (b)(vii)(B), and ~~(b)(xxxv)~~(xxxiv) of this
1263 section.

1264
1265 ~~(d)~~(e) Prior to granting approval for the operation of a Class VI well, the ~~a~~Administrator
1266 shall consider the following information:

1267
1268 (i) The final area of review based on modeling, using data obtained during
1269 logging and testing of the well and the formation as required by subparagraphs ~~(b)(xiv), (b)(xvii),~~
1270 ~~(b)(xxiii), and (b)(xxiv)~~ (b)(xv), (b)(xviii), (b)(xxiv), and (b)(xxv) of this section;

1271
1272 (ii) Any relevant updates, based on data obtained during logging and testing of
1273 the well and the formation as required by subparagraphs ~~(b)(xiv), (b)(xvii), (b)(xxiii), and~~
1274 ~~(b)(xxiv)~~ (b)(xv), (b)(xviii), (b)(xxiv), and (b)(xxv) of this section, to the information on the
1275 geologic structure and ~~hydrogeologic~~ hydrogeologic properties of the proposed storage site
1276 and overlying formations, submitted to satisfy the requirements of subparagraph ~~(b)(viii)~~ (b)(ix)
1277 of this section;

1278

1279 (iii) The results of the formation testing program as required in paragraph
1280 ~~(b)(xvi)~~ (b)(xvii) of this section;

1281
1282 (iv) Final injection well construction procedures that meet the requirements of
1283 Section 9 of this chapter;

1284
1285 (v) Any updates to the proposed area of review and corrective action plan,
1286 testing and monitoring plan, injection well-plugging plan, post-injection site care and site closure
1287 plan, or the emergency and remedial response plan submitted under paragraph (a) of this section,
1288 which are necessary to address new information collected during logging and testing of the well
1289 and the formation as required by all paragraphs of this section, ~~and any updates to the alternative
1290 post-injection site care timeframe demonstration submitted under paragraph (a) of this section,
1291 which are necessary to address new information collected during the logging and testing of the
1292 well and the formation as required by all paragraphs of this section;~~ and

1293
1294 ~~(vi)~~ (f) Owners or operators seeking a waiver of the requirement to inject below the
1295 lowermost USDW must also refer to Section 10 of this chapter and submit a supplemental report,
1296 as required at Section 10(a). The supplemental report is not part of the permit application.

1297
1298 ~~(e)~~ (g) An applicant applying for a Class VI well permit must obtain public liability
1299 insurance to cover the geologic sequestration activities for which a permit is sought.

1300
1301 (i) The public liability insurance shall be in addition to the financial
1302 assurance required in Section 19 of this chapter.

1303
1304 (ii) The insurance policy shall provide for personal injury and property
1305 damage protection and shall be in place until a completion and release certificate has been
1306 obtained from the ~~a~~Administrator certifying that plume stabilization has been achieved.

1307
1308 (iii) The minimum insurance coverage for public liability insurance as required
1309 by W.S. § 35-11-313(f)(ii)(O) shall be five hundred thousand dollars (\$500,000) for each
1310 occurrence of bodily injury or property damage, and one million dollars (\$1,000,000) aggregate.

1311
1312 (iv) The public liability insurance shall include a rider requiring that the
1313 insurer notify the ~~a~~Administrator whenever substantive changes are made to the policy, including
1314 any termination or failure to renew.

1315
1316 (v) Self-insurance in lieu of public liability insurance must meet state or
1317 federal requirements and be approved by the ~~a~~Administrator.

1318
1319 ~~(f)~~ (h) All applications for permits, reports, or information to be submitted to the
1320 ~~a~~Administrator shall be signed by a responsible officer as follows:

1321
1322 (i) For a corporation - a responsible corporate officer means:

1323

1324 (A) A president, secretary, treasurer, or vice president of the
1325 corporation in charge of a principal business function, or any other person who performs similar
1326 policy or decision making functions for the corporation; or
1327

1328 (B) The manager of one (1) or more manufacturing, production, or
1329 operating facilities employing more than 250 persons or having gross annual sales or expendi-
1330 tures exceeding \$25 million (in second quarter 1980 dollars), if authority to sign documents has
1331 been assigned or delegated to the manager in accordance with corporate procedures.
1332

1333 (ii) For a partnership or sole proprietorship -- by a general partner or the
1334 proprietor, respectively;
1335

1336 (iii) For a municipality, state, federal or other public agency -- by either the
1337 principal executive officer or ranking elected official. For the purposes of this section, a principal
1338 executive officer of a Federal agency includes:
1339

1340 (A) The chief executive officer of the agency, or
1341

1342 (B) A senior executive officer having responsibility for the overall
1343 operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
1344

1345 (iv) A person is authorized as a responsible officer only if:
1346

1347 (A) The authorization is made in writing by a person described in
1348 paragraphs (i) through (iii) in this subsection;
1349

1350 (B) The authorization specifies either an individual or a position
1351 having responsibility for the overall operation of the regulated facility or activity, such as the
1352 position of plant manager, operator of a well or a well field, superintendent, or position of
1353 equivalent responsibility. (A duly authorized representative may thus be either a named
1354 individual or any individual occupying a named position); and
1355

1356 (C) The written authorization is submitted to the Administrator.
1357

1358 (v) If an authorization under paragraph (iv) of this subsection is no longer
1359 accurate because a different individual or position has responsibility for the overall operation of
1360 the facility, a new authorization satisfying the requirements of paragraph (iv) of this subsection
1361 must be submitted to the Administrator prior to or together with any reports, information, or
1362 applications to be signed by an authorized representative.
1363

1364 ~~(g)~~(i) The application shall contain the following certification by the person signing the
1365 application:
1366

1367 "I certify under penalty of law that this document and all attachments were prepared
1368 under my direction or supervision in accordance with a system designed to ensure that qualified
1369 personnel properly gather and evaluate the information submitted. Based on my inquiry of the

1370 person or persons who manage the system, or those persons directly responsible for gathering the
1371 information, the information submitted is, to the best of my knowledge and belief, true, accurate,
1372 and complete. I am aware that there are significant penalties for submitting false information,
1373 including the possibility of fine and imprisonment for knowing violations.”

1374
1375 ~~(h)~~(j) All data used to complete permit applications shall be kept by the applicant for ~~for~~
1376 the life of the geologic sequestration project and for ten (10) years following site closure.

1377 **Section 6. Prohibitions.**

1378
1379 (a) In addition to the requirements in W.S. § 35-11-301(a), no person shall:

1380
1381 (i) Discharge into, construct, operate, or modify any Class VI well unless
1382 permitted pursuant to this chapter;

1383
1384 (ii) Discharge to any zone except the authorized discharge zone as described
1385 in the permit;

1386
1387 (iii) Conduct any authorized injection activity in a manner that results in a
1388 violation of any permit condition, representations made in the application, or the request for
1389 coverage under the individual permit. A permit condition supersedes any application content.

1390
1391 (iv) Construct, operate, maintain, convert, plug, abandon, or conduct any other
1392 injection activity in a manner that allows the movement of fluid containing any contaminant into
1393 underground sources of drinking water, if the presence of that contaminant may cause a violation
1394 of any primary drinking water regulation under 40 CFR Part 141 or may otherwise adversely
1395 affect the health of persons. The applicant for a permit shall have the burden of showing that the
1396 requirements of this paragraph are met.

1397
1398 (b) If any water quality monitoring of an underground source of drinking water
1399 indicates the movement of any contaminant into the underground source of drinking water,
1400 except as authorized under this chapter, the Administrator shall prescribe such additional
1401 requirements for construction, corrective action, operation, monitoring, or reporting (including
1402 closure of the injection well) as are necessary to prevent such movement. In the case of wells
1403 authorized by permit, these additional requirements shall be imposed by modifying the permit in
1404 accordance with Section 4 of this chapter, or the permit may be terminated under Section 4 of
1405 this chapter if cause exists, or appropriate enforcement action may be taken if the permit has
1406 been violated.

1407
1408 ~~(b)~~(c) No person shall inject any hazardous waste that has been banned from land
1409 disposal pursuant to Wyoming Hazardous Waste Rules Chapter 1, ~~Wyoming Hazardous Waste~~
1410 ~~Rules.~~

1411
1412 ~~(e)~~(d) The construction of new, or operation or maintenance of any existing Class V
1413 wells for non-experimental geologic sequestration is prohibited.

1414

1415 ~~(d)~~(e) The Administrator may identify (by narrative description, illustrations, maps, or
1416 other means) and shall protect as underground sources of drinking water, all aquifers and parts of
1417 aquifers that meet the definition of “underground source of drinking water” in Section 2, except
1418 to the extent there is expansion to the areal extent of an existing Class II enhanced oil recovery or
1419 enhanced gas recovery aquifer exemption for the exclusive purpose of Class VI injection for
1420 geologic sequestration under Section 5(c) of this chapter. Other than EPA-approved aquifer
1421 exemption expansions that meet the criteria set forth in ~~Wyoming Oil and Gas Conservation~~
1422 ~~Commission Rules and Regulations, Chapter 4, Section 12, Section 5(c) of this chapter,~~ new
1423 aquifer exemptions shall not be issued for Class VI injection wells. Even if an aquifer has not
1424 been specifically identified by the ~~a~~Administrator, it is an underground source of drinking water
1425 if it meets the definition in Section 2 of this chapter.

1426 **Section 7. Minimum ~~e~~Criteria for ~~s~~Siting Class VI ~~w~~Wells.**

1427
1428 (a) Owners or operators of Class VI wells must demonstrate to the satisfaction of the
1429 ~~a~~Administrator that the wells will be sited in areas with a suitable geologic system. The geologic
1430 system must be comprised of:

1431
1432 (i) An injection zone of sufficient areal extent, thickness, porosity, and
1433 permeability to receive the total anticipated volume of the carbon dioxide stream; and

1434
1435 (ii) A confining zone(s) that is free of transmissive faults or fractures and of
1436 sufficient areal extent and integrity to contain the injected carbon dioxide stream and displaced
1437 formation fluids and allow injection at proposed maximum pressures and volumes without
1438 initiating or propagating fractures in the confining zone(s) or causing non-transmissive faults to
1439 become transmissive.

1440
1441 (b) Owners or operators of Class VI wells must identify and characterize additional
1442 zones, if they exist, that will impede vertical fluid movement, allow for pressure dissipation, and
1443 provide additional opportunities for monitoring, mitigation, and remediation. Vertical faults and
1444 fractures that transect these zones must be identified.

1445 **Section 8. Area of ~~r~~Review ~~d~~Delineation and ~~e~~Corrective ~~a~~Action.**

1446
1447 (a) The area of review is based on computational modeling that accounts for the
1448 physical and chemical properties of all phases of the injected carbon dioxide stream. The owner
1449 or operator will re-evaluate the area of review at least every two (2) years during the operational
1450 life of the facility, and then no less frequently than every five (5) years through the post-injection
1451 site care period until the geologic sequestration project is closed in accordance with department
1452 rules and regulations.

1453
1454 ~~(i) — The owner or operator will re-evaluate the area of review at least every~~
1455 ~~two (2) years during the operational life of the facility, and then no less frequently than every~~
1456 ~~five (5) years through the post-injection site care period until the geologic sequestration project is~~
1457 ~~closed in accordance with department rules and regulations.~~

1458

1459 (b) The owner or operator of a Class VI well must prepare, maintain, and comply
1460 with a plan to delineate the area of review for a proposed geologic sequestration project, re-
1461 evaluate the delineation, and perform corrective action that meets the requirements of this section
1462 and is acceptable to the ~~a~~AAdministrator. As a part of the permit application for approval by the
1463 ~~a~~AAdministrator, the owner or operator must submit an area of review and corrective action plan
1464 that includes the following information:

1465
1466 (i) The method for delineating the area of review that meets the requirements
1467 of paragraph (c) of this section, including the name, version and availability of the model to be
1468 used, assumptions that will be made, and the site characterization data on which the model will
1469 be based;

1470
1471 (ii) A description of:

1472
1473 (A) The monitoring and operational conditions that would warrant a re-
1474 evaluation of the area of review prior to the next scheduled re-evaluation as determined by the
1475 minimum fixed frequency established in paragraph ~~(a)(i)~~ (a) of this section.

1476
1477 (B) How monitoring and operational data (e.g., injection rate and
1478 pressure) will be used to evaluate the area of review; and

1479
1480 (C) How corrective action will be conducted to meet the requirements
1481 of paragraph ~~(c)~~ (c)(v) of this section, including:

1482 (I) What corrective action will be performed prior to injection;

1483
1484 (II) What, if any, portions of the area of review will have
1485 corrective action addressed on a phased basis, and how the phasing will be determined;

1486
1487 (III) How corrective action will be adjusted if there are changes
1488 in the area of review; and

1489
1490 (IV) How site access will be ensured for future corrective action.

1491
1492
1493 (c) Owners or operators of Class VI wells must perform the following actions to
1494 delineate the area of review, identify all wells that require corrective action, and perform
1495 corrective action on those wells:

1496
1497 (i) Predict, using computational modeling:

1498
1499 (A) The projected lateral and vertical migration of the carbon dioxide
1500 plume and formation fluids in the subsurface from the commencement of injection activities until
1501 the plume movement ceases;

1502
1503 (B) The pressure differentials, and demonstrate that pressure
1504 differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW

1505 or to otherwise threaten human health, safety, or the environment will not be present (or for a
1506 fixed time period as determined by the ~~a~~Administrator);

1507

1508 (C) The potential need for brine removal, and;

1509

1510 (D) The long-term effects of pressure buildup if brine is not removed.

1511

1512 (ii) The modeling must:

1513

1514 (A) Be based on:

1515

1516 (I) Detailed geologic data available or collected to characterize
1517 the injection zone, confining zone and any additional zones; and

1518

1519 (II) Anticipated operating data, including injection pressures,
1520 rates and total volumes over the proposed operational life of the facility.

1521

1522 (B) Take into account any relevant geologic heterogeneities, other
1523 discontinuities, data quality, and their possible impact on model predictions; and

1524

1525 (C) Consider potential migration through faults, fractures, and artificial
1526 penetrations.

1527

1528 (iii) Using methods approved by the ~~a~~Administrator, identify all penetrations,
1529 including active and abandoned wells and underground mines, in the area of review that may
1530 penetrate the confining zone. Provide a description of each well's type, construction, date drilled,
1531 location, depth, record of plugging and/or completion, and any additional information the
1532 ~~a~~Administrator may require; and

1533

1534 (iv) Determine which abandoned wells in the area of review have been
1535 plugged in a manner that prevents the movement of:

1536

1537 (A) Carbon dioxide that may endanger USDWs or otherwise threaten
1538 human health, safety, or the environment; ~~;~~ or ~~;~~

1539

1540 (B) Displaced formation fluids, or other fluids, including the use of
1541 materials compatible with the carbon dioxide stream, that may endanger USDWs or otherwise
1542 threaten human health, safety, or the environment.

1543

1544 ~~(d)~~(v) Owners or operators of Class VI wells that are determined to need
1545 corrective action using methods that are approved by the Administrator, must perform corrective
1546 action on all wells in the area of review ~~that are determined to need corrective action using~~
1547 ~~methods necessary~~ to prevent the movement of fluid into or between USDWs including use of
1548 materials compatible with the carbon dioxide stream, where appropriate.

1549

1550 ~~(e)~~(d) At a fixed frequency, not to exceed two (2) years during the operational life of the
1551 facility, or five (5) years during the post-injection site care period (until ~~the geologic~~
1552 ~~sequestration project is closed~~ site closure) as specified in the area of review and corrective
1553 action plan, or when monitoring and operational conditions warrant, owners or operators must:

1554
1555 (i) Re-evaluate the area of review in the same manner specified in paragraph
1556 (c)(i) of this section;

1557
1558 (ii) Identify all wells in the re-evaluated area of review that require corrective
1559 action in the same manner specified in paragraph (c)(iv) of this section;

1560
1561 (iii) Perform corrective action on wells requiring corrective action in the
1562 reevaluated area of review in the same manner specified in paragraph ~~(d)~~ (c)(v) of this section;
1563 and

1564
1565 (iv) Submit an amended area of review and corrective action plan or
1566 demonstrate to the ~~a~~A administrator through monitoring data and modeling results that no change
1567 to the area of review and corrective action plan is needed.

1568
1569 (A) Any amendments to the area of review and corrective action plan
1570 must be approved by the ~~a~~A administrator;

1571
1572 (B) Any amendments to the area of review must be incorporated into
1573 the permit; and

1574
1575 (C) Any amendments to the area of review are subject to the permit
1576 modification requirements of Section 4 of this chapter, as appropriate.

1577
1578 ~~(f)~~(e) The emergency and remedial response plan (as required by Section 18 of this
1579 chapter) and a demonstration of financial responsibility (as described by Section 19 of this
1580 chapter) must account for the entire area of review (as modified), regardless of whether or not
1581 corrective action in the area of review is phased.

1582
1583 ~~(g)~~(f) All modeling inputs and data used to support area of review reevaluations under
1584 paragraph ~~(e)~~ (d) of this section shall be retained for ten (10) years.

1585 **Section 9. Construction and ~~e~~Operation ~~s~~Standards for Class VI ~~w~~Wells.**

1586
1587 (a) The owner or operator must ensure that all Class VI wells are designed, at a
1588 minimum, to the construction standards set forth by the ~~d~~Department and the Wyoming ~~e~~Oil and
1589 ~~g~~Gas ~~e~~Conservation ~~e~~Commission, as applicable, and constructed and completed to:

1590
1591 (i) Prevent the movement of fluids into or between USDWs or into any
1592 unauthorized zones;

1593
1594 (ii) Permit the use of appropriate testing devices and workover tools; and

1595
1596 (iii) Permit continuous monitoring of the annulus space between the injection
1597 tubing and long string casing.

1598
1599 (b) Casing and cement or other materials used in the construction of each Class VI
1600 well must have sufficient structural strength and be designed for the life of the well.

1601
1602 (i) All well materials must be compatible with fluids with which the materials
1603 may be expected to come into contact, and meet or exceed standards developed for such
1604 materials by the American Petroleum Institute, ASTM International, or comparable standards
1605 acceptable to the ~~a~~Administrator.

1606
1607 (ii) The casing and cementing program must be designed to prevent the
1608 movement of fluids into or between USDWs.

1609
1610 (iii) In order to allow the ~~a~~Administrator to determine and specify casing and
1611 cementing requirements, the owner or operator must provide the following information:

1612
1613 (A) Depth to the injection zone;

1614
1615 (B) Injection pressure, external pressure, internal pressure, and axial
1616 loading;

1617
1618 (C) Hole size;

1619
1620 (D) Size and grade of all casing strings (wall thickness, external
1621 diameter, nominal weight, length, joint specification and construction material), including
1622 whether the casing is new, or used;

1623
1624 (E) ~~Composition~~ Corrosiveness of the carbon dioxide stream and
1625 formation fluids;

1626
1627 (F) Down-hole temperatures and pressures;

1628
1629 (G) Lithology of injection and confining zones;

1630
1631 (H) Type or grade of cement and additives; and

1632
1633 (I) Quantity, chemical composition, and temperature of the carbon
1634 dioxide stream.

1635
1636 (iv) Casing must extend through the base of the lowermost USDW above the
1637 injection zone and be cemented to the surface through the use of a single or multiple strings of
1638 casing and cement.

1639

1640 (v) At least one (1) long string casing, using a sufficient number of
1641 centralizers, must be set in a manner so as to create a cement bond through the overlying and/or
1642 underlying confining zones(s). The long string casing must extend to the injection zone, must be
1643 cemented by circulating cement to the surface in one (1) or more stages, and must be isolated by
1644 placing cement and/or other isolation techniques as necessary to provide adequate isolation of
1645 the injection zone and provide for protection of USDWs, human health, safety, and the
1646 environment.

1647
1648 (A) Circulation of cement may be accomplished by staging. The
1649 ~~a~~Administrator may approve an alternative method of cementing in cases where the cement
1650 cannot be recirculated to the surface, provided the owner or operator can demonstrate by using
1651 logs that the cement does not allow fluid movement behind the ~~well-bore~~ wellbore.

1652
1653 (vi) Cement and cement additives must be suitable for use with the carbon
1654 dioxide stream and formation fluids and of sufficient quality and quantity to maintain integrity
1655 over the operating life of the well.

1656
1657 (vii) The integrity and location of the cement shall be verified using technology
1658 capable of evaluating cement quality radially with sufficient resolution to identify the location of
1659 channels, voids, or other areas of missing cement to ensure that USDWs are not endangered and
1660 that human health, safety, and the environment are protected.

1661
1662 (c) All owners and operators of Class VI wells must inject fluids through tubing with
1663 a packer set at a depth opposite a cemented interval at the location approved by the
1664 ~~a~~Administrator.

1665
1666 (i) Tubing and packer materials used in the construction of each Class VI
1667 well must be compatible with fluids with which the materials may be expected to come into
1668 contact and must meet or exceed standards developed for such materials by the American
1669 Petroleum Institute, ASTM International, or comparable standards acceptable to the
1670 ~~a~~Administrator.

1671
1672 (ii) In order for the ~~a~~Administrator to determine and specify requirements for
1673 tubing and packer, the owner or operator must submit the following information:

1674
1675 (A) Depth of setting;

1676
1677 (B) Characteristics of the carbon dioxide stream (e.g., chemical
1678 content, corrosiveness, temperature, and density) and formation fluids;

1679
1680 (C) Maximum proposed injection pressure;

1681
1682 (D) Maximum proposed annular pressure;

1683
1684 (E) Maximum proposed injection rate (intermittent or continuous) and
1685 volume of the carbon dioxide stream;

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- (F) Size of tubing and casing; and
- (G) Tubing tensile, burst, and collapse strengths.

Section 10. Class VI Injection Depth Waiver Requirements.

(a) The owner and/or operator seeking a waiver of the requirement to inject below the lowermost USDW shall submit a supplemental report concurrent with the permit application. The report shall contain the following:

- (i) A demonstration that the injection zone(s) ~~is/~~are laterally continuous, is not a USDW, and is not hydraulically connected to USDWs; does not outcrop within the area of review; has adequate injectivity, volume, and sufficient porosity to safely contain the injected carbon dioxide and formation fluids; and has appropriate geochemistry.
- (ii) A demonstration that the injection zone(s) ~~is/~~are bounded by laterally continuous, impermeable confining units above and below the injection zone(s) adequate to prevent fluid movement and pressure buildup outside of the injection zone(s); and that the confining unit(s) ~~is/~~are free of transmissive faults and fractures. The report shall further characterize the regional fracture properties and contain a demonstration that the fractures will not interfere with injection, serve as conduits, or endanger USDWs.
- (iii) A computer model demonstrating that USDWs above and below the injection zone will not be endangered as a result of fluid movement. The modeling shall be done in conjunction with the area of review determination, as described in Section 8 of this chapter, and is subject to requirements, as described in Section 8(c) of this chapter, and periodic reevaluation, as described in Section 8(e) of this chapter.
- (iv) A demonstration that well design and construction, in conjunction with the waiver, will ensure isolation of the injectate in lieu of the requirements of Section 9(a)(i) of this chapter and will meet the well construction requirements of paragraph (e) ~~if~~ of this section.
- (v) A description of how the monitoring and testing and any additional plans will be tailored to this geologic sequestration project to ensure protection of USDWs above and below the injection zone.
- (vi) Information on the location of all public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.
- (vii) Any other information requested by the ~~a~~AAdministrator.

(b) To inform the EPA ~~R~~Regional-~~a~~AAdministrator’s decision on whether to grant a waiver of the injection depth requirements of 40 CFR §§ 144.6, 146.5(f), and 146.86(a)(1), the ~~a~~AAdministrator must submit, to the EPA ~~R~~Regional-~~a~~AAdministrator, documentation of the following:

- 1731 (i) An evaluation of the following information as it relates to siting,
1732 construction, and operation of a geologic sequestration project with a waiver:
1733
- 1734 (A) The integrity of the upper and lower confining units;
1735
- 1736 (B) The suitability of the injection zone(s) (e.g., lateral continuity; lack
1737 of transmissive faults and fractures; knowledge of current or planned artificial penetrations into
1738 the injection zone(s) or formations below the injection zone);
1739
- 1740 (C) The potential capacity of the geologic formation(s) to sequester
1741 carbon dioxide, accounting for the availability of alternative injection sites;
1742
- 1743 (D) All other site characterization data, the proposed emergency and
1744 remedial response plan, and a demonstration of financial responsibility;
1745
- 1746 (E) Community needs, demands, and supply from drinking water
1747 resources;
1748
- 1749 (F) Planned needs, potential and/or future use of USDWs and non-
1750 USDWs in the area;
1751
- 1752 (G) Planned or permitted water, hydrocarbon, or mineral resource
1753 exploitation potential of the proposed injection formation(s) and other formations both above and
1754 below the injection zone to determine if there are any plans to drill through the formation to
1755 access resources in or beneath the proposed injection zone(s)/formation(s);
1756
- 1757 (H) The proposed plan for securing alternative resources or treating
1758 USDW formation waters in the event of contamination related to the Class VI injection activity;
1759 and;
- 1760 ~~(ii)~~(I) Any other applicable considerations or information requested by
1761 the ~~a~~Administrator.
1762
- 1763 ~~(iii)~~(ii) Consultation with the Public Water System Supervision Directors of all
1764 States and Tribes having jurisdiction over lands within the area of review of a well for which a
1765 waiver is sought.
1766
- 1767 ~~(iv)~~(iii) Any written waiver-related information submitted by the Public Water
1768 System Supervision Director(s) to the (UIC) Director.
1769
- 1770 (c) Concurrent with the Class VI permit application public notice process, the
1771 ~~a~~Administrator shall give public notice that an injection depth waiver request has been
1772 submitted. The notice shall clearly state:
1773
- 1774 (i) The depth of the proposed injection zone(s);
1775
- 1776 (ii) The location of the injection wells;

- 1777
- 1778 (iii) The name and depth of all USDWs within the area of review~~;~~_;
- 1779
- 1780 (iv) A map of the area of review~~;~~_;
- 1781
- 1782 (v) The names of any public water supplies affected, reasonably likely to be
- 1783 affected, or served by the USDWs in the area of review~~;~~_; and
- 1784
- 1785 (vi) The results of any consultation between the UIC program and the Public
- 1786 Water System Supervision program within the area of review.
- 1787
- 1788 (d) Following the injection depth waiver application public notice, the ~~a~~AAdministrator
- 1789 of the Water Quality Division of the Department of Environmental Quality shall provide all the
- 1790 information received through the waiver application process to the US EPA ~~Regional~~Regional
- 1791 ~~a~~AAdministrator. Based on the information provided, the US EPA ~~Regional~~Regional~~a~~AAdministrator shall
- 1792 provide written concurrence or non-concurrence regarding waiver issuance.
- 1793
- 1794 (i) If the US EPA ~~Regional~~Regional~~a~~AAdministrator requires additional information
- 1795 to make a decision, the ~~a~~AAdministrator of the Water Quality Division of the Department of
- 1796 Environmental Quality shall provide the information. The US EPA ~~Regional~~Regional~~a~~AAdministrator
- 1797 may require public notice of the new information.
- 1798
- 1799 (ii) ~~In no case shall the~~ The ~~a~~AAdministrator of ~~a State approved program~~ the
- 1800 Water Quality Division of the Department of Environmental Quality shall not issue a depth
- 1801 injection waiver without receipt of written concurrence from the US EPA Regional
- 1802 Administrator.
- 1803
- 1804 (e) If an injection depth waiver is issued, within thirty (30) days of issuance, the EPA
- 1805 shall post the following information on the Office of Water's website:
- 1806
- 1807 (i) The depth of the proposed injection zone(s).
- 1808
- 1809 (ii) The location of the injection wells.
- 1810
- 1811 (iii) The name and depth of all USDWs within the area of review.
- 1812
- 1813 (iv) A map of the area of review.
- 1814
- 1815 (v) The names of any public water supplies affected, reasonably likely to be
- 1816 affected, or served by the USDWs in the area of review.
- 1817
- 1818 (vi) The date of waiver issuance.
- 1819
- 1820 (f) Upon receipt of a waiver of the requirement to inject below the lowermost USDW
- 1821 for geologic sequestration, the owner or operator of a Class VI well must comply with the
- 1822 following:

- 1823
1824 (i) All requirements of Sections 8, 11, 12, 13, 15, 16, 18, and 19 of this
1825 chapter.
1826
1827 (ii) All the requirements of Section 9 of this chapter with the following
1828 modified requirements:
1829
1830 (A) The Class VI well shall be constructed and completed to prevent
1831 the movement of fluids into any unauthorized zones including USDWs, in lieu of requirements
1832 of Section ~~9(a)(1)~~ 9(a)(i) of this ~~chapter~~ chapter.
1833
1834 (B) The casing and cementing program shall be designed to prevent the
1835 movement of fluids into any unauthorized zones including USDWs, in lieu of requirements of
1836 Section 9(b) and ~~9(b)(1)~~ 9(b)(i) of this chapter.
1837
1838 (C) The casing shall extend through the base of the nearest USDW
1839 directly above the injection zone and shall be cemented to the surface; or at the ~~a~~AAdministrator's
1840 discretion, another formation above the injection zone and below the nearest USDW above the
1841 injection zone.
1842
1843 (iii) All the requirements of Sections 14 ~~and 17~~ of this chapter with the
1844 following modified requirements:
1845
1846 (A) The owner or operator shall monitor the groundwater quality,
1847 geochemical changes, and pressure in the first USDWs immediately above and below the
1848 injection zone(s); and any other formation at the discretion of the ~~a~~AAdministrator.
1849
1850 (B) The owner or operator shall conduct ~~T~~esting and monitoring to
1851 track the extent of the carbon dioxide plume and the presence or absence of elevated pressure
1852 (e.g., the pressure front) by using direct methods to monitor for pressure changes in the injection
1853 zone(s); and, indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys
1854 and/or down-hole carbon dioxide detection tools), unless the ~~a~~AAdministrator determines, based
1855 on site-specific geology, that such methods are not appropriate.
1856
1857 (iv) All requirements of Section 17 of this chapter with the following,
1858 modified post-injection site care monitoring requirements:
1859
1860 (A) The owner or operator shall monitor the groundwater quality,
1861 geochemical changes and pressure in the first USDWs immediately above and below the
1862 injection zone; and in any other formations at the discretion of the ~~a~~AAdministrator.
1863
1864 (B) Testing and monitoring to track the extent of the carbon dioxide
1865 plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct
1866 methods in the injection zone(s); and indirect methods (e.g., seismic, electrical, gravity, or
1867 electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the
1868 ~~a~~AAdministrator determines based on site-specific geology, that such methods are not appropriate;

1869
1870 (v) Any additional requirements requested by the ~~a~~AAdministrator to ensure
1871 protection of USDWs above and below the injection zone(s).

1872 **Section 11. Logging, ~~s~~Sampling, and ~~t~~Testing ~~p~~Prior to ~~i~~Injection ~~w~~Well**
1873 **~~e~~Operation.**

1874
1875 (a) During the drilling and construction of a Class VI injection well, the owner or
1876 operator must run appropriate logs, surveys and tests to determine or verify the depth, thickness,
1877 porosity, permeability, and lithology of, and the salinity of any formation fluids ~~within, for in~~ all
1878 relevant geologic formations in order to ensure conformance with the injection well construction
1879 requirements under Section 9 of this chapter, and to establish accurate baseline data against
1880 which future measurements may be compared. The owner or operator must submit to the
1881 Administrator a descriptive report prepared by a knowledgeable log analyst that includes an
1882 interpretation of the results of such logs and tests. At a minimum, such logs and tests must
1883 include:

1884
1885 ~~(i) The owner or operator must submit to the administrator a descriptive~~
1886 ~~report prepared by a knowledgeable log analyst that includes an interpretation of the results of~~
1887 ~~such logs and tests. At a minimum, such logs and tests must include:~~

1888
1889 ~~(A)~~(i) Deviation checks measured during drilling on all holes constructed by
1890 drilling a pilot hole that is subsequently enlarged by reaming or another method. Such checks
1891 must be at sufficiently frequent intervals to determine the location of the borehole and to ensure
1892 that vertical avenues for fluid movement in the form of diverging holes are not created during
1893 drilling; and

1894
1895 ~~(B)~~(ii) Before and upon installation of the surface casing:

1896
1897 ~~(H)~~(A) Resistivity, spontaneous potential, and caliper logs before the
1898 casing is installed; and

1899
1900 ~~(H)~~(B) A cement bond, and variable density log, or other approved device
1901 to evaluate cement quality radially with sufficient resolution to identify channels, voids, or other
1902 areas of missing cement, and a temperature log, after the casing is set and cemented.

1903
1904 ~~(C)~~(iii) Before and upon installation of the long string casing:

1905
1906 ~~(H)~~(A) Resistivity, spontaneous potential, porosity, caliper, gamma ray,
1907 fracture finder logs, and any other logs the ~~a~~AAdministrator requires for the given geology before
1908 the casing is installed; and

1909
1910 ~~(H)~~(B) A cement bond and variable density log, and a temperature log
1911 after the casing is set and cemented.

1912

1913 ~~(D)~~(iv) Test(s) designed to demonstrate the internal and external mechanical
1914 integrity of injection wells, which may include:

- 1915
- 1916 ~~(H)~~(A) A pressure test with liquid or gas;
- 1917
- 1918 ~~(H)~~(B) ~~Diagnostic tools~~ A tracer survey, such as oxygen-activation
1919 logging;
- 1920
- 1921 ~~(H)~~(C) A temperature or noise log; and
- 1922
- 1923 ~~(H)~~(D) A casing inspection log.
- 1924

1925 ~~(E)~~(v) Any alternative methods that provide equivalent or better information and
1926 that are required of, and/or approved by the ~~a~~AAdministrator.

1927

1928 (b) The owner or operator must take whole cores or sidewall cores of the injection
1929 zone and confining system, and formation fluid samples from the injection zone(s), and submit to
1930 the ~~a~~AAdministrator a detailed report prepared by a log analyst that includes:

- 1931
- 1932 (i) Well log analyses (including well logs);
- 1933
- 1934 (ii) Core analyses; and
- 1935
- 1936 (iii) Formation fluid sample information.
- 1937

1938 ~~(+)~~ (iv) The ~~a~~AAdministrator may accept data from cores and fluid samples from
1939 nearby wells if the owner or operator can demonstrate that such data are representative of
1940 conditions in the wellbore.

1941

1942 (c) ~~Prior to injection well operation, t~~The owner or operator must record the
1943 formation fluid temperature, formation fluid pH and conductivity, reservoir pressure, and static
1944 fluid level of the injection zone(s).

1945

1946 (d) ~~At any time prior to injection well operation, t~~The owner or operator must
1947 determine fracture pressures of the injection and confining zones and verify hydrogeologic and
1948 geo-mechanical characteristics of the injection zone by conducting ~~the following tests:~~ a pressure
1949 fall-off test, any other information requested by the Administrator; and,

1950

1951 ~~(+)~~ ~~A pressure fall-off test; and,~~

1952

1953 ~~(+)~~(i) A pump test; or

1954

1955 ~~(+)~~(ii) Injectivity tests.

1956

1957 (e) The owner or operator must provide the ~~a~~AAdministrator with the opportunity to
1958 witness all logging and testing by this ~~subpart~~section. The owner or operator must submit a

1959 schedule of such activities to the Administrator prior to conducting the first test and notify the
1960 Administrator of any changes to the schedule thirty (30) days prior to the next scheduled test.

1961
1962 ~~(i) The owner or operator must submit a schedule of such activities to the~~
1963 ~~administrator upon spudding the well and notify the administrator of any changes to the schedule~~
1964 ~~at least thirty (30) days prior to the scheduled test.~~

1965 **Section 12. ~~i~~Injection ~~w~~Well ~~o~~Operating ~~r~~Requirements.**

1966
1967 (a) The owner or operator must ensure that injection pressure does not exceed ninety
1968 (90) percent of the fracture pressure of the injection zone(s) so as to ensure that the injection
1969 does not initiate new fractures or propagate existing fractures in the injection zone(s). ~~In no case~~
1970 ~~may injection pressure cause movement of injection or formation fluids in a manner that~~
1971 ~~endangers a USDW, or otherwise threatens human health, safety, or the environment.~~

1972
1973 (i) In no case may injection pressure cause movement of injection or
1974 formation fluids in a manner that endangers a USDW, or otherwise threatens human health,
1975 safety, or the environment.

1976
1977 ~~(i)(ii)~~ (ii) In no case may injection pressure initiate fractures in the confining zone(s)
1978 or cause the movement of injectate or formation fluids that endangers a USDW or otherwise
1979 threatens human health, safety, or the environment.

1980
1981 (b) Injection of the carbon dioxide stream between the outermost casing protecting
1982 USDWs and the ~~well bore~~ wellbore is prohibited.

1983
1984 (c) The owner or operator must fill the annulus between the tubing and the long string
1985 casing with a non-corrosive fluid approved by the ~~a~~AAdministrator. The owner or operator must
1986 maintain on the annulus a pressure that exceeds the operating injection pressure, unless the
1987 Administrator determines that such requirement might harm the integrity of the well or endanger
1988 USDWs.

1989
1990 ~~(i) The owner or operator must maintain on the annulus a pressure that~~
1991 ~~exceeds the operating injection pressure, unless the administrator determines that such~~
1992 ~~requirement might harm the integrity of the well or endanger USDWs.~~

1993
1994 (d) Other than during periods of well workover or ~~(maintenance)~~ approved by the
1995 ~~a~~AAdministrator in which the sealed tubing-casing annulus is, by necessity, disassembled for
1996 maintenance or corrective procedures, the owner or operator must maintain mechanical integrity
1997 of the injection well at all times.

1998
1999 (e) The owner or operator must install and use continuous recording devices to
2000 monitor:

2001
2002 (i) Injection pressure; and

2003

- 2004 (ii) Rate, volume, and temperature of the carbon dioxide stream.
2005
- 2006 (f) The owner or operator must install and use continuous recording devices to
2007 monitor the pressure on the annulus between the tubing and the long string casing and annulus
2008 fluid volume.
2009
- 2010 (g) The owner or operator must install, test, and use alarms and automatic surface
2011 shut-off systems, or at the discretion of the ~~a~~Administrator use down-hole shut-off systems (e.g.,
2012 automatic shut-off, check valves), or other mechanical devices that provide equivalent
2013 protection, designed to alert the operator and shut-in the well when operating parameters such as
2014 injection rate, injection pressure, or other parameters approved by the ~~a~~Administrator diverge
2015 beyond ranges and/or gradients specified in the permit.
2016
- 2017 (h) If an automatic shutdown is triggered or a loss of mechanical integrity is
2018 discovered, the owner or operator must immediately investigate and identify as expeditiously as
2019 possible the cause. If, upon such investigation, the well appears to be lacking mechanical
2020 integrity, or if monitoring required under paragraphs (e), (f), and (g) of this section otherwise
2021 indicates that the well may be lacking mechanical integrity, the owner or operator must:
2022
- 2023 ~~(i) If, upon such investigation, the well appears to be lacking mechanical~~
2024 ~~integrity, or if monitoring required under paragraphs (e), (f), and (g) of this section otherwise~~
2025 ~~indicates that the well may be lacking mechanical integrity, the owner or operator must:~~
2026
- 2027 ~~(A)~~(i) Immediately cease injection;
2028
- 2029 ~~(B)~~(ii) Take all steps reasonably necessary to determine whether there may have
2030 been a release of the injected carbon dioxide stream or formation fluids into any unauthorized
2031 zone;
2032
- 2033 ~~(C)~~(iii) Notify the ~~a~~Administrator within twenty-four (24) hours;
2034
- 2035 ~~(D)~~(iv) Restore and demonstrate mechanical integrity to the satisfaction of the
2036 ~~a~~Administrator as soon as practicable and prior to resuming injection; and
2037
- 2038 ~~(E)~~(v) Notify the ~~a~~Administrator when injection can be expected to resume.

2039 **Section 13. Mechanical ~~i~~ntegrity.**
2040

- 2041 (a) A Class VI well has mechanical integrity if:
2042
- 2043 (i) There is no significant leak in the casing, tubing, or packer; and
2044
- 2045 (ii) There is no significant fluid movement into a USDW through channels
2046 adjacent to the injection ~~well-bore~~ wellbore.
2047

2048 (b) To evaluate the absence of significant leaks under paragraph (a)(i) of this section,
2049 owners or operators must, following an initial annulus pressure test, continuously monitor
2050 injection pressure, rate, injected volumes, and pressure on the annulus between tubing and long
2051 string casing and annulus fluid volume as specified in Section 12 (e) and (f) [of this chapter](#);

2052
2053 (c) At least once per year, the owner or operator must use one (1) of the following
2054 methods to determine the absence of significant fluid movement under subparagraph (a)(ii) of this
2055 section:

2056
2057 (i) An approved tracer survey such as an oxygen-activation log; or

2058
2059 (ii) A temperature or noise log.

2060
2061 (d) If required by the aAdministrator, at a frequency specified in the testing and
2062 monitoring plan required in Section 14 of this chapter, the owner or operator must run a casing
2063 inspection log to determine the presence or absence of corrosion in the long-string casing.

2064
2065 (e) The aAdministrator may require any other test to evaluate mechanical integrity
2066 under paragraph (a)(i) or (a)(ii) of this section. Also, the aAdministrator may allow the use of a
2067 test to demonstrate mechanical integrity other than those listed above, with the written approval
2068 of the US EPA ~~regional~~ aAdministrator. To obtain approval, the Administrator must submit a
2069 written request to the US EPA Regional Administrator that must set forth the proposed test and
2070 all technical data supporting its use.

2071
2072 ~~(i) — To obtain approval, the administrator must submit a written request to the~~
2073 ~~US EPA regional administrator that must set forth the proposed test and all technical data~~
2074 ~~supporting its use.~~

2075
2076 (f) In conducting and evaluating the tests enumerated in this section or others to be
2077 allowed by the aAdministrator, the owner or operator and the aAdministrator must apply
2078 methods and standards generally accepted in the industry.

2079
2080 (i) When the owner or operator reports the results of mechanical integrity
2081 tests to the aAdministrator, he/she shall include a description of the test(s) and the method(s)
2082 used.

2083
2084 (ii) In making his/her evaluation, the aAdministrator must review monitoring
2085 and other test data submitted since the previous evaluation.

2086
2087 (g) The aAdministrator may require additional or alternative tests if the results
2088 presented by the owner or operator under paragraph (e) of this section are not satisfactory to the
2089 aAdministrator to demonstrate that there is no significant leak in the casing, tubing or packer, or
2090 significant movement of fluid into or between USDWs resulting from the injection activity as
2091 stated in paragraphs (a)(i) and (a)(ii) of this section.

2092 **Section 14. Testing and ~~m~~Monitoring ~~r~~Requirements.**

2093
2094 (a) The owner or operator of a Class VI well must prepare, maintain, and comply
2095 with a testing and monitoring plan to verify that the geologic sequestration project is operating as
2096 permitted and is not endangering USDWs. The testing and monitoring plan must be submitted
2097 with the permit application, for Administrator approval, and must include a description of how
2098 the owner or operator will meet the requirements of this section, including accessing sites for all
2099 necessary monitoring and testing during the life of the project.

2100
2101
2102 ~~(i) The requirement to maintain and implement an approved plan is directly~~
2103 ~~enforceable regardless of whether the requirement is a condition of the permit.~~

2104
2105 ~~(ii) The testing and monitoring plan must be submitted with the permit~~
2106 ~~application, for administrator approval, and must include a description of how the owner or~~
2107 ~~operator will meet the requirements of this section, including accessing sites for all necessary~~
2108 ~~monitoring and testing during the life of the project.~~

2109
2110 (b) Testing and monitoring associated with geologic sequestration projects must, at a
2111 minimum, include:

2112
2113 (i) Plans and procedures for environmental surveillance and excursion
2114 detection, prevention, and control programs, including a monitoring plan to:

2115 (A) Assess the migration of the injected carbon dioxide; and

2116
2117 (B) ~~Insure~~ Ensure the retention of the carbon dioxide in the geologic
2118 sequestration site.

2119
2120 ~~(C) For purposes of this section, “excursion” shall mean the detection~~
2121 ~~of migrating carbon dioxide at or beyond the boundary of the geologic sequestration site as~~
2122 ~~defined in W.S. 35-11-103(c).~~

2123
2124
2125 (ii) Analysis of the carbon dioxide stream with sufficient frequency to yield
2126 data representative of its chemical and physical characteristics;

2127
2128 (iii) Installation and use, except during well workovers, of continuous
2129 recording devices to monitor:

2130 (A) Injection pressure;~~;~~

2131
2132 (B) Rate and volume;

2133 (C) Pressure on the annulus between the tubing and the long string
2134 casing; ~~and~~

2135
2136
2137

- 2138 (D) The annulus fluid volume added; and
2139
2140 (E) The pressure on the annulus between the tubing and the long string
2141 casing.
2142
2143 (iv) Corrosion monitoring of the well materials for loss of mass, thickness,
2144 cracking, pitting, and other signs of corrosion must be performed and recorded at least quarterly
2145 to ensure that the well components meet the minimum standards for material strength and
2146 performance set forth in Section 9(b) of this chapter by:
- 2147 (A) Analyzing coupons of the well construction materials placed in
2148 contact with the carbon dioxide stream; ~~or~~
2149
2150 (B) Routing the carbon dioxide stream through a loop constructed with
2151 the material used in the well and inspecting the materials in the loop; or
2152
2153 (C) Using an alternative method; ~~materials, or time period~~ approved by
2154 the aAdministrator.
2155
2156 (v) Periodic monitoring of the ~~reservoir fluid groundwater~~ quality ~~in a~~
2157 ~~permeable and porous formation as near as practicable to~~ and geochemical changes above the
2158 confining zone(s) ~~for geochemical changes~~ that may be a result of carbon dioxide movement or
2159 displaced formation fluid movement through the confining zone(s) or additional identified zones
2160 including:
2161
2162 (A) The location and number of monitoring wells must be based on
2163 specific information about the geologic sequestration project, including injection rate and
2164 volume, geology, the presence of artificial penetrations and other relevant factors; and
2165
2166 (B) The monitoring frequency and spatial distribution of monitoring
2167 wells based on baseline geochemical data that have been collected under Section ~~5(b)(xi)~~
2168 5(b)(xiii) of this chapter and any modeling results in the area of review evaluation required by
2169 Section 8(c) of this chapter.
2170
2171 (vi) A demonstration of external mechanical integrity pursuant to Section
2172 13(c) at least once per year until the well is plugged; and if required by the aAdministrator, a
2173 casing inspection log pursuant to requirements of Section 13(d) of this chapter at a frequency
2174 established in the testing and monitoring plan;
2175
2176 (vii) A pressure fall-off test ~~or other equivalent test~~ that identifies reservoir
2177 conditions with respect to flow dynamics at least once every five (5) years unless more frequent
2178 testing is required by the aAdministrator based on site-specific information; and
2179
2180 (viii) Testing and monitoring to track the extent of the carbon dioxide plume,
2181 the position of the pressure front, and surface displacement ~~by~~ using:
2182
2183

- 2184 (A) Direct methods in the injection zone(s); and
2185
2186 (B) Indirect methods (e.g., seismic, electrical, gravity, or
2187 electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the
2188 ~~a~~Administrator determines, based on site-specific geology, that such methods are not
2189 appropriate;
2190
2191 (ix) At the ~~a~~Administrator's discretion, based on site-specific conditions,
2192 surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that
2193 could endanger a USDW, or otherwise threaten human health, safety, or the environment.
2194
2195 (A) The ~~testing and monitoring plan~~ surface air or soil gas monitoring
2196 plan must be based on potential risks to USDWs, and modeling within the area of review;
2197
2198 (B) The monitoring frequency and spatial distribution of surface air
2199 monitoring and/or soil gas monitoring must reflect baseline data. The monitoring plan must
2200 specify how the proposed monitoring will yield useful information on the area of review
2201 delineation and the potential movement of fluid containing any contaminant into USDWs in
2202 exceedence of any primary drinking water regulation under 40 CFR Part 141, or which may
2203 otherwise adversely affect human health, safety, or the environment.
2204
2205 (x) If an owner or operator demonstrates that monitoring employed under 40
2206 CFR §§ 98.440 to 98.449 (Clean Air Act, 42 U.S.C. 7401 et seq.) accomplishes the goals of
2207 ~~(h)(1) and (2)~~ (b)(ix)(A) and (B) of this section, and meets the requirements pursuant to 40 CFR
2208 § 146.91(c)(5), ~~a Director~~ the Administrator that requires surface air/soil gas monitoring must
2209 approve the use of monitoring employed under 40 CFR §§ 98.440 to 98.449. Compliance with
2210 §§ 98.440 to 98.449 pursuant to this provision is considered a condition of the Class VI permit;
2211
2212 (xi) Any additional monitoring, as required by the ~~a~~Administrator, necessary
2213 to support, upgrade, and improve computational modeling of the area of review re-evaluation
2214 required under Section ~~8(e)~~ 8(d) of this chapter and as necessary to demonstrate that there is no
2215 movement of fluid containing any contaminant into underground sources of drinking water in
2216 exceedence of any primary drinking water regulation under 40 CFR Part 141, or which could
2217 otherwise adversely affect human health, safety, or the environment;
2218
2219 (xii) The owner or operator shall periodically review the testing and monitoring
2220 plan to incorporate monitoring data collected under this subpart, operational data collected under
2221 Section 11 of this chapter, and the most recent area of review reevaluation performed under
2222 Section 8 of this chapter. In no case shall the owner or operator review the testing and
2223 monitoring plan less often than once every five (5) years. Based on this review, the owner or
2224 operator shall submit an amended testing and monitoring plan or demonstrate to the
2225 ~~a~~Administrator that no amendment to the testing and monitoring plan is needed. Any
2226 amendments to the testing and monitoring plan must be approved by the ~~a~~Administrator, must be
2227 incorporated into the permit, and are subject to the permit modification requirements of Section 4
2228 of this chapter, as appropriate. Amended plans or demonstrations shall be submitted to the
2229 ~~a~~Administrator as follows:

- 2230
2231 (A) Within one (1) year of an area of review reevaluation;
2232
2233 (B) Following any significant changes to the facility, such as addition
2234 of monitoring wells or newly permitted injection wells within the area of review, on a schedule
2235 determined by the ~~a~~Administrator; or
2236
2237 (C) When required by the ~~a~~Administrator.
2238
2239 (xiii) A quality assurance and surveillance plan for all testing and monitoring
2240 requirements.

2241
2242 **XX** (c) The permittee shall retain records of all monitoring information, including the
2243 following:

2244
2245 (i) Calibration and maintenance records and all original strip chart recordings
2246 for continuous monitoring instrumentation, copies of all reports required by this permit, and
2247 records of all data used to complete the application for this permit, for a period of at least three
2248 (3) years from the date of the sample, measurement, report, or application. This period may be
2249 extended by request of the Administrator at any time; and

2250
2251 (ii) The nature and composition of all injected fluids until three (3) years after
2252 the completion of any plugging and abandonment procedures specified under Section 16 of this
2253 chapter. The Administrator may require the owner or operator to deliver the records to the
2254 Administrator at the conclusion of the retention period.

2255
2256 (d) Records of monitoring information shall include:

2257
2258 (i) The date, exact place, and time of sampling or measurements;

2259
2260 (ii) The individual(s) who performed the sampling or measurements;

2261
2262 (iii) The date(s) analyses were performed;

2263
2264 (iv) The individual(s) who performed the analyses;

2265
2266 (v) The analytical techniques or methods used; and

2267
2268 (vi) The results of such analyses.

2269 **Section 15. Reporting ~~r~~Requirements.**

2270
2271 (a) The owner or operator must, at a minimum, provide the following reports to the
2272 ~~a~~Administrator, for each permitted Class VI well:
2273

2274 (i) Semi-annual reports, which are required by the permit shall be submitted
2275 to the Administrator within thirty (30) days following the end of the period covered in the report,
2276 and shall ~~containing~~ contain:

2277
2278 (A) Any changes to the physical, chemical, and other relevant
2279 characteristics of the carbon dioxide stream from the proposed operating data;

2280
2281 (B) Monthly average, maximum and minimum values for injection
2282 pressure, flow rate and volume, and annular pressure;

2283
2284 (C) A description of any event that exceeds operating parameters for
2285 annulus pressure or injection pressure as specified in the permit;

2286
2287 (D) A description of any event that triggers a shutdown device required
2288 pursuant to Section 12(g) of this chapter, and the response taken;

2289
2290 (E) The monthly volume of the carbon dioxide stream injected over the
2291 reporting period and project cumulatively;

2292
2293 (F) Monthly annulus fluid volume added; and

2294
2295 (G) The results of monitoring prescribed under Section 14 of this
2296 chapter.

2297
2298 (ii) Report, within thirty (30) days the results of:

2299
2300 (A) Periodic tests of mechanical integrity;

2301
2302 (B) Any other test of the injection well conducted by the permittee if
2303 required by the ~~a~~Administrator; and

2304
2305 (C) Any well workover.

2306
2307 (iii) Report, within twenty-four (24) hours:

2308
2309 (A) Any evidence that the injected carbon dioxide stream or associated
2310 pressure front may cause an endangerment to a USDW;

2311
2312 (B) Any noncompliance with a permit condition, or malfunction of the
2313 injection system, which may cause fluid migration into or between USDWs;

2314
2315 (C) Any triggering of a shut-off system (i.e., down-hole or at the
2316 surface);

2317

2318 (D) Pursuant to compliance with the requirement at Section 14(b)(x) of
2319 this chapter for surface air/ ~~or~~ soil gas monitoring or other monitoring technologies, if required
2320 by the ~~a~~Administrator, any release of carbon dioxide to the atmosphere or biosphere.

2321
2322 (iv) Owners or operators must notify the ~~a~~Administrator in writing thirty (30)
2323 days in advance of:

2324 (A) Any planned well workover;

2325 (B) Any planned stimulation activities, other than stimulation for
2326 formation testing conducted under Section 5 of this chapter; and

2327 (C) Any other planned test of the injection well conducted by the
2328 permittee.

2329
2330 ~~(moved to 15(a)(i))(b) Reports required by the permit shall be submitted to the~~
2331 ~~administrator within 30 days following the end of the period covered in the report.~~

2332 (c) Owners or operators must submit all required reports, submittals, and notifications
2333 to both the ~~a~~Administrator and to EPA, in an electronic format acceptable to the EPA.

2334 (d) The permittee shall submit a written report to the ~~a~~Administrator of all remedial
2335 work concerning the failure of equipment or operational procedures that resulted in a violation of
2336 a permit condition, at the completion of the remedial work.

2337 (e) For any aborted or curtailed operation, a complete report shall be submitted
2338 within thirty (30) days of complete termination of the discharge or associated activity.

2339 (f) The permittee shall retain all monitoring records required by the permit for a
2340 period of ten (10) years following ~~facility site~~ closure. The ~~a~~Administrator may require the
2341 owner or operator to deliver the records to the ~~a~~Administrator at the conclusion of the retention
2342 period.

2343
2344 **Section 16. Injection ~~w~~Well ~~p~~Plugging.**

2345 (a) Prior to the well-plugging, the owner or operator must flush each Class VI
2346 injection well with a buffer fluid, determine bottom hole reservoir pressure, and perform a final
2347 external mechanical integrity test in accordance with Section 13 of this chapter.

2348 (b) The owner or operator of a Class VI well must prepare, maintain, update on the
2349 same schedule as the update to the area of review delineation, and comply with a well-plugging
2350 plan that is acceptable to the ~~a~~Administrator. Temporary or intermittent cessation of injection
2351 operations is not abandonment. The well-plugging plan must include the following information:

2362 ~~(i) The requirement to maintain and implement an approved plan is directly~~
2363 ~~enforceable regardless of whether the requirement is a condition of the permit.~~

2364
2365 ~~(ii) The well plugging plan must be submitted as part of the permit application~~
2366 ~~and must include the following information:~~

2367
2368 ~~(A)~~(i) Appropriate test or measure to determine bottom hole reservoir pressure;

2369
2370 ~~(B)~~(ii) Appropriate testing methods to ensure final external mechanical integrity
2371 as specified in Section 13 of this chapter;

2372
2373 ~~(C)~~(iii) The type and number of plugs to be used;

2374
2375 ~~(D)~~(iv) The placement of each plug including the elevation of the top and bottom
2376 of each plug;

2377
2378 ~~(E)~~(v) The type and grade and quantity of material, suitable for use with the
2379 carbon dioxide stream, to be used in plugging;

2380
2381 ~~(F) The material must be suitable for use with the carbon~~
2382 ~~dioxide stream.~~

2383
2384 ~~(F)~~(vi) A description of the method of placement of the plugs.

2385
2386 (c) The owner or operator must notify the ~~a~~AAdministrator, in writing, at least sixty
2387 (60) days before plugging a well.

2388
2389 (i) If any changes have been made to the original well-plugging plan, the
2390 owner or operator must also provide the revised well-plugging plan.

2391
2392 (ii) At the discretion of the ~~a~~AAdministrator, a shorter notice period may be
2393 allowed.

2394
2395 (iii) Any amendments to the injection well-plugging plan must be approved by
2396 the ~~a~~AAdministrator, must be incorporated into the permit, and are subject to the permit
2397 modification requirements of Section 4 of this chapter, as appropriate.

2398
2399 (d) Within sixty (60) days after completion of plugging and abandonment of a well or
2400 well field the permittee shall submit to the ~~a~~AAdministrator a final report that includes:

2401
2402 (i) Certification of completion in accordance with approved plans and
2403 specifications by a licensed professional engineer or a licensed professional geologist.

2404
2405 (ii) Certification of accuracy by the owner or operator and by the person who
2406 performed the plugging operation (if other than the owner or operator).

2408 (iii) The owner or operator shall retain the well-plugging report for ten (10)
2409 years following site closure.

2410 **Section 17. Post-injection Site Care and Site Closure.**

2411 (a) The owner or operator of a Class VI well must prepare, maintain, update on the
2412 same schedule as the update to the area of review delineation, and comply with a plan for post-
2413 injection site care and site closure that meets the requirements of ~~subpart paragraph~~ (a)(ii) of this
2414 section and is acceptable to the aAdministrator. ~~The requirement to maintain and implement an~~
2415 ~~approved plan is directly enforceable regardless of whether the requirement is a condition of the~~
2416 ~~permit.~~

2417
2418 (i) The owner or operator must submit the post-injection site care and site
2419 closure plan as a part of the permit application to be approved by the aAdministrator, in
2420 consultation with EPA.

2421
2422 (ii) The post-injection site care and site closure plan must include the
2423 following information:

2424 (A) A demonstration containing substantial evidence that the geologic
2425 sequestration project will no longer pose a risk of endangerment to USDWs or will not harm or
2426 present a risk to human health, safety, or the environment at the end of the post-injection site
2427 care timeframe. The demonstration must be based on significant, site-specific data and
2428 information, including all data and information collected pursuant to Sections 4 and 7 of this
2429 chapter.

2430 ~~(formerly Section 19(k)(ii))~~(B) The site closure plan shall address all
2431 reclamation, required monitoring, and remediation sufficient to show that the carbon dioxide
2432 injected into the geologic sequestration site will not harm human health, safety, the environment,
2433 or drinking water supplies.

2434
2435 ~~(A)~~(C) Detailed plans for post-injection monitoring, verification,
2436 maintenance, and mitigation;

2437
2438 ~~(B)~~(D) The pressure differential between pre-injection and predicted post-
2439 injection pressures in the injection zone;

2440
2441 ~~(C)~~(E) The predicted position of the carbon dioxide plume and associated
2442 pressure front at the time when plume movement has ceased and pressure differentials sufficient
2443 to cause the movement of injected fluids or formation fluids into a USDW are no longer present,
2444 as demonstrated in the area of review evaluation required under Section 8(c)(i) of this chapter;

2445
2446 ~~(D)~~(F) A description of post-injection monitoring locations, methods, and
2447 proposed frequency; and

2448
2449
2450
2451

2452 ~~(E)~~(G) A proposed schedule for submitting post-injection site care
2453 monitoring results pursuant to Section 15(c) of this chapter, as appropriate.

2454
2455 (H) The duration of the post-injection site care timeframe that ensures
2456 compliance with subparagraph (A) of this subsection.

2457
2458 (I) The results of computational modeling performed pursuant to
2459 delineation of the area of review under Section 8 of this chapter;

2460
2461 (J) The predicted timeframe for pressure decline within the injection
2462 zone, and any other zones, such that formation fluids may not be forced into any USDWs; and/or
2463 the timeframe for pressure decline to pre-injection pressures;

2464
2465 (K) The predicted rate of carbon dioxide plume migration within the
2466 injection zone, and the predicted timeframe for the cessation of migration;

2467
2468 (L) A description of the site-specific processes that will result in
2469 carbon dioxide trapping including immobilization by capillary trapping, dissolution, and
2470 mineralization at the site;

2471
2472 (M) The predicted rate of carbon dioxide trapping in the immobile
2473 capillary phase, dissolved phase, and/or mineral phase;

2474
2475 (N) The results of laboratory analyses, research studies, and/or field or
2476 site-specific studies to verify the information required in paragraphs (J) and (K) of this
2477 subsection;

2478
2479 (O) A characterization of the confining zone(s) including a
2480 demonstration that it is free of transmissive faults, fractures, and micro-fractures and of
2481 appropriate thickness, permeability, and integrity to impede fluid (e.g., carbon dioxide, formation
2482 fluids) movement;

2483
2484 (P) The presence of potential conduits for fluid movement including
2485 planned injection wells and project monitoring wells associated with the proposed geologic
2486 sequestration project or any other projects in proximity to the predicted or modeled, final extent
2487 of the carbon dioxide plume and area of elevated pressure;

2488
2489 (Q) A description of the well construction and an assessment of the
2490 quality of plugs of all abandoned wells within the area of review;

2491
2492 (R) The distance between the injection zone and the nearest USDWs
2493 above and/or below the injection zone; and

2494
2495 (S) Any additional site-specific factors required by the Administrator.
2496

2497 (iii) Information submitted to support the demonstration in paragraph (a)(ii) of
2498 this section must meet the following criteria:

2499
2500 (A) All analyses and tests performed to support the demonstration must
2501 be accurate, reproducible, and performed in accordance with the established quality assurance
2502 standards;

2503
2504 (B) Estimation techniques must be appropriate and EPA-certified test
2505 protocols must be used where available;

2506
2507 (C) Predictive models must be appropriate and tailored to the site
2508 conditions, composition of the carbon dioxide stream and injection and site conditions over the
2509 life of the geologic sequestration project;

2510
2511 (D) Predictive models must be calibrated using existing information
2512 (e.g., at Class I, Class II, or Class V experimental technology well sites) where sufficient data are
2513 available;

2514
2515 (E) Reasonably conservative values and modeling assumptions must
2516 be used and disclosed to the Administrator whenever values are estimated on the basis of known,
2517 historical information instead of site-specific measurements;

2518
2519 (F) An analysis must be performed to identify and assess aspects of the
2520 alternative post-injection site care timeframe demonstration that contribute significantly to
2521 uncertainty. The owner or operator must conduct sensitivity analyses to determine the effect that
2522 significant uncertainty may contribute to the modeling demonstration.

2523
2524 (G) An approved quality assurance and quality control plan must
2525 address all aspects of the demonstration; and,

2526
2527 (H) Any additional criteria required by the Administrator.

2528
2529 ~~(iii)~~(iv) Upon cessation of injection, owners or operators of Class VI wells
2530 must either submit an amended post-injection site care and site closure plan or demonstrate to the
2531 ~~a~~Administrator through monitoring data and modeling results that no amendment to the plan is
2532 needed. Any amendments to the post-injection site care and site closure plan must be:

2533
2534 ~~(A) Any amendments to the post-injection site care and site closure~~
2535 ~~plan must be:~~

2536
2537 ~~(A)~~(A) Approved by the ~~a~~Administrator.

2538
2539 ~~(B)~~(B) Incorporated into the permit.

2540
2541 ~~(C)~~(C) Subject to the permit modification requirements of Section 4 of
2542 this chapter, as appropriate.

2543
2544 ~~(iv)~~(v) The owner or operator may modify and resubmit the post-injection site
2545 care and site closure plan for the ~~a~~Administrator's approval within thirty (30) days of such
2546 change.

2547 (b) The owner or operator shall monitor the site following the cessation of injection
2548 to show the position of the carbon dioxide plume and pressure front and demonstrate that
2549 USDWs are not being endangered.
2550

2551 (i) The owner or operator shall continue to conduct monitoring as specified in
2552 the ~~a~~Administrator-approved post-injection site care and site closure plan until closure is
2553 certified by the ~~a~~Administrator.
2554

2555 (ii) The owner or operator can request and demonstrate to the satisfaction of
2556 the ~~a~~Administrator that the post-injection site care and site closure plan should be revised to
2557 reduce the frequency of monitoring.
2558

2559 (iii) Prior to authorization for site closure, the owner or operator must
2560 demonstrate to the ~~a~~Administrator, based on monitoring, other site-specific data, and modeling
2561 that is reasonably consistent with site performance, that no additional monitoring is needed to
2562 ensure that the geologic sequestration project does not, and is not expected to pose an
2563 endangerment to a USDW or otherwise threaten human health, safety, or the environment. In
2564 addition, the owner or operator must demonstrate, based on the best available understanding of
2565 the site, including monitoring data and/or modeling, that all other site closure standards and
2566 requirements have been met.
2567

2568 (iv) If such a demonstration cannot be made, the owner or operator must
2569 continue post-injection site care.
2570

2571 (v) The owner or operator must notify the ~~a~~Administrator, in writing, at least
2572 120 days before filing a request for site closure. At this time, if any changes have been made to
2573 the original post-injection site care and site closure plan, the owner or operator must also provide
2574 the revised plan. At the discretion of the ~~a~~Administrator, a shorter notice period may be allowed.
2575

2576 ~~(formerly Section 19(k)(i))~~(vi) Post-injection site care shall be for a period
2577 of not less than ten (10) years after the date when all wells excluding monitoring wells have been
2578 appropriately plugged and abandoned, all subsurface operations and activities have ceased and
2579 all surface equipment and improvements have been removed or appropriately abandoned, or so
2580 long thereafter as necessary to obtain a completion and release certificate from the Administrator
2581 certifying that plume stabilization has been achieved without the use of control equipment based
2582 on a minimum of three (3) consecutive years of monitoring data.
2583

2584 (c) After the ~~a~~Administrator has certified site closure, the owner or operator must
2585 plug monitoring wells, as determined by the ~~a~~Administrator, in a manner that will not allow
2586 movement of injection or formation fluids.
2587
2588

2589 (d) Once the ~~a~~Administrator has certified site closure, the owner or operator must
2590 submit a site closure report within ninety (90) days after completion of all closure operations.
2591 The report must thereafter be retained at a location designated by the ~~a~~Administrator for ten (10)
2592 years. The report must include:

2593
2594 (i) Documentation of appropriate injection and monitoring well plugging as
2595 specified in Section 16 of this chapter and paragraph (c) of this section.
2596

2597 (ii) The owner or operator must provide a copy of a survey plat that has been
2598 submitted to the local zoning authority designated by the ~~a~~Administrator.
2599

2600 (A) The plat must indicate the location of the injection well(s) and
2601 monitoring wells relative to permanently surveyed benchmarks.
2602

2603 (B) The owner or operator must also submit a copy of the plat to the
2604 US EPA ~~r~~Regional-~~a~~Administrator.
2605

2606 (iii) Documentation of appropriate notification and information to such State,
2607 local and tribal authorities as have authority over drilling activities to enable such State and local
2608 authorities to impose appropriate conditions on subsequent drilling activities that may penetrate
2609 the injection and confining zone(s).
2610

2611 (iv) Proof of providing notice to surface owners, mineral claimants, mineral
2612 owners, lessees, and other owners of record of subsurface interests as to the proposed site
2613 closure. Notice requirements at a minimum shall include:
2614

2615 (A) The publishing of notice of the application in a newspaper of
2616 general circulation in each county of the proposed operation at weekly intervals for four (4)
2617 consecutive weeks;
2618

2619 (B) The published notice shall provide a mechanism to request a public
2620 hearing;
2621

2622 (C) A copy of the notice shall also be mailed to all surface owners,
2623 mineral claimants, mineral owners, lessees and other owners of record of subsurface interests
2624 that are located within one (1) mile of the proposed boundary of the geologic sequestration site.
2625

2626 (v) Records reflecting the nature, composition and volume of the carbon
2627 dioxide stream.
2628

2629 (e) Each owner or operator of a Class VI injection well must record a notation on the
2630 deed to the facility property or any other document that is normally examined during title search
2631 that will in perpetuity provide any potential purchaser of the property the following information:
2632

2633 (i) The fact that land has been used to sequester carbon dioxide;
2634

2635 (ii) The name of the State agency, local authority, and/or tribe with which the
2636 survey plat was filed, as well as the address of the Regional Environmental Protection Agency
2637 Office to which it was submitted; and
2638

2639 (iii) The volume of fluid injected, the injection zone or zones into which it was
2640 injected, and the period over which injection occurred.
2641

2642 (f) Well-plugging reports, post-injection site care data, including, if appropriate, data
2643 and information used to develop the demonstration of the alternative post-injection site care time
2644 frame, and the site closure report collected pursuant to requirements of subsection (d) above shall
2645 be retained for ten (10) years following site closure. The owner or operator must deliver the
2646 records to the aAdministrator at the conclusion of the retention period, and the records must
2647 thereafter be retained at a location designated by the aAdministrator for that purpose.
2648

2649 ~~(i) The owner or operator must deliver the records to the aAdministrator at~~
2650 ~~the conclusion of the retention period, and the records must thereafter be retained at a location~~
2651 ~~designated by the aAdministrator for that purpose.~~

2652 **Section 18. Emergency and ~~r~~R~~e~~m~~e~~dial ~~r~~R~~e~~sponse.**

2653
2654 (a) As part of the permit application, the owner or operator must provide the
2655 ~~a~~A~~d~~ministrator with an emergency and remedial response plan that describes actions to be taken
2656 to address movement of the injectate or formation fluids that may cause an endangerment to a
2657 USDW or threaten human health, safety, or the environment during construction, operation,
2658 closure, and post-closure periods. ~~The requirement to maintain and implement an approved plan~~
2659 ~~is directly enforceable regardless of whether the requirement is a condition of the permit.~~
2660

2661 (i) The emergency and remedial response plan must be reviewed and
2662 updated, as necessary, on the same schedule as the update to the area of review delineation.
2663

2664 (ii) Any amendments to the emergency and remedial response plan must be
2665 approved by the ~~a~~A~~d~~ministrator, must be incorporated into the permit, and are subject to the
2666 permit modification requirements of Section 4 of this chapter, as appropriate.
2667

2668 (A) Amended plans or demonstrations shall be submitted to the
2669 ~~a~~A~~d~~ministrator as follows:
2670

2671 (I) Within one (1) year of an area of review reevaluation;
2672

2673 (II) Following any significant changes to the facility, such as
2674 addition of injection or monitoring wells, on a schedule determined by the ~~a~~A~~d~~ministrator; or
2675

2676 (III) When required by the ~~a~~A~~d~~ministrator.
2677

2678 (b) If monitoring data, or other evidence obtained by the ~~the~~ owner or operator
2679 indicate that the injected carbon dioxide stream, displaced formation fluids or associated pressure

2680 front may endanger a USDW or threatens human health, safety, or the environment, the owner or
2681 operator must:

- 2682
- 2683 (i) Immediately cease injection;
 - 2684
 - 2685 (ii) Take all steps reasonably necessary to identify and characterize any
2686 release;
 - 2687
 - 2688 (iii) Notify the Administrator within twenty-four (24) hours.
 - 2689

2690 ~~(iii)(iv)~~ In addition to paragraphs (i-iii) of this subsection, if an excursion is
2691 discovered, the owner or operator shall provide verbal notice to the Department ~~W~~within twenty-
2692 four (24) hours, ~~provide verbal notice to the Department of Environmental Quality of any~~
2693 excursion after the excursion is discovered, followed by written notice to all surface owners,
2694 mineral claimants, mineral owners, lessees and other owners of record of subsurface interests
2695 within thirty (30) days of when the excursion is discovered; and

2696

- 2697 ~~(iv)(v)~~ (v) Implement the emergency and remedial response plan approved by the
2698 ~~a~~Aadministrator.
- 2699

2700 (c) The ~~a~~AAdministrator may allow the operator to resume injection prior to
2701 remediation if the owner or operator demonstrates that the injection operation will not endanger
2702 USDWs or otherwise threaten human health, safety, or the environment.

2703

- 2704 ~~(d) — The owner or operator must notify the administrator or the designated~~
2705 ~~representative prior to conducting any well workover.~~

2706 **Section 19. Financial ~~r~~Responsibility.**

2707

- 2708 (a) Financial responsibility requirements are to ensure that owners or operators have
2709 the financial resources to carry out activities related to closing and remediating geologic
2710 sequestration sites if needed so they do not endanger the environment or USDWs.
- 2711

2712 (b) Owners or operators of Class VI wells must demonstrate and maintain financial
2713 responsibility for all applicable phases of the geologic sequestration project including complete
2714 site reclamation in the event of default. The phases of a geologic sequestration project are as
2715 follows:

- 2716
- 2717 (i) Permitting/Characterization.
 - 2718
 - 2719 (ii) Monitoring and testing, including the requirements of Section 14 of this
2720 chapter.
 - 2721

2722 ~~(ii)(iii)~~ (iii) Operations (injection and permanent well closure activities), including the
2723 requirements of Section 16 of this chapter.

2724

2725 ~~(iii)~~(iv) Post-injection site care (“plume stabilization” – monitoring until certified
2726 by the ~~a~~Administrator; above ground reclamation completed-), including the requirements of
2727 Section 17 of this chapter.

2728
2729 ~~(iv)~~(v) Emergency and remedial response (that meets the requirements of Section
2730 18 of this chapter).

2731
2732 ~~(e) The requirement to maintain adequate financial responsibility and resources is~~
2733 ~~directly enforceable regardless of whether the requirement is a condition of the permit.~~

2734
2735 ~~(d)~~(c) ~~To demonstrate financial responsibility,~~ The owner or operator must submit a
2736 detailed written estimate, at the time of permit application and updated annually in accordance
2737 with paragraph (j)(iii) below, and in current dollars, that includes the cost of performing
2738 corrective action on wells in the area of review; that meets the requirements of Section 8 of this
2739 chapter; plugging the injection well(s); that meets the requirements of Section 16 of this chapter;
2740 post injection site care and site closure; that meets the requirements of Section 17 of this chapter;
2741 monitoring activities that meets the requirements of Section 14 of this chapter; and emergency
2742 and remedial response, ~~including that meets~~ the requirements of Section 18 of this chapter. ~~The~~
2743 ~~submission requirements for the financial responsibility instruments are based on results of the~~
2744 ~~cost estimate.~~

2745
2746 (i) The financial assurance cost estimate for the various phases of the
2747 sequestration project shall consider the following events:

2748
2749 (A) Contamination of underground sources of water including drinking
2750 water supplies.

2751
2752 (B) Mineral rights infringement.

2753
2754 (C) Single large volume release of carbon dioxide that impacts human
2755 health and safety and/or causes ecological damage.

2756
2757 (D) Low level leakage of carbon dioxide to the surface that impacts
2758 human health and safety and/or causes ecological damage.

2759
2760 (E) Storage rights infringement.

2761
2762 (F) Property and infrastructure damage including changes to surface
2763 topography and structures.

2764
2765 (G) Entrained contaminant releases (non-CO₂).

2766
2767 (H) Accidents/unplanned events.

2768
2769 (I) Well capping and permitted abandonment.

2770

- 2771 (J) Removal of above ground facilities and site reclamation.
2772
- 2773 (ii) The Risk Activity matrix in Appendix A of this chapter shall be
2774 considered during the risk assessment process.
2775
- 2776 (iii) The cost estimate shall be based upon a multi-disciplinary analytical
2777 framework such as Monte Carlo or other commonly accepted stochastic modeling tools.
2778
- 2779 (A) Cost curves shall combine risk probabilities, event outcomes, and
2780 damages assessment to calculate expected losses under a series of events.
2781
- 2782 (B) For all cases of potential damages, the probability distributions
2783 should be identified for 50 percent, 95 percent, and 99 percent probabilities of occurrence.
2784
- 2785 ~~(e)~~(d) The owner or operator must also submit a proposed cost estimate for
2786 measurement, monitoring, and verification of plume stabilization following post-closure
2787 certification and release of all other financial assurance instruments.
2788
- 2789 ~~(e)~~(e) The cost estimate must be performed for each phase separately and must be based
2790 on the costs to the regulatory agency of hiring a third party to perform the required activities. A
2791 third party is a party who is not within the corporate structure of the owner or operator.
2792
- 2793 (f) The owner or operator must demonstrate and maintain financial responsibility as
2794 determined by the Administrator that meets the conditions of this section.
2795
- 2796 (g) The ~~required demonstration of~~ financial responsibility instrument(s) used shall be
2797 from the following list of qualifying instruments:
2798
- 2799 (i) Trust Funds;
2800
- 2801 (ii) Surety Bonds;
2802
- 2803 (iii) Letter of Credit;
2804
- 2805 (iv) Insurance.
2806
- 2807 (A) Any insurance instruments submitted for financial assurance
2808 purposes shall include sState of Wyoming as an additional insured, ~~which inclusion shall not be~~
2809 ~~deemed a waiver of sovereign immunity.~~
2810
- 2811 (B) Inclusion of the State of Wyoming as an additional insured shall
2812 not be deemed a waiver of sovereign immunity.
2813
- 2814 (v) Self-insurance (i.e., Financial Test and Corporate Guarantee);
2815
- 2816 (vi) Escrow account;

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(vii) Any other instrument(s) satisfactory to the ~~a~~Administrator.

(h) The qualifying instrument(s) must be sufficient to cover the cost of the estimate required in subsection (d) of this section.

~~(h)~~(i) The qualifying financial responsibility instrument(s) must comprise protective conditions of coverage that include at a minimum cancellation, renewal, continuation provisions, specifications on when the provider becomes liable following a notice of cancellation, and requirements for the provider to meet a minimum rating, minimum capitalization, and the ability to pass the bond rating test when applicable.

(i) Cancellation – An owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the ~~a~~Administrator. The cancellation must not be final for 120 days after receipt of cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within sixty (60) days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled must be released within sixty (60) days of notification by the ~~a~~Administrator.

(ii) Renewal – Owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as, at a minimum, the owner or operator has the option of renewal at the face amount of the expiring instrument.

(iii) Continuation – Cancellation, termination, or failure to renew may not occur and the financial instrument shall remain in full force and effect in the event that on or before the date of expiration:

(A) The ~~a~~Administrator deems the facility abandoned.

(B) The permit is terminated, revoked, or a new permit is denied.

(C) Closure is ordered by the ~~a~~Administrator, a U.S. district court, or other court of competent jurisdiction.

(D) The owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code.

(E) The amount due is paid.

2861 ~~(j)~~(i) The qualifying financial responsibility instrument(s) must be approved by the
2862 ~~a~~A Administrator. The ~~a~~A Administrator shall also approve the use and length of pay-in-periods for
2863 trust funds and escrow accounts.

2864
2865 (i) The ~~a~~A Administrator shall consider and approve the financial responsibility
2866 demonstration for all the phases of the geologic sequestration project prior to issuing a Class VI
2867 permit.

2868
2869 (ii) The ~~a~~A Administrator may find that the financial responsibility
2870 demonstration is unsatisfactory for any reason, as long as that reason is not arbitrary or
2871 capricious. The ~~a~~A Administrator may exercise discretion in negotiating a satisfactory financial
2872 responsibility demonstration or to deny a demonstration.

2873
2874 (iii) The owner or operator must provide any updated information related to
2875 their financial responsibility instrument(s) on an annual basis and if there are any changes, the
2876 ~~director~~ Administrator must evaluate the financial responsibility demonstration to confirm that
2877 the instrument(s) used remain adequate for use. The owner or operator must maintain financial
2878 responsibility requirements regardless of the status of the ~~a~~A Administrator’s review of the
2879 financial responsibility demonstration.

2880
2881 (iv) The owner or operator must provide an adjustment of the cost estimate to
2882 the ~~a~~A Administrator within sixty (60) days of notification by the ~~a~~A Administrator, if the
2883 ~~a~~A Administrator determines during the annual evaluation of the qualifying financial responsibility
2884 instrument(s) that the most recent demonstration is no longer adequate to cover the cost of
2885 corrective action (as required by Section 8 of this chapter), injection well-plugging (as required
2886 by Section 16 of this chapter), post-injection site care and site closure (as required by Section 17
2887 of this chapter), and emergency and remedial response (as required by Section 18 of this
2888 chapter).

2889
2890 (v) During the active life of the geologic sequestration project, the owner or
2891 operator must adjust the cost estimate for inflation within sixty (60) days prior to the anniversary
2892 date of the establishment of the financial instrument(s) used to comply with paragraph (g) of this
2893 section and provide this adjustment to the ~~a~~A Administrator. The owner or operator must also
2894 provide to the ~~a~~A Administrator written updates of adjustments to the cost estimate within sixty
2895 (60) days of any amendments to the area of review and corrective action plan (Section 8 of this
2896 chapter), the injection well-plugging plan (Section 16 of this chapter), the post-injection site care
2897 and site closure plan (Section 17 of this chapter), the emergency and remedial response plan
2898 (Section 18 of this chapter), and mitigation or reclamation costs that ~~s~~State may incur as a result
2899 of any default by the permit holder.

2900
2901 (vi) The ~~a~~A Administrator must approve any decrease or increase to the initial
2902 cost estimate. During the active life of the geologic sequestration project, the owner or operator
2903 must revise the cost estimate no later than sixty (60) days after the ~~a~~A Administrator has approved
2904 the request to modify the area of review and corrective action plan (Section 8 of this chapter), the
2905 injection well-plugging plan (Section 16 of this chapter), the post-injection site care and site
2906 closure plan (Section 17 of this chapter), and the emergency and response plan (Section 18 of

2907 this chapter), if the change in the plan increases the cost. If the change to the plans decreases the
2908 cost, any withdrawal of funds must be approved by the ~~a~~Administrator. Any decrease to the
2909 value of the financial assurance instrument must first be approved by the ~~director~~Administrator.
2910 The revised cost estimate must be adjusted for inflation as specified in ~~the preceding~~ paragraph
2911 (k)(v) of this section.

2912
2913 (vii) Whenever the current cost estimate increases to an amount greater than the
2914 face amount of a financial instrument currently in use, the owner or operator, within sixty (60)
2915 days after the increase, must either cause the face amount to be increased to an amount at least
2916 equal to the current cost estimate and submit evidence of such increase to the ~~a~~Administrator, or
2917 obtain other financial responsibility instruments to cover the increase. Whenever the current cost
2918 estimate decreases, the face amount of the financial assurance instrument may be reduced to the
2919 amount of the current cost estimate only after the owner or operator has received written
2920 approval from the ~~a~~Administrator.

2921
2922 ~~(j)~~(k) The owner or operator may demonstrate financial responsibility by using one (1)
2923 or multiple qualifying financial instruments for specific phases of the geologic sequestration
2924 project.

2925
2926 (i) In the event that the owner or operator combines more than one (1)
2927 instrument for a specific geologic sequestration phase (e.g., well-plugging), such combination
2928 must be limited to instruments that are not based on financial strength or performance (i.e., self-
2929 insurance or performance bond). For example trust funds, surety bonds guaranteeing payment
2930 into a trust fund, letters of credit, escrow account, and insurance.

2931
2932 (ii) When using a third-party instrument to demonstrate financial
2933 responsibility, the owner or operator must provide proof that the third-party providers either have
2934 passed financial strength requirements based on credit ratings; or has met a minimum rating,
2935 minimum capitalization, and ability to pass the bond rating test when applicable.

2936
2937 (iii) An owner or operator using certain types of third-party instruments must
2938 establish a standby trust to enable the State of Wyoming to be party to the financial responsibility
2939 agreement without the State of Wyoming being the beneficiary of any funds. The standby trust
2940 fund must be used along with other financial responsibility instruments (e.g., surety bonds,
2941 letters of credit, or escrow accounts) to provide a location to place funds if needed.

2942
2943 (iv) An owner or operator may deposit money into an escrow account to cover
2944 financial responsibility requirements; this account must segregate funds sufficient to cover
2945 estimated costs for Class VI (geologic sequestration) financial responsibility from other accounts
2946 and uses.

2947
2948 (v) An owner or operator or its guarantor may use self-insurance to
2949 demonstrate financial responsibility for certain phases of geologic sequestration projects. In
2950 order to satisfy this requirement the owner or operator must meet a tangible net worth of an
2951 amount approved by the ~~a~~Administrator, have a net working capital and tangible net worth each
2952 at least six times the sum of the current well-plugging, post injection site care and site closure

2953 cost, have assets located in the United States amounting to at least 90 percent of total assets or at
2954 least six (6) times the sum of the current well-plugging, post injection site care and site closure
2955 cost, and must submit a report of its bond rating and financial information annually. In addition
2956 the owner or operator must either: have a bond rating test of AAA, AA, A, or BBB as issued by
2957 Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or meet all of the following five
2958 financial ratio thresholds: a ratio of total liabilities to net worth less than 2.0; a ratio of current
2959 assets to current liabilities greater than 1.5; a ratio of the sum of net income plus depreciation,
2960 depletion, and amortization to total liabilities greater than 0.1; a ratio of current assets minus
2961 current liabilities to total assets greater than -0.1; and a net profit (revenues minus expenses)
2962 greater than 0.

2963
2964 (vi) An owner or operator who is not able to meet corporate financial test
2965 criteria may arrange a corporate guarantee by demonstrating that its corporate parent meets the
2966 financial test requirements on its behalf. The parent's demonstration that it meets the financial
2967 test requirement is insufficient if it has not also guaranteed to fulfill the obligations for the owner
2968 or operator.

2969
2970 (vii) An owner or operator may obtain an insurance policy to cover the
2971 estimated costs of geologic sequestration activities requiring financial responsibility. This
2972 insurance policy must be obtained from a third party provider.

2973
2974 ~~(k)(l)~~ The owner or operator must maintain financial responsibility and resources until
2975 the administrator receives and approves the completed post-injection site care and site closure
2976 plan and the administrator approves site closure.

2977
2978 ~~(moved to Section 17(b)) — (i) — Post injection site care shall be for a period of not~~
2979 ~~less than ten (10) years after the date when all wells excluding monitoring wells have been~~
2980 ~~appropriately plugged and abandoned, all subsurface operations and activities have ceased and~~
2981 ~~all surface equipment and improvements have been removed or appropriately abandoned, or so~~
2982 ~~long thereafter as necessary to obtain a completion and release certificate from the administrator~~
2983 ~~certifying that plume stabilization has been achieved without the use of control equipment based~~
2984 ~~on a minimum of three consecutive years of monitoring data.~~

2985
2986 ~~(moved to Section 17(a)) — (ii) — The site closure plan shall address all reclamation,~~
2987 ~~required monitoring, and remediation sufficient to show that the carbon dioxide injected into the~~
2988 ~~geologic sequestration site will not harm human health, safety, the environment, or drinking~~
2989 ~~water supplies.~~

2990
2991 ~~(h)(m)~~ The owner or operator must notify the ~~a~~A administrator by certified mail of adverse
2992 financial conditions such as bankruptcy that may affect the ability to carry out injection well-
2993 plugging and post-injection site care and site closure.

2994
2995 (i) In the event that the owner or operator or the third party provider of a
2996 financial responsibility instrument is going through a bankruptcy, the owner or operator must
2997 notify the ~~a~~A administrator by certified mail of the commencement of a voluntary or involuntary

2998 proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor,
2999 within ten (10) days after commencement of the proceeding.

3000

3001 (ii) A guarantor of a corporate guarantee must make such a notification to the
3002 ~~a~~AAdministrator if he/she is named as debtor, as required under the terms of the corporate
3003 guarantee.

3004

3005 (iii) An owner or operator who fulfills the requirements of paragraph (g) of this
3006 section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance
3007 policy will be deemed to be without the required financial assurance in the event of bankruptcy
3008 of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee
3009 institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit,
3010 escrow account, or insurance policy. The owner or operator must establish other financial
3011 assurance within sixty (60) days after such an event.

3012

3013 ~~(m)~~(n) The owner or operator may be released from a financial instrument in the
3014 following circumstances:

3015

3016 (i) The owner or operator has completed the phase of the geologic
3017 sequestration project for which the financial instrument was required and has fulfilled all its
3018 financial obligations as determined by the ~~a~~AAdministrator, including obtaining financial
3019 responsibility for the next phase of the ~~GS~~ geologic sequestration project, if required.

3020

3021 (ii) The owner or operator has submitted a replacement financial instrument
3022 and received written approval from the ~~a~~AAdministrator accepting the new financial instrument
3023 and releasing the owner or operator from the previous financial instrument.

3024

3025 (iii) The owner or operator has submitted a revised cost estimate for the
3026 remaining phases of the geologic sequestration project. The revised cost estimate may
3027 demonstrate that a partial release of the financial instrument is warranted and can still provide
3028 adequate financial assurance for the remainder of the project. Partial release of the financial
3029 instrument is at the discretion of the ~~a~~AAdministrator.

3030

3031 ~~(n)~~(o) Following the release of all financial assurance and receipt of a site closure
3032 certificate, the ~~a~~AAdministrator must approve the cost estimate prepared for the post-closure
3033 measurement, monitoring and verification of a geologic sequestration site. The cost estimate
3034 shall only be provided after plume stabilization and all remediation work has been completed.

3035 **Section 20. Public ~~p~~PParticipation, ~~p~~PPublic ~~n~~NNotice and ~~p~~PPublic ~~h~~HHearing**
3036 **~~r~~RRequirements.**

3037

3038 ~~(a) — Public notice is not required for minor modifications as described by Section~~
3039 ~~4(b)(xi) of this chapter or for a permit denial where the application is determined incomplete.~~

3040

3041 ~~(b)~~(a) The ~~a~~AAdministrator shall give public notice if a draft permit has been prepared or
3042 a hearing has been scheduled.

3043
3044 ~~(e)~~(b) Public notice of the preparation of a draft permit shall allow at least sixty (60)
3045 days for public comment. Public notice of a public hearing shall be given at least thirty (30) days
3046 before the hearing. Public notice of the hearing may be given at the same time as public notice of
3047 the draft permit and the two notices may be combined.

3048
3049 ~~(d)~~(c) Public notice shall be given by:

3050
3051 (i) Mailing a copy of the notice, a copy of the fact sheet, the permit
3052 application (if any) and the draft permit (if any) to the following persons:

3053
3054 (A) The applicant, by certified or registered mail;

3055
3056 (B) The U.S. Environmental Protection Agency, Region 8 Drinking
3057 Water Program;

3058
3059 (C) The U.S. Environmental Protection Agency, Underground
3060 Injection Control Program;

3061
3062 (D) Wyoming Game and Fish Department;

3063
3064 (E) Wyoming State Engineer;

3065
3066 (F) State Historical Preservation Officer;

3067
3068 (G) Wyoming Oil and Gas Conservation Commission;

3069
3070 (H) Wyoming Department of Environmental Quality, Land Quality
3071 Division

3072
3073 (I) Wyoming State Geological Survey;

3074
3075 (J) Wyoming Water Development Office;

3076 (K) Wyoming Department of Environmental Quality, Air Quality
3077 Division;

3078
3079 (L) Wyoming Department of Environmental Quality, Solid and
3080 Hazardous Waste Division;

3081
3082 (M) U.S. Army Corps of Engineers;

3083
3084 ~~(K)~~(N) Persons on the mailing list developed by the ~~d~~D department,
3085 including those who request in writing to be on the list and by soliciting participants in public
3086 hearings in that area for their interest in being included on “area” mailing lists; and
3087

3088 ~~(L)~~(O) Any unit of local government having jurisdiction over the area
3089 where the facility is proposed to be located.

3090
3091 (ii) Publication of the notice in a newspaper of general circulation in the
3092 location of the facility or operation; and

3093
3094 (iii) At the discretion of the ~~a~~AAdministrator, any other method reasonably
3095 expected to give actual notice of the action in question to the persons potentially affected by it,
3096 including press releases or any other forum or medium to elicit public participation.

3097
3098 ~~(e)~~(d) All public notices issued under this chapter shall contain the following minimum
3099 information:

3100
3101 (i) Name and address of the ~~e~~DDepartment;

3102
3103 (ii) Name and address of permittee or permit applicant, and, if different, of the
3104 facility or activity regulated by the permit;

3105
3106 (iii) A brief description of the business conducted at the facility or activity
3107 described in the permit application or the draft permit;

3108
3109 (iv) The type and quantity of wastes, fluids, or pollutants that are proposed to
3110 be or are being treated, stored, disposed of, injected, emitted, or discharged.

3111
3112 (v) A brief summary of the basis for the draft permit conditions including
3113 references to applicable statutory or regulatory provisions;

3114
3115 (vi) Reasons why any requested variances or alternatives to required standards
3116 do or do not appear justified;

3117
3118 ~~(iv)~~(vii) Name, address and telephone number of a person from whom
3119 interested persons may obtain further information, including copies of the draft permit, as the
3120 case may be, statement of basis or fact sheet, and the application;

3121
3122 ~~(v)~~(viii) A brief description of comment procedures including,

3123
3124 ~~(formerly v)~~(A) ~~p~~Procedures to request a hearing; ~~and;~~

3125
3126 (B) The beginning and ending dates of the comment period;

3127
3128 (C) The address where comments will be received; and

3129
3130 ~~(formerly v)~~(D) ~~o~~Other procedures ~~which~~ that the public may use to
3131 participate in the final permit decision; and

3132
3133 ~~(vi)~~(ix) Any additional information considered necessary and proper.

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~~(e)~~(e) In addition to the information required in paragraph ~~(e)~~ (d) of this section, any notice for public hearing shall contain the following:

- (i) Reference to the date of previous public notices relating to the permit;
- (ii) Date, time and place of hearing; and
- (iii) A brief description of the nature and purpose of the hearing, including applicable rules and procedures.

~~(e)~~(f) The ~~d~~Department shall provide an opportunity for the applicant, permittee, or any interested person to submit written comments regarding any aspect of a permit or to request a public hearing.

~~(h) All information received on or with the permit application shall be made available to the public for inspection and copying except such information as has been determined to constitute trade secrets or confidential information pursuant to W.S. 35-11-1101.~~

~~(i)~~(g) During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing. Requests for public hearings must be made in writing to the ~~a~~Administrator and shall state the reasons for the request.

~~(i)~~(h) The ~~a~~Administrator shall hold a hearing whenever the ~~a~~Administrator finds, on the basis of requests, a significant degree of public interest in a draft permit. The ~~a~~Administrator has the discretion to hold a hearing whenever such a hearing may clarify issues involved in a permit decision.

~~(i)~~(i) The public comment period shall automatically extend to the close of any public hearing. The ~~a~~Administrator may also extend the comment period by so stating at the public hearing.

~~(i)~~(j) The ~~a~~Administrator shall render a decision on the draft permit within sixty (60) days after the completion of the comment period if no hearing is requested. If a hearing is held, the ~~a~~Administrator shall make a decision on any ~~d~~Department hearing as soon as practicable after receipt of the transcript or after the expiration of the time set to receive written comments.

~~(m)~~(k) At the time a final decision is issued, the ~~d~~Department shall respond, in writing, to those comments received during the public comment period or comments received during the allotted time for a hearing held by the ~~d~~Department. This response shall:

- (i) Specify any changes that have been made to the permit; and
- (ii) Briefly describe and respond to all comments voicing a ~~legitimate~~ technical or regulatory concern that is within the authority of the ~~d~~Department to regulate.

3180 ~~(n)~~(l) The response to comments shall also be available to the public.

3181

3182 ~~(o)~~(m) Requests for a contested case hearing on a permit issuance, denial, revocation,
3183 termination, or any other final ~~e~~Department action appealable to the Council shall be in
3184 accordance with the ~~department's~~ Department of Environmental Quality ~~r~~Rules of ~~p~~Pactice and
3185 ~~p~~Procedure.

3186

Appendix A. Risk Activity Table

	Major Risk (Feature, Event, or Process)
1	Mineral Rights Infringement <u>Infringement</u> (Trespass)
1.1	Leakage migrates into mineral zone or hydraulic front impacts recoverable mineral zone; causes may include plume migration different than modeled.
1.2	Post injection discovery of recoverable minerals.
1.3	New technology (or economic conditions) enables recovery of previously un-economically recoverable minerals.
1.4	Act of God (e.g. seismic event).
1.5	Formation fluid impact due to CO ₂ injection.
1.6	Address also contributing causes 3.1, 3.2, 3.3, 3.5, 4.3, and 4.4
2	Water Quality Contamination
2.1	Leakage of CO ₂ outside permitted area.
2.2	Leakage of drilling fluid contaminates potable water aquifer.
2.3	Rock/acid water (i.e. geochemistry) interaction contaminates potable water by carryover of dissolved contaminants.
2.4	Act of God (e.g. seismic event).
2.5	Formation fluid impact due to CO ₂ injection.
2.6	See also contributing causes 3.1, 3.2, 3.3, 3.5, 4.3, and 4.4
3	Single Large Volume CO₂ Release to the Surface – Asphyxiation/Health/Ecological
3.1	Overpressurization (i.e. induced).
3.2	Caprock/reservoir failure.
3.3	Well blowout (e.g. at surface or bore failure below ground), includes monitoring wells – Causes could include seal failure (e.g. well, drilling or injection equipment).
3.4	Major mechanical failure of distribution system or storage facilities above ground or below ground (i.e. near the surface).
3.5	Orphan well failure (e.g. well not identified prior to injection).
3.6	Sabotage/Terrorist attack (e.g. on surface infrastructure).
3.7	Act of God (e.g. major seismic event)
4	Low Level CO₂ Release to Surface – Ecological damage due to low-level releases; potential asphyxiation of human or ecological receptors
4.1	Overpressurization (i.e. induced).
4.2	Caprock/reservoir failure (e.g. Plume migrates along fault line/fissure to surface).
4.3	Incomplete geological seal (e.g. inaccurate characterization of sub-surface geology).
4.4	Well seal failure (e.g. well, drilling or injection equipment) including monitor wells
4.5	Mechanical failure of distribution system or storage facilities above or below ground (e.g. near surface).
4.6	Orphan wells (e.g. well not identified prior to injection).
4.7	Induced seismicity leading to leakage.
4.8	Act of God (e.g. seismic event).

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Risk Activity Table (continued)

	Major Risk (Feature, Event, or Process)
5	Storage Rights Infringement (CO₂ or other entrained contaminant gases) – Form of Mineral Rights Infringement
5.1	Leakage migrates into adjacent pore space; causes may include plume migrates faster than modeled.
5.2	Post injection decision (e.g. due to new technology or changed economic conditions) to store gas in adjacent pore space.
5.3	Acts of God affecting storage capacity of pore space.
5.4	Formation fluid impact due to CO ₂ injection.
5.5	Will also require primary contributing causes 3.1, 3.2, 3.3, 3.5, 4.3, and 4.4
6	Modified Surface Topography (subsidence or uplift) Resulting in Property/Infrastructure Damage
6.1	Induced Seismicity – Pressure from geochemistry induced reactivation of historic fault or dissolution of material caused by subsidence.
6.2	Formation fluid impact due to CO ₂ injection.
7	Entrained Contaminant (Non-CO₂) Releases
7.1	Change in CO ₂ composition/properties (e.g. concentration of contaminate in CO ₂ supply increases).
7.2	Microbial activity initiated by injection process or composition.
	Will also require primary contributing causes 3.1, 3.2, 3.3, 3.5, 4.3, and 4.4
8	Accidents/Unplanned Events (Typical Insurable Events)
8.1	Surface infrastructure damage
8.2	Saline water releases from surface storage impoundment.