



**California Department of Conservation
Division of Oil, Gas, and Geothermal Resources**

Underground Injection Control Program Report

On Permitting and Program Assessment

Reporting Period of October 1, 2014 through September 30, 2015

Prepared pursuant to Senate Bill 83

(Ch. 24, Stats. Of 2015)



STATE OF CALIFORNIA
EDMUND G. BROWN, JR.
Governor

NATURAL RESOURCES AGENCY
JOHN LAIRD
Agency Secretary

DEPARTMENT OF CONSERVATION
DAVID BUNN
Director

Underground Injection Control Program Report on Permitting and Program Assessment

Reporting Period of October 1, 2014 through September 30, 2015
Prepared pursuant to Senate Bill 83 (Ch. 24, Stats. of 2015)

Introduction

Section 45 of Senate Bill (SB) 83 (Chapter 24, Statutes of 2015), requires the Department of Conservation's (Department) Division of Oil, Gas, and Geothermal Resources (Division) and the State Water Resources Control Board (State Water Board) to semi-annually report to the relevant committees of the Legislature on the following nine topics related to the Division's Underground Injection Control (UIC) Program:

- (1) The number and location of underground injection wells and permits and project approvals issued by the Department, including permits and projects that were approved but subsequently lapsed without having commenced injection.
- (2) The average length of time to obtain an underground injection permit and project approval from date of application to the date of issuance.
- (3) The number and description of underground injection permit violations identified.
- (4) The number of enforcement actions taken by the Department.
- (5) The number of shut-in orders or requests to relinquish permits and the status of those orders or requests.
- (6) The number, classification, and location of underground injection program staff and vacancies.
- (7) Any state or federal legislation, administrative, or rulemaking changes to the program.
- (8) The status of the review of the UIC projects and summary of the program's assessment findings completed during the reporting period, including any steps taken to address identified deficiencies.
- (9) Summary of significant milestones in their compliance schedule agreed to with the United States Environmental Protection Agency (US EPA), as indicated in the March 9, 2015, letter to the Division and the State Water Board from the US EPA, including, but not limited to, regulatory updates, evaluations of injection wells, and aquifer exemption applications.

SB 83 extended the reporting requirements outlined in SB 855 (Chapter 715, Statutes of 2010), and added requirements (8) and (9) to the report. The most recent SB 855 Report, which reported on the UIC Program activities for 2011-2014, was submitted to the Legislature on October 8, 2015. The Department also submitted a Renewal Plan that outlines Department efforts to overhaul the UIC Program while emphasizing the protection of public health and the environment.

This initial SB 83 report is due January 30, 2016. Subsequent reports are due every six months thereafter until March 1, 2019. This report includes the required information from October 1, 2014 to September 31, 2015 (reporting period), unless otherwise noted. This reporting period aligns with the federal budget year, and the Division's reporting to the US EPA.

The Department and State Water Board are working closely on UIC-related issues. The two organizations hold regular meetings, and are documenting processes, identifying roles and responsibilities, conducting oilfield visits, and participating in trainings.

(1) The number and location of underground injection wells, permits, and project approvals issued by the Department, including permits and projects that were approved, but subsequently lapsed without having commenced injection.

A total of 53,315 active, idle, and new wells existed in California during the reporting period. This total includes all disposal, enhanced oil recovery, and gas storage wells. Ninety-six percent of these are enhanced oil recovery wells, and slightly more than 81 percent are located in the area managed by the Division's District Office based in Bakersfield. A detailed breakdown is below:

Number and Location of UIC Wells

Location/ County	No. of UIC Wells*			Total
	Disposal	Enhanced Oil Recovery	Gas Storage*	
Cypress District Office	35	2,052	69	2,156
Los Angeles	22	1,757	69	1,848
Orange	12	293	0	305
San Bernardino	1	2	0	3
Ventura District Office	140	1,162	145	1,447
Los Angeles	41	391	145	577
Ventura	99	771	0	870
Orcutt District Office	182	1,925	21	2,128
Monterey	47	949	0	996
San Luis Obispo	17	260	0	277
Santa Barbara	116	714	21	851
Santa Clara	2	2	0	4
Bakersfield District Office	1,355	43,356	1	44,712
Kern	1,347	43,352	1	44,700
Kings	1	0	0	1
San Luis Obispo	0	4	0	4
Tulare	7	0	0	7

Continued on next page.

Number and Location of UIC Wells (Continued)

Location/ County	No. of UIC Wells*			Total
	Disposal	Enhanced Oil Recovery	Gas Storage*	
Coalinga District Office	72	2,587	13	2,672
Fresno	63	2,581	0	2,644
Kings	5	6	0	11
Madera	3	0	12	15
San Benito	1	0	1	2
Sacramento District Office	31	0	169	200
Alameda	2	0	0	2
Butte	1	0	17	18
Colusa	2	0	8	10
Contra Costa	0	0	21	21
Glenn	3	0	0	3
Sacramento	3	0	0	3
San Joaquin	5	0	98	103
San Mateo	2	0	0	2
Solano	7	0	18	25
Sutter	3	0	0	3
Tehama	3	0	0	3
Yolo	0	0	7	7
Total	1,815	51,082	418	53,315

* This includes all new and idle wells. A new well is a well that has been approved for injection, but has yet to report data indicating that injection has occurred. An idle well is defined in Public Resources Code Section 3008 as "any well that has not produced oil or natural gas or has not been used for injection for six consecutive months of continuous operation during the last five or more years."

Number and Location of Injection Well Permits

During the reporting period, the Department issued 1,932 injection well permits involving 1807 wells. Of the 1,932 total injection well permits, 452 did not lead to injection. The breakdown is below:

District Office/County	No. of UIC Well Permits
Cypress District Office	186
Los Angeles	96
Los Angeles Offshore	74
Orange	10
Orange Offshore	6
Ventura District Office	54
Los Angeles	15
Ventura	39
Orcutt District Office	52
Monterey	24
San Luis Obispo	15
Santa Barbara	13
Bakersfield District Office	1,526
Kern	1,526
Coalinga District Office	106
Fresno	105
Kings	1
Sacramento District Office	8
Colusa	1
Glenn	2
San Joaquin	2
Solano	3
Total	1,932

Project Approvals

During the reporting period, the Department approved seven projects.

Location / County	No. of UIC Projects Approved
Cypress District Office	0
Ventura District Office	1
Los Angeles	1
Orcutt District Office	0
Bakersfield District Office	4
Kern	4
Coalinga District Office	2
Fresno	1
San Benito	1
Sacramento District Office	0
Total	7

(2) The average length of time to obtain an underground injection permit and project approval from date of application to date of issuance.

UIC Project Approval

On average, the Department required 181 days to process and approve an injection project. Injection project review involves Division staff evaluating detailed engineering and geologic studies, an injection plan, and conducting an area of review analysis (among other tasks). A project may implicate hundreds of wells in the area of review analysis. The State Water Board must also review and concur with Department approval of the project, and all projects are required to go through a public comment period.

UIC Well Permit Issuance

The average time required to issue a well permit was 7 days during the reporting period. UIC well permits are generally issued within an approved UIC project area. To issue a well permit in a UIC project area, Division staff may rely upon the project review and must ensure that the well meets construction standards.

(3) The number and description of underground injection permit violations identified.

During the reporting period, the following number of permit violations were identified:

Permit Violations Identified	
Unauthorized Injection	39
Mechanical Integrity	65
Operations and Maintenance	191
Plugging and Abandonment	33
Monitoring and Reporting Violations	701
Other Violations	15
Total	1,044

(4) The number of enforcement actions taken by the Department.

During the reporting period, the following enforcement actions were undertaken:

Enforcement Actions Taken	
Notices of Violations Issued	899
Administrative Orders	2
Well shut-ins	52
Other Enforcement Actions	109
Total	1,062

(5) The number of shut-in orders or requests to relinquish permits and the status of those orders or requests.

The Division issued two Orders. An additional 52 wells were shut in. The 52 well closures can be broken down as follows:

- Eighteen wells were shut-in for various operational issues that did not require enforcement via an Order.
- Thirty-three wells were affected by the Department's Emergency Order approved on April 20, 2015 regarding aquifer exemption compliance. During the current SB 83 reporting period, ending September 20, 2015, 26 out of the 33 were included in the shut-in enforcement. The other seven were also closed, but will be included in the next reporting cycle. The operators of all 33 complied with the Division's request to close their wells.
- Eight wells were voluntarily relinquished by operators. These wells were cited in the SB 855 report, but were closed during this SB 83 reporting cycle.

(6) The number, classification, and location of underground injection program staff and vacancies.

Department of Conservation			
Location	Job Classification	No. of Positions	No. of Vacancies
Sacramento (HQ)	Associate Oil & Gas Engineer	3	1
	Senior Oil & Gas Engineer	1	0
	Research Program Specialist-GIS	2	1
	Attorney	1	0
	Governmental Program Analyst	3	1
Cypress District Office	Associate Oil & Gas Engineer	6	1
	Engineering Geologist	8	0
	Senior Oil & Gas Engineer	2	0
Ventura District Office	Associate Oil & Gas Engineer	1	0
Orcutt District Office	Associate Oil & Gas Engineer	1	0
	Senior Oil & Gas Engineer	1	1
Bakersfield District Office	Associate Oil & Gas Engineer	7	2
	Senior Oil & Gas Engineer	2	0
	Engineering Geologist	8	2
Coalinga District Office	Associate Oil & Gas Engineer	1	0
Sacramento District Office	Associate Oil & Gas Engineer	1	0
	Engineering Geologist	1	0
Unassigned positions	Associate Oil & Gas Engineer	3	3
Total		52	12

State Water Resources Control Board			
Location	Job Classification	No. of Positions	No. of Vacancies
Sacramento	Engineering Geologist	7	1
	Water Resources Control Engineer	1	0
	Attorney	1	0
Central Valley Region (Fresno)	Engineering Geologist	2	1
	Water Resources Control Engineer	3	0
Central Coast Region (San Luis Obispo)	Engineering Geologist	3	2
Los Angeles Region	Engineering Geologist	1	0
	Water Resources Control Engineer	1	0
Total		22	5
Total (Both Departments)		74	17

(7) Any state or federal legislation, administrative, or rulemaking changes to the program.

Federal Legislation

Nothing to report.

State Legislation

SB 83 expanded upon the process for the state to follow when proposing new aquifer exemptions to US EPA. (Public Resources Code, Sections 3130, 3131, and 3132.). Prior to proposing an aquifer exemption to US EPA, the Division must do the following: (1) consult with the State Water Board and the appropriate regional water quality control board to ensure that the aquifer meets applicable criteria; (2) provide a public comment period; (3) conduct a public hearing with the State Water Board; and (4) until March 1, 2019, notify the relevant legislative policy committees before submitting the exemption proposal to US EPA.

UIC Regulatory Changes

Aquifer Exemption Compliance Regulations

On April 20, 2015, the Office of Administrative Law approved the Division's Aquifer Exemption Compliance Schedule Regulations pursuant to an emergency rulemaking process. The regulations give legal effect to a compliance schedule directed by US EPA for phasing out injection into non-exempt aquifers that meet the federal regulatory definition of an underground source of drinking water. The first compliance deadline occurred on October 15, 2015, which resulted in the cessation of injection operations at thirty-three wells. All of the affected operators voluntarily complied with the shut-in deadline established in the emergency regulations, which obviated the need for Division-issued enforcement orders.

The Division is currently in the later stages of promulgating the Aquifer Exemption Compliance Schedule Regulations as permanent regulations, and this process is expected to be completed during the first half of 2016. The permanent regulations would implement the next rounds of compliance deadlines, proposed to occur on December 31, 2016 and February 15, 2017.

The Aquifer Exemption Compliance Schedule Regulations are an important cornerstone of the Division's overall effort to bring the UIC Program into compliance with the federal Safe Drinking Water Act, and the compliance deadlines are the product of extensive discussions between US EPA, the Division, and State Water Board.

Performance Standards for Gas Storage Projects

On January 15, 2016, the Department issued notice of its intent to propose the adoption of emergency regulations to help ensure that operators of underground gas storage facilities properly mitigate risks and take all appropriate steps to prevent uncontrolled releases, blowouts, and other infrastructure-related accidents. The emergency regulations will be established under the emergency rulemaking process to ensure that protective standards are in place until permanent regulations are finalized.

The proposed emergency regulations are consistent with the mandates outlined in the Governor's emergency proclamation related to the Aliso Canyon Gas Storage Facility. The emergency proclamation mandated, among other things, daily inspection of gas storage wellheads, ongoing verification of the mechanical integrity of all gas storage wells, regular testing of all safety valves used in wells, and the establishment of a comprehensive risk management plan.

Anticipated Updates to UIC Regulations

Additionally, the Division on January 21, 2016, released a discussion draft of proposed amendments to the Division's UIC regulations. Formal rulemaking is anticipated to begin in the early half of this calendar year. The proposed regulations are intended to accomplish the following:

- Clarify standards for ensuring zonal isolation of injection projects
- Expressly define the quality of water to be protected when constructing wells
- Establish permitting and regulatory requirements specific to cyclic steam operations
- Codify best practices for well construction
- Clarify the process and standards for establishing maximum allowable surface pressure for injection operations

The Division is also in the process of developing regulatory language outlining to the permitting and other regulatory requirements specific to cyclic steam operations.

(8) The status of the review of the UIC projects and summary of the program's assessment findings completed during the reporting period, including any steps taken to address identified deficiencies.

The Division is currently undertaking a project-by-project review that will be implemented in two phases. The first phase includes an inventory, prioritization, and file reviews of all active UIC project files to identify data or documentation deficiencies. In phase one, the operators will also be required to update their project documentation and supply any missing and/or deficient data. The second phase will include a detailed review and evaluation of complete project files. This phase is intended to ensure that the project is up to standard, and to identify and address any issues related to injection exemption, confinement, and protection of underground sources of drinking water with updated Project Approvals. The second phase review of projects will be conducted with the State Water Board in consultation with the appropriate regional water quality control boards.

In conjunction with phase one of the project-by-project reviews and the upgrading of the Division's database management systems, the Department has engaged the Ground Water Protection Council to implement their Risk Based Database Management System (data management system) as the future backbone of the Division's databases and UIC data repository. The data management system is a commercial-off-the-shelf data management system currently used by oil and gas regulatory agencies in 23 states. Using a widely used, off-the-shelf system will minimize the time required to test and deploy this complex data management system. The Division is currently in the "Proof of Concept" phase of implementation.

Since phase one will require operators to submit substantial amounts of data, the Division is working with major operators and industry associations to arrange for large-scale data transfers to populate the UIC well database, and to provide a working database for phase two's detailed evaluation of projects. This UIC well database will

also be designed within the data management system framework and will be a searchable database as committed to the EPA by February 2017.

(9) Summary of significant milestones in their compliance schedule agreed to with the United States Environmental Protection Agency, as indicated in the March 9, 2015, letter to the Division and the state board from the United States Environmental Protection Agency, including, but not limited to, regulatory updates, evaluations of injection wells, and aquifer exemption applications.

Aquifer Exemptions

The Division and State Water Board proposed a schedule to eliminate all injection into non-exempt aquifers to the U.S. EPA. For those zones with water quality of less than 3,000 milligrams per liter, the deadline to stop injecting for waste disposal is October 15, 2015. This October 15, 2015 deadline resulted in the cessation of injection operations at thirty-three wells. All of the affected operators voluntarily complied with the shut-in deadline.

In August 2015, the Division, in consultation with the State Water Resources Control Board and the Central Coast Regional Water Quality Control Board, sent the initial public notice regarding the proposal to expand the current aquifer exemption designation for the Dollie sands of the Pismo formation in the Arroyo Grande oil field. The proposed aquifer exemption would allow the State, in compliance with the federal Safe Drinking Water Act, to approve Class II injection into the identified area, either for enhanced oil recovery or for injection disposal of fluids associated with oil and gas production. This initial public comment period was held from August 20 through September 21, 2015 with a public comment hearing on September 21, 2015, in San Luis Obispo.

Public comments for a subsequent 15-Day public comment period regarding additional information was due on December 16, 2015.

Evaluation of Injection Wells

The Division identified 6,157 permitted UIC wells that were potentially injecting into non-exempt aquifers: 532 water disposal wells and 5,625 enhanced oil recovery wells. The Division and State Water Board employed a risk-based review to help determine any potential risks to groundwater with a current beneficial use. During the reporting period, the Central Valley, Central Coast, and Los Angeles Regional Water Boards issued California Water Code section 13267 information orders to 40 operators for 170 UIC wells that met the screening criteria outlined in Enclosure D of the February 6, 2015 letter to the US EPA. The information orders were issued to gather additional information prior to initiating any further action.

The State Water Board and regional water quality control boards are currently evaluating the data and information submitted by the operators to determine whether the injection wells subject to the section 13267 orders are impacting current groundwater resources. Wells found to be shut-in, idle, converted to a production well,

perforated in an exempt zone, or that demonstrate no impact on groundwater resources are not considered a risk to current groundwater resources.

Of the 170 injection wells associated with the information orders, 98 were determined not to pose a potential risk to nearby water supply wells (based on the criteria outlined above). Operators for the remaining 72 wells have not submitted all of the required information to complete an evaluation of potential impacts to groundwater resources. Many operators are currently cooperating with Regional Water Board staff to resolve these issues, and to assemble the required information. Operators that have failed to respond to the information orders either have been issued or are in the process of being issued a Notice of Violation.

UIC Rulemaking Updates

The Division adopted the UIC Aquifer Exemption Compliance Schedule emergency regulations in April 2015, re-adopted the emergency regulations in October 2015, and is now in the process of the third and final adoption of the emergency regulations.

On May 29, 2015, the Department noticed its intent for a permanent rulemaking of the UIC Aquifer Exemption Compliance Schedule. The Department accepted 45 days of public comment beginning on May 29, 2015 and ending on July 13, 2015. Additionally, the Department held two public comment hearings (on July 15, 2015 in Bakersfield and on July 16, 2015, in Santa Maria). The regulations must be finalized by March 2016 to ensure they are adopted prior to the expiration of the emergency regulations in April 2016.

Aliso Canyon Natural Gas Storage Facility

On October 23, 2015, a natural gas leak was discovered at a well at the Aliso Canyon Natural Gas Storage Facility in Los Angeles County. The Southern California Gas Company (SoCalGas), which owns and maintains the natural gas storage facility and is responsible for its wells, has been unable to stop the leak as of January 30, 2016. The leak appears to be caused by damage to the well casing at approximately 500 feet underground.

The Division is serving as part of a team of state and local agencies that are working together to ensure public health and environmental protection. As the State entity that permits and inspects the State's gas wells, the Division is overseeing Southern California Gas' actions to stop the leak at the well, and to ensure no further risks arise

The Division has been onsite since the leak was reported critically evaluating Southern California Gas' plans to shut-in the well. Staff engineers are monitoring actions at the wellhead, inspecting the well bore, thoroughly assessing all actions and progress to shut the well, and permitting and authorize their work.

On November 18, 2015, the Division issued its first emergency order requiring the Southern California Gas Company to provide data on the tests and remedial work performed on the leaking well. The Division issued its second emergency order on

December 10, ordering the Southern California Gas Company to “continue to not inject gas into the gas storage facility until injection is authorized by the Division. That same week, the Division and the Commission released a joint statement outlining the scope of the investigations into the cause of the well failure. This document details the methodology of the investigation.

On January 15, 2016, the Division issued a public notice of intent to adopt emergency regulations for natural gas storage facilities. Consistent with the mandate of the Governor's emergency proclamation related to the Aliso Canyon, these regulations are designed to ensure that operators of underground gas storage facilities are properly mitigating risks and taking appropriate steps to prevent uncontrolled releases, blowouts, and other infrastructure-related accidents.

The Supervisor also requested that SoCalGas comply with portions of the emergency regulations ahead of schedule. On January 22, 2016, the Supervisor ordered the Southern California Gas Company to submit its inspection and leak detection protocol for Aliso Canyon no later than January 26, 2016. This protocol must include the use of infrared imaging, or other technology of equal or better effectiveness, to reveal leaks from wells and the ground surface.

Division Staff Trainings

The Department has engaged the following training providers to implement the training component outlined in the Division's Renewal Plan:

1. Topcorp – A consortium of the Colorado School of Mines, Pennsylvania State University, and the University of Texas at Austin. Topcorp specializes in providing energy-related training courses for regulators and policymakers. The Division has contracted with Topcorp to conduct various trainings, including environmental management technology, petroleum geology and engineering, and petroleum engineering. Access to training modules will begin in February 2016.
2. PETEX – An extension campus of The University of Texas at Austin that develops, produces, and delivers technical and nontechnical training courses and publications for employees in various sectors of the petroleum industry. The Division is working with PETEX to produce a series of modules specifically designed for Division staff.

9b. By January 30, 2016, and every six months thereafter, the department shall report on progress addressing the program's assessment findings and shall deliver that report to the fiscal and relevant policy committees of each house of the Legislature.

The Division will submit the report to the relevant policy and fiscal of each house on January 30 and July 30 of each year. These reports will also be available on the Division's website.

9c. By January 30, 2016, and every six months thereafter, the state board shall post on its Internet Web site a report on the status of the regulation of oil field produced water ponds within each region. The report shall include the total number of ponds in each region, the number of permitted and unpermitted ponds, enforcement actions, and the status of permitting the unpermitted ponds.

The number and status of oil field produced water ponds within each Regional Water Board as of November 30, 2015 is available at:

http://www.waterboards.ca.gov/water_issues/programs/groundwater/sb4/index.shtml