EPA Region 6
End-of-Year Review
for the
Oil Conservation Division (OCD) of the
New Mexico Energy, Minerals, and Natural Resources Department
Underground Injection Control (UIC) Program
State Fiscal Year 2011 (FY11)
July 1, 2010 through June 30, 2011

I. Introduction

The Oil Conservation Division of the New Mexico Energy, Minerals, and Natural Resources Department (EMNRD) is the lead agency for the State's Underground Injection Control (UIC) program. The OCD has jurisdiction over Class I non-hazardous wells permitted to receive oilfield non-exempt refinery wastes, all Class II wells, Class III brine solution mining wells, Class V wells.

The EPA granted primacy for Class II wells in New Mexico directly to the Oil Conservation Division (OCD) in 1982 and all other UIC types to the New Mexico Water Quality Control Commission (WQCC) in 1983. The oil field and geothermal related WQCC UIC wells are administered by the OCD. The non-oil field related UIC wells are administered by the New Mexico Environment Department.

This annual review considers all activities of the approved State UIC program administered by the OCD, including those identified in the grant work plan as well as other program activities, for the period July 1, 2010, through June 30, 2011. The total New Mexico UIC grant awarded in FY11 was $325,622; OCD received $238,330 based on the joint powers agreement between OCD and the New Mexico Environment Department.

II. Work Plan Objectives and Activity Level

Well Inventory

1. Class II wells - The OCD Engineering Bureau and District Office Inspectors have jurisdiction over Class II wells injecting oilfield exempt wastes and/or wells involved in enhanced oil recovery (EOR) and Class II LPG Storage wells where the gas is liquid at STP. As of August 2011, the total inventory was 4613, which included 4331 active (3549 EOR and 782 saltwater disposal (SWD) wells and 282 temporarily abandoned (267 EOR and 15 SWD) wells. In addition, there were 2458 plugged and abandoned wells. Figure 1 shows the Class II well inventory variation for the last five years. Class II LPG Storage wells remained at zero.

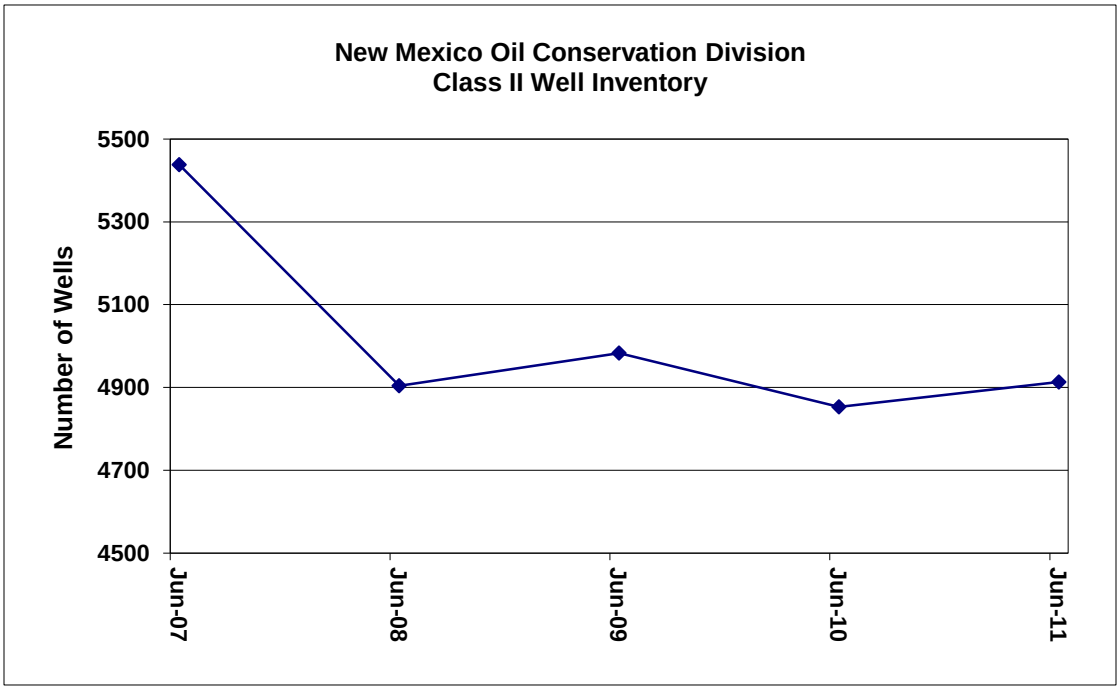


Figure 1: Class II active and temporarily abandoned injection well inventory

2. Class I, III, and V wells – The OCD Environmental Bureau has jurisdiction over Class I non-hazardous wells injecting oilfield non-exempt wastes, Class III brine solution mining wells where fresh water is injected into a salt formation to produce high density brine for drilling, Class V geothermal injection wells where geothermal reservoir temperature is less than or higher than 250°F, and any other Class V wells used in the oil, gas and geothermal industries. Table 1 reports the OCD Class I, III, and V well inventory.

   During FY11, the total number of Class I non-hazardous active disposal wells remained at five.

   Class III wells included 10 active with 9 permits. With its Reclamation Fund, the OCD continues to monitor for subsidence/collapse potential and characterize the configuration of the brine cavern in Carlsbad. Additional remote geophysical surveys have been completed using magnetotellurics and induced polarization resistivity. Water levels, cavern pressure, surface subsidence, surface tilt, and building fracture are measured continuously. All data indicates slight but consistent ground movement.

   There are currently no Class V Geothermal wells or other Class V active wells under OCD's jurisdiction. In July 2009, OCD permitted Raser Technologies to construct high temperature geothermal injection wells to produce binary cycle system commercial power near Animas, New Mexico. As a result, two new wells have been drilled; however, Raser Technologies filed for bankruptcy in April 2011. There is a plan to restructure in order to complete this project. During FY11, OCD continued its efforts to identify and close any Class V wells at oil, gas and geothermal facilities that threaten drinking water; however, none was identified. Razor Technologies has not formally applied to have these two wells converted to injection

wells. Until these applications have been submitted and approved, the OCD Class V well count will remain at zero (0).

Table 1 - Class I, III, and V inventory

	Class I Non-hazardous			Class III			Class V		
Date Tabulated	AC[1]	TA[2]	PA[3]	AC	TA	PA	AC	TA	PA[4]
6/30/2007	5	0	0	18	3	14	0	0	27
6/30/2008	5	0	0	13	7	15	0	0	27
6/30/2009	5	0	0	10	0	27	0	0	27
6/30/2010	5	0	0	10	0	24	0	0	27
6/30/2011	5	0	0	10	0	24	0	0	27

[1] - Active
[2] - Temporarily Abandoned
[3] - Plugged and Abandoned
[4] - It is the policy of the Environmental Bureau to close Class V wells discovered at oil, gas and geothermal facilities that threaten drinking water. Since the program started in 1997, cumulatively 27 have been closed by this program.

Testing

Major workplan field activities are required by regulations and/or guidance. Specific field activities for the three major classes of injection wells within the OCD UIC program are presented in Table 2.

Table 2- FY11 Mechanical Integrity Testing (7/1/10 to 6/30/11)

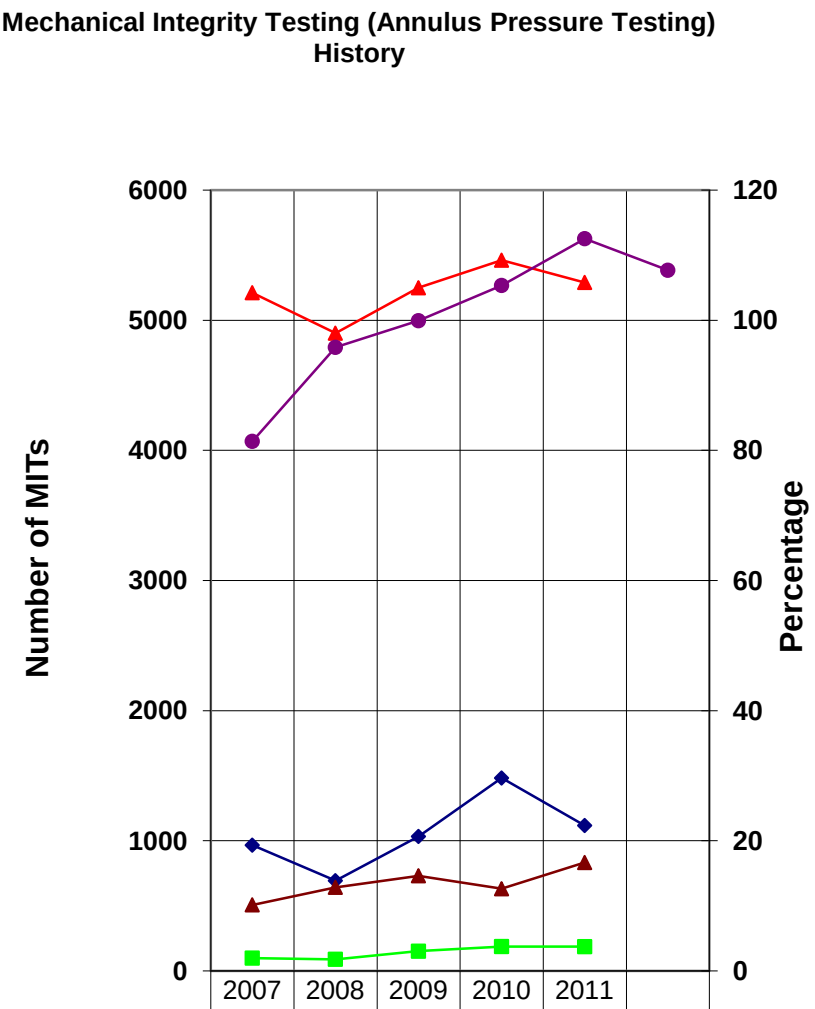
Activity	Well Class	Work Plan Target	Accomplished During FY11	Percent of Goal
Annulus Pressure Tests*	I	1	1	100.0
	II	880	1117	127.0
	III	10	8	80.0

* Based on OCD submitted end-of-year report (July 1, 2010 to June 30, 2011)

1. Class I non-hazardous wells – During FY08, with EPA assistance, OCD staff developed the Fall-off Test Guidance for Class I wells. Based on the UIC Primacy Memorandum of Agreement with EPA, OCD is required to complete at least one Fall-off Test before permit renewal or every 5 years. During FY11, OCD implemented the annual Fall-off Test requirements from that guidance for one of its Class I wells. Fall-off Test's on four Class I wells will be completed by the State FY12 Q2 (by December 31, 2011).

2. Class II wells – In FY11, the failure rate for both annulus pressure and bradenhead tests was

5.9 percent. To address well integrity problems, the Bureau issued a notice of violation and followed up with a letter to the owners of these wells. In addition, OCD continues to monitor their progress until they are in compliance.



	2007	2008	2009	2010	2011	
MITs Conducted	966	693	1033	1482	1117	
MITs Failed	98	89	151	187	186	
MITs conducted within past 5 yrs	5212	4901	5250	5462	5291	
MITs Failure (%)	10.1	12.8	14.6	12.6	16.7	
Inventory tested within past 5 yrs (%)	81.4	95.8	99.9	105.4	112.5	107.7

Figure 2: Mechanical Integrity Tests (Annulus Pressure Tests) for Class II wells

- Annulus pressure tests – OCD continues to place high emphasis on conducting and witnessing MITs, and is again commended for its efforts implementing this important

component of the UIC program. As shown in Figure 2, the state reported 1117 tests were conducted in FY11. This far exceeded the target of 880 that the Bureau had set. Figure 2 shows the annulus pressure test failure rate in FY11 was 16.7 percent. All regularly scheduled Class II five-year MITs were witnessed.

- Bradenhead tests – The OCD reported that in FY11, 5139 bradenhead tests were conducted and the failure rate for these tests is 3.5% or 181 wells. Even though OCD did not achieve its target of 8114 wells tested, these tests are not required by Federal regulations. OCD conducts bradenhead tests because they are helpful for detecting mechanical integrity problems in Class II wells as well.

3. Class III wells - The Environmental Bureau conducted 8 mechanical integrity tests (MITs) on Class III wells during this fiscal year. While the EPA requires MIT every five years or after any well completion work, OCD requires formation or salt cavern testing or MIT on an annual basis. Therefore, OCD actually is still 90% in compliance with federal requirements because in FY09, it conducted mechanical integrity tests on 9 out of 10 total Class III wells.

Inspections

Similar to MIT tests, the OCD far exceeded its projected target of 1567 Class II wells for inspection during this fiscal year. The state reported 5320 inspections in FY11. Figure 3 summarizes total number of Class II wells inspected by the OCD during each of the last five years.

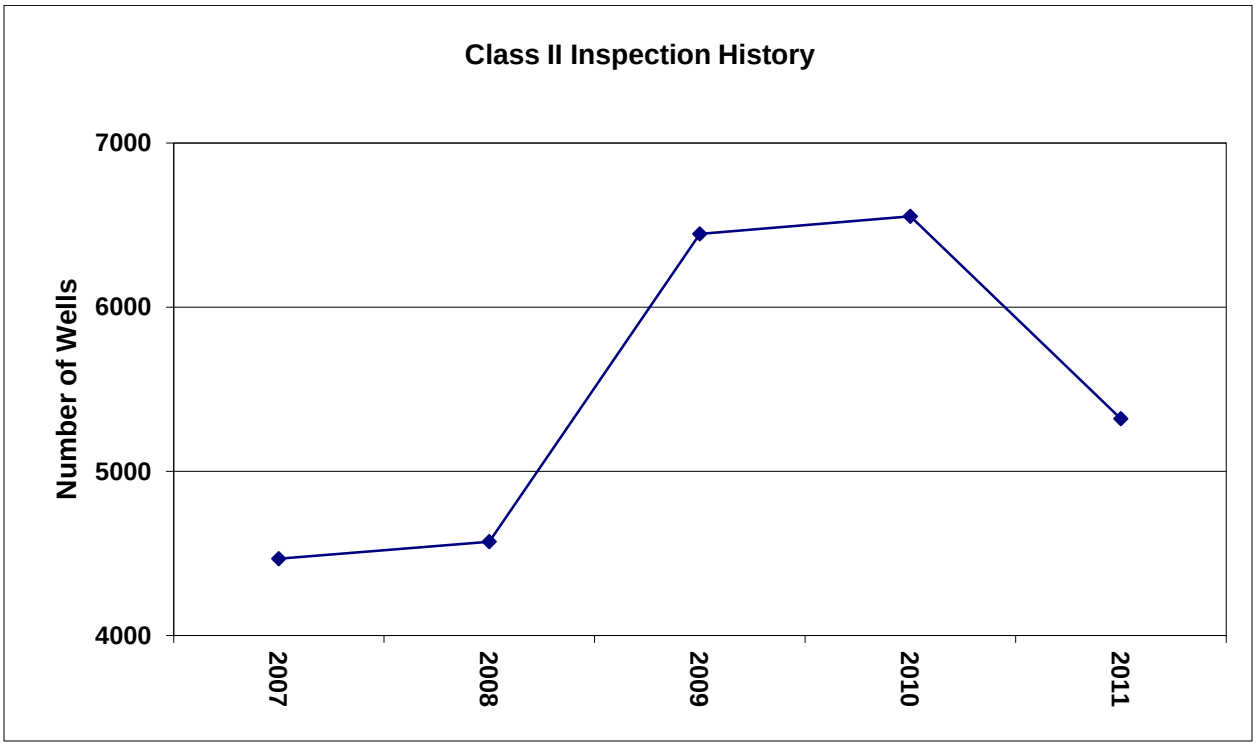


Figure 3: Inspections for Class II wells

Permitting

In its FY11 workplan, the OCD estimated that 116 new permit applications would be received, 151 Class II injection wells would be authorized, and 15 major permit modifications would be required. The actual numbers of permits received, modified, and denied are shown in Table 3. All are higher than their projected numbers.

Table 3 - FY11 Permit Activities (7/1/10 to 6/30/11)

Activity	Salt Water Disposal	Enhanced Oil Recovery	Total Permits	Number of Wells Permitted
Permit Applications Received	112	30	142	213
Major Permit Modifications	14	14	28	-
Permits Denied	33	1	34	-

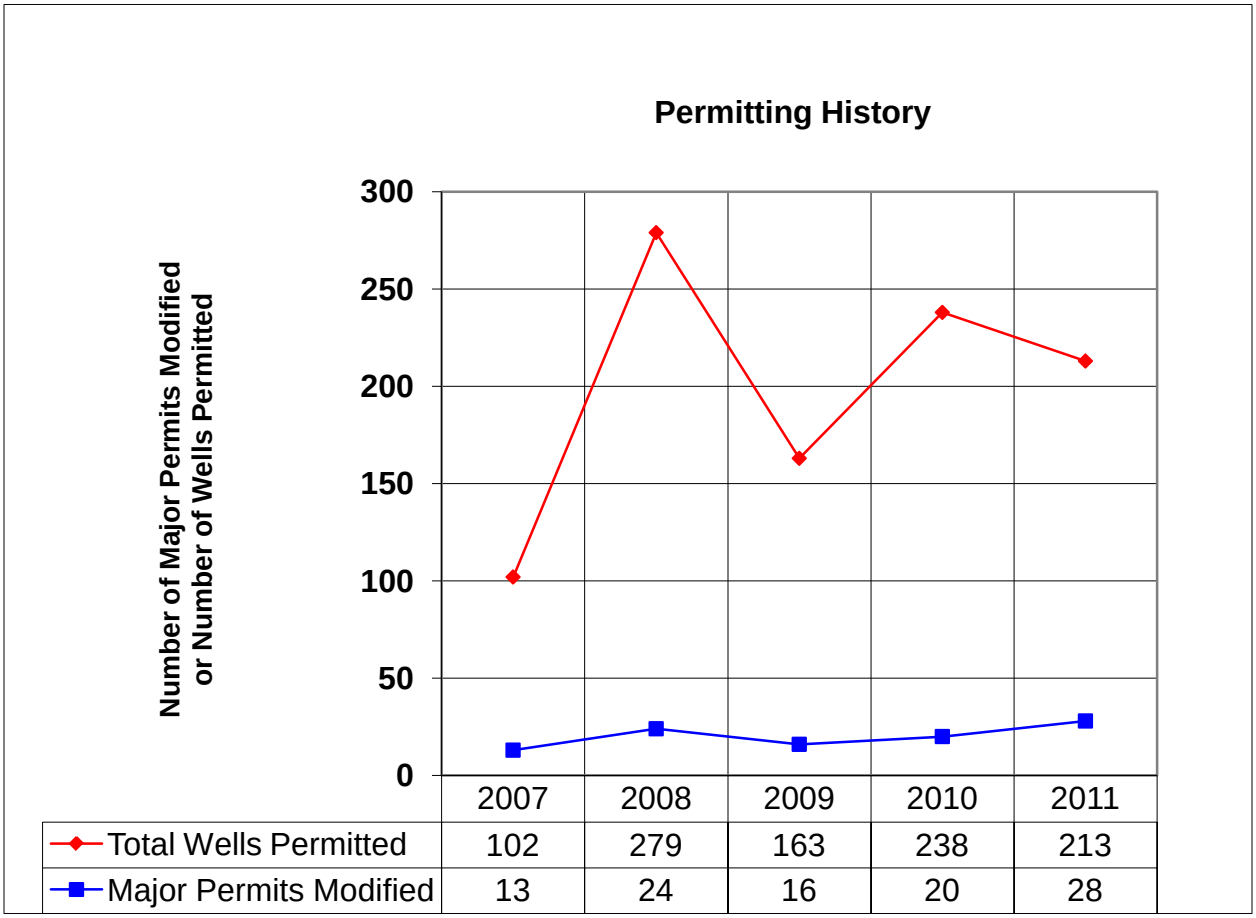


Figure 4: Permitting Activity for Class II Wells

Figure 4 shows the number of wells permitted and the number of major permits modified by OCD during the last five years. The total number of wells permitted in FY11 was decreased slightly from that of last fiscal year. However, there was a slight increase in the number of major permits modified for this fiscal year.

Work Plan Deliverables

Table 4 lists the deliverables submitted to Region 6 for FY11. The Quality Management Plan (QMP) and Quality Assurance Project Plan (QAPP) are updated annually by amendment, including new concurrence signature pages and current organizational charts.

Table 4 - FY11 Grant Work Plan Deliverables

Deliverables	**Due Date**	**Received**
FY 2011 Final Financial Status Report	09/30/11	10/04/11
Annual UIC Program Report (FY11)	07/30/11	07/27/11
UIC Annual Inventory (FY11)	01/30/11	12/06/10
7520 Reports	10/30/10, 01/30/11, 04/30/11, 07/30/11	10/30/10, 01/30/11, 04/30/11, 07/30/11
Update of QMP	07/29/11	07/05/11
Update of QAPP	09/29/11	08/19/11
Final FY 2012 Work Plan	05/01/11	04/29/11

Enforcement

Table 5 summarizes the number of violations of Class II wells discovered by the OCD from July 1, 2010 to June 30, 2011 and reported on EPA Form 7520-2A. With the exception of MIT violations, all other type of violations decreased during this fiscal year. Compared to FY10, the number of mechanical integrity violations was increased slightly by 9%, about 26 more wells. Both numbers of operation and maintenance violations and of monitoring and reporting violations went down by almost half. Notably, in FY11, the plugging and abandonment violations significantly decreased by 84% compared to last fiscal year due to increased activities in the field; therefore, fewer wells are being plugged and more are being brought into compliance to be used as active disposal wells.

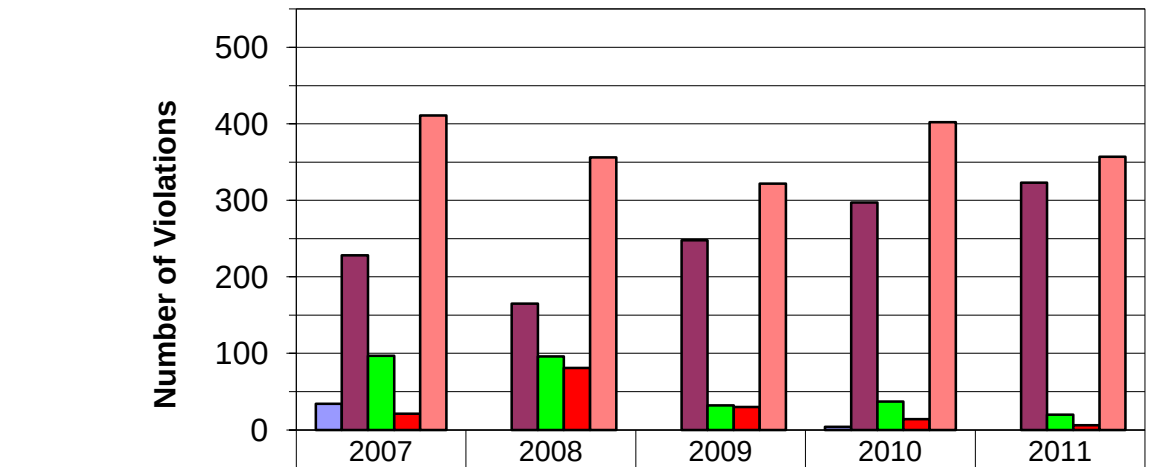
Table 5 - Summary of Class II Well Violations (7/1/10 – 6/30/11)

Item	Salt Water Disposal	Enhanced Oil Recovery	Total
Unauthorized Injection	0	0	0
Mechanical Integrity	49	274	323
Operation & Maintenance	3	17	20
Plugging and Abandonment	1	7	8
Monitoring & Reporting	5	1	6
Total of Violations	58	299	357

Table 6 - Summary of Class II Well Enforcement Activities (7/1/10 – 6/30/11)

Item	Salt Water Disposal	Enhanced Oil Recovery	Total
Number of wells w/violations	115	386	501
Number of wells w/enforcement action	44	247	291
Notices of violation	0	0	0
Other Enforcement Actions (e.g. emergency inspections)	43	247	290
Wells shut-in	0	1	1
Number of wells returned to compliance	50	239	289

Table 6 shows 501 Class II wells with violations and 291 wells with enforcement actions. The difference is because some wells had multiple violations. The number of wells with violations reported in Table 6 is higher than the total violations shown on Figure 5 because this total did not include injection pressure/rate and other violations. In FY11, OCD did not issue any notice of violation but required one well to be shut-in until compliance was obtained. At the time of this report, 289 wells with violations have been returned to compliance. Efforts to obtain compliance for the remaining wells are ongoing. In addition, OCD performed 290 other enforcement actions, mainly emergency inspections.



	2007	2008	2009	2010	2011
Unauth. Injection	34	0	0	4	0
Mech. Integrity	228	165	248	297	323
Oper. & Mainten.	97	96	32	37	20
Monitoring & Report	21	81	30	14	6
Total Violations	411	356	322	402	357

Figure 5: Violations History

Current Initiatives

1. Injection Reporting Compliance – During FY11, OCD identified 57 Class II SWD wells that have not been reported on the C-115 Operators' Monthly Report: 4 are operated by Marks & Garner Production LTD Company and RHCJ Enterprises whose authority to transport and inject has been revoked, 15 are covered by an Agreed Compliance Order, and 38 are operated by operators whom OCD are working with to get them to file C-115's.

2. Protectable Waters Within Disposal Intervals – The effort to identify and protect fresh waters within any proposed disposal interval is on going. OCD's geologists and engineers actively watch for protectable waters whenever they evaluate a permit. The Capitan Reef in Southeast New Mexico also contains both protectable and non-protectable waters. OCD considers the Capitan Reef massive carbonate to be off limits to oil field water disposal operations.

3. EPA's National UIC Database System – OCD has reviewed the mapping for the EPA's National UIC Database and looks forward to providing information that has been keyed into its Risk-Based Data Management System (RBDMS) system. However, any requested information that is not keyed into RBDMS will not be available for transfer.

That data is currently being identified by OCD staff who supplied it for the UIC reports.

4. Risk-Based Data Management System (RBDMS) system – The RBDMS database system remains vitally important to the administration and functionality of the New Mexico UIC program. OCD uses RBDMS to track UIC Class I, II, and III tasks among other entities. Technology advancements in operating and database management systems require the need to update RBDMS. During FY 11, EPA awarded OCD $24,450 for this special project and OCD plans to purchase new software and sufficient Structured Query Language (SQL) licenses in order to migrate RBDMS into a web-based system that houses all other OCD data in one integrated application and location.