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November 1, 2016

Kenneth A. Harris
State Oil and Gas Supervisor
Division of Oil, Gas, and Geothermal Resources
801 K Street MS 18-05
Sacramento, CA 95814

Timothy Sullivan
Executive Director
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

RE: Fitness for Service Analysis of the Aliso Canyon Storage Facility

Dear Messrs. Harris and Sullivan:

As requested in your October 21, 2016 letter, SoCalGas has completed a fitness for service analysis of the Aliso Canyon storage facility to validate that the facility is fit for service and safe to resume injection operations. Under the direction of the California Public Utilities Commission, SoCalGas has maintained an adequate balance of gas volume in the facility and a sufficient number of wells with adequate withdrawal capacity to reduce energy reliability risk, consistent with SB 380, Public Utilities Code section 451, and other applicable regulations and directives from the State Oil and Gas Supervisor.

“Fitness for service” is a term that has been used for many years in the natural gas industry to refer to a pipeline’s ability to operate in a manner that provides for the safety of the people who live and work near the pipeline, protects the environment, and dependably transports natural gas to customers. A natural gas pipeline that is fit for service performs as expected and operates within an appropriate margin of safety. In making a fitness for service determination, the industry considers the design, construction, operation, and maintenance of the pipeline, and related integrity management activities, including the monitoring and any resultant response,

reduction, repair or replacement activities. In operating our natural gas pipeline system, SoCalGas applies these longstanding principles to assess the fitness for service of our pipelines. SoCalGas applied these same principles – using analogous characteristics and activities – to perform an assessment of the fitness for service of the surface facilities and underground storage wells and reservoir at the Aliso Canyon storage facility. SoCalGas first considered the design and construction of the surface facilities, underground storage wells and reservoir to determine their baseline fitness for service. For the surface facilities, we assessed the baseline fitness for service through our compliance with federal and state design and construction standards. For the underground storage wells, baseline fitness for service was established through the implementation of a comprehensive suite of integrity assessment and monitoring activities, including but not limited to, temperature logs, noise logs, ultrasonic imaging, magnetic flux leakage inspections, cement bond logs, multi-arm caliper inspections, and hydrostatic pressure testing completed under the direction and oversight of the Division of Oil, Gas and Geothermal Resources (DOGGR), in consultation with independent technical experts from the Lawrence Berkeley, Lawrence Livermore, and Sandia National Laboratories. DOGGR approved all of the wells to be used for injection as having completed this comprehensive set of assessments to its satisfaction, further validating the fitness for service of those storage wells. To determine the baseline for fitness of service of the reservoir, we evaluated the reservoir's geological characteristics, including the properties of the caprock that enable it to withstand the pressure it is intended to hold.

SoCalGas then validated the fitness for service of the surface facilities, underground storage wells and reservoir by implementing additional safety measures and integrity management activities. For surface facilities, fitness for service is validated through monitoring, data collection, pressure reduction, repair and replacement activities, in compliance with federal and state pipeline integrity management regulations. For underground storage wells—in addition to reviewing the design, construction, operations and maintenance history of the wells, along with implementing additional integrity management practices—fitness for service is reinforced by installing new steel tubing and packer systems and reconstructing the wells to flow gas solely through the tubing. This allows us to operate wells with two complete barriers to mitigate the potential for an uncontrolled release of natural gas. The ongoing fitness for service of the reservoir is validated through modeling and monitoring reservoir performance and completing periodic shut-in inventory analyses.

As discussed in more detail below, this fitness for service analysis validates that the Aliso Canyon storage facility is fit for service and safe to resume injection operations.

I. Fitness for Service Overview

Based on industry guidelines, a fitness for service analysis of pipelines encompasses a review of applicable design, construction, operation, and maintenance criteria. Analysis of these criteria includes the identification of risks associated with historical design and construction practices and risks associated with operating and maintaining the pipeline. Generally, a risk assessment takes into account both the likelihood of failure and the consequence of a potential failure and includes consideration of threats characterized as Time Dependent, Stable, and Time Independent. By identifying relevant threats, a prudent operator can identify integrity management activities that address the threats or mitigate the risks associated with those threats to maintain an appropriate margin of safety. The integrity management activity should be based on the threat, and more than one method or tool may be appropriate to address the threats.

For natural gas pipeline infrastructure, under Federal pipeline safety regulations, 49 Code of Federal Regulation (CFR Part) 192, integrity management activities include continuing surveillance activities of the pipeline, conducting integrity assessments, and consideration of the threats that might affect the pipeline and applicable integrity management activities. Through these actions, SoCalGas: (1) determines whether the pipeline meets design, construction, operation, and maintenance criteria; (2) identifies threats that could affect the pipeline; and (3) implements integrity management activities to mitigate or address applicable threats. In so doing, SoCalGas determines and validates fitness for service through application of specific criteria, threat identification, and integrity management actions.

The design requirements for a pipeline or asset consider the material used, safety factors, population densities, hazardous conditions, associated equipment, and additional safety measures. These design requirements are intended to establish an appropriate margin of safety for the public, employees and the environment.

During construction, these design requirements are executed. Proper execution includes: (1) inspecting material to validate that it meets the outlined design requirements, (2) installation with consideration to external conditions, such as washouts and floods, and (3) testing to confirm the integrity of the design and installation.

Once the facility or asset is in operation, the focus is on multiples levels of an inspection and monitoring program and includes, but is not limited to, the following types of activities: surveillance, damage prevention, public awareness, odorization, and operating within stated requirements.

Maintenance activities on pipelines and their appurtenances are regularly scheduled. In addition, certain assets may be subject to additional integrity management requirements based on the specific characteristics of those assets.

These same principles can be applied to an underground storage field. In assessing the fitness for service of an underground storage field, an operator should first consider threats associated with the design, construction, operation, and maintenance of the surface facilities, underground

storage wells and reservoir. Surface facilities are those facilities beyond the wellhead. Underground storage wells include the wellhead and below. The reservoir is the subsurface body of rock where natural gas is stored. Each component has its own design, construction, operation, and maintenance threat and risk considerations, and each component may drive different associated integrity management activities. Based on the analysis of the design, construction, operation, and maintenance characteristics of the surface facilities, underground storage wells and reservoir, an operator can identify threats that may affect integrity. Once threats have been identified, the operator develops and implements integrity management activities to address and mitigate those threats.

As with pipelines, the design of the underground storage well should consider the materials, safety factors, population densities, hazardous conditions, associated equipment, and additional safety measures. The design requirements are intended to establish an appropriate margin of safety for the public, employees and the environment. Once an underground storage well is in operation, the focus is on monitoring, inspection and other integrity management activities.

Compliance with modern standards and regulations for design, construction, operation, and maintenance may serve as a baseline indication that a pipeline or underground storage well is fit for service. For existing pipelines or underground storage wells that are not designed or constructed to modern standards, additional integrity management activities may be necessary to validate fitness for service.

For subsurface features such as the reservoir, fitness for service is established through evaluation of the reservoir's geological characteristics, including the properties of the caprock that enable it to withstand the pressure it is intended to hold. Ongoing fitness for service and integrity of the reservoir is assessed by operating and monitoring within the minimum and maximum reservoir pressure set for the facility, performing geotechnical and geologic studies, modelling the reservoir, monitoring reservoir performance, and undertaking periodic shut-in inventory analyses

II. Integrity Management Activities

Integrity management activities are designed to mitigate and address identified threats. The threats and appropriate mitigations may vary across asset types, and more than one mitigation activity may address multiple threats. Through threat assessment activities, an operator can develop an integrity management approach that mitigates and addresses risks stemming from construction, design, operation, and maintenance. As discussed further below, SoCalGas used this approach to validate the fitness for service of the Aliso Canyon storage facility by addressing the operability and integrity of the surface facilities (*e.g.*, compressors, pressure vessels, aboveground and belowground piping, valves, and auxiliary systems, and other aboveground assets) and validating the integrity of the underground storage well components and reservoir (*e.g.*, wellhead piping and valves, well casing(s), tubing, and packers). Completion of these activities enhances the margin of safety and validates fitness for service.

There are five basic types of integrity management action that an operator can take to mitigate risk and/or improve performance of an existing facility or asset:

- **Monitor:** Monitor for early warnings of future performance issues and to reduce risk by finding problems early on and gathering data to determine additional mitigation action.
- **Respond:** If a threat to an asset's integrity is identified through monitoring activity, mobilize resources to respond to the threat: making it safe, making necessary repairs, and restoring service.
- **Reduce:** If a threat to an asset's integrity is identified through monitoring activity, consider reducing the asset's use (*i.e.*, pressure reduction or isolation) to increase the margin of safety.
- **Repair:** A variety of methods are available to mitigate risk and/or improve the performance of an asset by physically altering the asset. The appropriate method will depend on both the asset and threat.
- **Replace:** Replacement addresses an integrity threat by replacing the asset with an asset designed, constructed, operated and maintained in accordance with applicable design and construction requirements.

SoCalGas uses the above integrity management actions to address threats and reduce risk. When the threats have been addressed and risks are appropriately mitigated – and the asset performs as expected and carries an appropriate safety factor in its continued use – the asset or system has been validated as fit for service.

A. Surface Facilities

Fitness for service of surface storage facilities (*e.g.*, compressors, pressure vessels, aboveground and belowground piping, valves, auxiliary systems, and other aboveground assets) is validated through compliance with applicable federal and state regulations governing the design, construction, operation and maintenance of these assets. Surface facilities supporting the withdrawal and injection of natural gas into and from underground storage wells follow the Code of Federal Regulations (CFR) Title 49, Part 192 for pipeline design, construction, operations and maintenance.

With respect to surface facilities at Aliso Canyon, SoCalGas validated fitness for service by confirming compliance with applicable federal and state regulations governing the design, construction, operation and maintenance of these assets. The analysis confirms monitoring and maintenance activities have been performed on an appropriate schedule, and conditions requiring additional action have been remediated. The Aliso Canyon surface facilities are therefore demonstrated to be fit for service.

Design and Construction

The requirements for the design of surface facilities consider the strength of the material, operating pressures, safety factors, population densities, hazards conditions, emergency shutdowns, pressure relief and additional safety measures. The outlined design requirements are intended to provide an appropriate margin of safety. During construction, these design requirements are validated through quality control processes and pressure testing. Most of the pipelines and facilities at Aliso Canyon were installed in the early 1970s, designed, and constructed based on 49 CFR Part 192 requirements.

Monitoring and Metrics

As discussed above, once a surface facility is in operation, the focus is on monitoring, which includes surveillance, damage prevention, public awareness, odorization and operating the surface facility within applicable pressure requirements outlined in Part 192. The maintenance activities on surface facilities are regularly scheduled and include, pipeline patrols, leak surveys, daily visual and infrared inspections, and valve testing and maintenance. In addition, SoCalGas assesses transmission pipelines using pressure testing, in-line inspection (ILI), direct assessment (DA) and other technologies.

Data gathered from monitoring, combined with performance history, is used to establish performance metrics. These metrics may indicate changing conditions or reflect trends that may prompt further action. The response to these conditions or trends varies according to the severity and nature of the condition or trend. Personnel are available onsite 24 hours a day, 365 days a year to respond to any identified conditions. Should any conditions require additional action, Part 192 details requirements and processes that include reduce (pressure reduction), repair, and replace activities.

SoCalGas performs additional monitoring and maintenance of the surface facilities at the Aliso Canyon storage facility, which include:

- Patrols four times per day to visually inspect wells, the surrounding infrastructure and surface facilities. The patrols include a visual inspection of the well site, piping, pipe supports, wellhead, cellar, catwalks, if present, grating and safety railing;
- Daily video scans of every well and the surrounding area using sensitive thermal imaging cameras that enable timely detection of leaks. Any anomalies found during the inspection are assessed, flagged and addressed or repaired by operations and maintenance personnel;
- Installation and monitoring of an Infrared Fence-Line Methane Detection System utilizing eight pairs of infrared methane monitors along the southern border of the property to notify onsite personnel in the event that methane is detected along this property line;

- Semi-annual testing to confirm the operability of surface safety valves; and
- Annual testing of the Emergency Shutdown Devices and piping relief valves.

Other activities to monitor and maintain fitness for service include instrumentation, control and safety shutdown systems including: supervisory control and data acquisition (SCADA), unit programmable logic controllers (PLCs) and the facility data historian (OSI PI). These systems monitor and control surface facilities, valves, and piping. The systems also monitor and record well tubing/annulus pressures and the fence line methane monitoring system. The data gathered by these systems are used to establish and measure key performance metrics.

Response Activities

If a realized or potential threat to an asset's integrity is identified, SoCalGas first mobilizes resources to respond to the threat and make safe. SoCalGas' facility-wide Emergency Response Plan guides response activities in the event of an emergency and a Spill Contingency Plan guides response activities in the event of a release of liquids as the result of a surface facility failure. The Emergency Response Plan specifies action to address the safety of customers, the general public, employees and the protection of property, and includes emergency preparedness, crisis management, and business resumption planning in the event of an emergency. In addition, SoCalGas' Aliso Canyon Air Quality Notification Plan specifies procedures to promptly notify area residents via phone call, text message, and/or email in the event of a reportable release of natural gas.

Pressure Reductions

If SoCalGas identifies a threat to the integrity of a surface facility, where appropriate, SoCalGas may reduce the use of that surface facility to increase the margin of safety. For example, following identification of a pinhole leak on a withdrawal line near well Ward 3A, SoCalGas identified withdrawal pipelines with similar characteristics for the purpose of performing an internal corrosion threat assessment. As an interim measure, while the assessment of similar withdrawal pipelines was performed, SoCalGas isolated and lowered the pressure in the similar withdrawal lines to 40 psi. The assessment validated the integrity and the fitness for service of the similar withdrawal pipelines, demonstrating sufficient factors of safety. The withdrawal pipeline with the pinhole leak is removed from service.

Repair Activities

Under SoCalGas' compliance activities and Integrity Management program, integrity assessment and monitoring processes are expected to either result in a determination that the surface facility is fit for service as-is or identify threats to be mitigated through repair or permanent removal of the surface facility from service.

Replacement

For surface facilities, permanent removal from service is accomplished through compliance with regulations set forth in 49 CFR Part 192.

B. Underground Storage Wells and Reservoir

As discussed above, the industry has been applying fitness for service principles to natural gas pipelines for many years to validate a pipeline's ability to operate in a manner that provides for the safety of the people who live and work near the pipeline, protect the environment, and dependably transport natural gas to customers. SoCalGas is applying these same principles to assess the safety and integrity of the underground natural gas storage wells and reservoir at Aliso Canyon. This is a prudent approach to validating the ongoing integrity of the underground storage wells and reservoir going forward.

Fitness for service of the underground storage wells and the reservoir (*e.g.*, wellhead piping and valves, well casing(s), tubing, and packer) is demonstrated through compliance with applicable regulations governing the design, construction, operation and maintenance of these assets. To determine fitness for service of the underground storage wells and reservoir at Aliso Canyon, SoCalGas analyzed the applicable design, construction, operation, and maintenance criteria of the wells and geological characteristics of the reservoir. SoCalGas then identified applicable threats and implemented integrity management activities to address the threats and/or mitigate the risk generated by those threats. These efforts have enhanced the Aliso Canyon storage facility's margin of safety and validate its fitness for service.

Design and Construction

As discussed above, SoCalGas employed well tubing and casing integrity assessments directed by DOGGR, in consultation with independent technical experts from the Lawrence Berkeley, Lawrence Livermore, and Sandia National Laboratories to establish the baseline fitness for service of the underground storage wells. DOGGR exercised oversight over the well tubing and casing assessment process and approved all of the wells to be utilized for injection as having completed the assessments to its satisfaction. The integrity assessment methods authorized by DOGGR and employed by SoCalGas include:

- Temperature logs to verify no cooling is taking place inside or outside the well, which indicates well integrity;
- Noise logs to confirm an absence of the sound of gas flowing from the well, which indicates well integrity;
- Casing wall thickness inspection using ultrasonic imaging, designed to detect whether well casings have thinned due to internal or external corrosion is intended to demonstrate a casing's ability to contain at least 115% of the maximum allowable operating pressure (MAOP);

- Magnetic flux leakage inspection to identify internal and external pitting of the pipe and provide three-dimensional measurements of these pits to demonstrate a casing's ability to contain at least 115% of the MAOP;
- Cement bond log, which measures both the degree of adherence between cement and the external casing of the well and the contact between the cement anchor of the well and the underground gas reservoir is intended to demonstrate no significant spaces between cement and casing or between cement and the gas storage formation and cap rock exist;
- Multi-arm caliper inspection, which measures any internal degradation or significant changes to the well's geometry and is intended to demonstrate the casing's ability to contain at least 115% of the MAOP;
- Hydrostatic-pressure testing to determine the well's ability to withstand greater than normal operating pressures and evaluate the integrity of any packers, which seal the annular space between the tubing and casing. This is intended to demonstrate the casing's ability to contain at least 115% of the MAOP.

The baseline assessment of reservoir integrity was established through geologic and geotechnical studies and modelling of the reservoir.

In addition, SoCalGas took action to further validate the ongoing fitness of service of underground storage wells by enhancing the design and construction of the wells. "About 80% of natural gas storage wells in the United States with known completion years were drilled before 1980, and many predate modern materials and technology standards."¹ Recently, a Federal Interagency Task Force tasked with ensuring safe and reliable underground natural gas storage determined that "modern design practices dictate that new wells must be designed with two complete barriers. . . . so that a single point of failure cannot lead to leakage and uncontrolled flow."²

While the Interagency Task Force recommends the industry move toward phasing out single point-of-failure designs, SoCalGas has already reconstructed the wells to be used for injection or withdrawal of natural gas at Aliso Canyon with new tubing and packer configurations (with new steel pipe) and these wells are now designed so that natural gas will flow solely through the inner tubing. The casings of these wells are no longer exposed to reservoir or injection/withdrawal pressure during operation and provide an additional safety barrier in the event of a tubing or packer failure. Thus, all wells approved by DOGGR for injection are now constructed with two complete barriers to mitigate the potential for an uncontrolled release of natural gas at Aliso. Thus, the design and construction of the underground storage wells to be used for injection and

¹ Interagency Task Force Well Integrity Observations and Recommendations, *Ensuring Safe and Reliable Underground Gas Storage: Final Report of the Interagency Task Force on Natural Gas Storage Safety*, at 54 (October 2016).

² *Id.* at 54-55.

withdrawal operations establishes the ongoing fitness for service of those wells.

The Joint Agency Task Force further recommends that “[o]perators who have existing wells with single-point-of-failure designs should have a risk management plan to maintain safe well operating pressure that includes a rigorous monitoring program, well integrity evaluation, leakage surveys, mechanical integrity tests, conservative assessment intervals, and in most cases a plan to phase out these designs.”³ SoCalGas has also implemented a risk management plan that includes well integrity evaluations, a monitoring program, leakage surveys, mechanical integrity tests, and conservative assessment intervals. These activities reinforce and further validate the ongoing fitness for service of the storage wells and reservoir at Aliso Canyon.

Monitoring and Metrics

Through monitoring and ongoing integrity assessment activities, SoCalGas assembles and evaluates information about the condition of the underground storage wells and reservoir, and evaluates these metrics to guide subsequent actions. SoCalGas collects available information such as asset attributes, operations and maintenance activities, and geotechnical data. SoCalGas uses this information to identify threats and take appropriate integrity management action.

At Aliso Canyon, SoCalGas performed and will continue to perform a comprehensive suite of well integrity/fitness assessments, as described above, and monitoring activities to continually evaluate the integrity of underground storage wells. The ongoing monitoring methods implemented by SoCalGas include:

- Installation and operation of real-time pressure monitors on all active wells. These real-time pressure readings are monitored twenty-four hours a day from a central operations center at the Aliso Canyon site. The system provides tubing and annulus surface pressure measurement to monitor storage well integrity, provide data for analysis and regulatory reporting, detect potential anomalies, generate alarms and support operations and maintenance intervention and repair activities if required;
- Semi-annual testing to confirm the proper operability of surface safety valves;
- Testing of the functionality of all downhole devices (*e.g.*, valves) and repeating this testing every six months;
- Annual testing of master valves and wellhead pipeline isolation valves to validate proper function and verify the valves’ ability to isolate the well;
- Patrols four times per day to visually inspect the wells and surrounding infrastructure. The patrols include visual inspection of the well site, piping, pipe supports, wellhead, cellar, catwalks if present, grating and safety railing;

³ *Id.* at 55.

- Installation of sand erosion monitors and testing of every operating well every 12 to 15 months. These erosion tests measure the reservoir sand flowing through the system and allow Company personnel to take appropriate measures to mitigate any risk of internal erosion of interior system components or automatically shut down operations of a particular well;
- Installation and monitoring of an Infrared Fence-Line Methane Detection System utilizing eight pairs of infrared methane monitors along the southern border of the property notify onsite personnel in the unlikely event that methane is detected along this property line;
- Daily video scans of every well and surrounding area using sensitive thermal imaging cameras that enable timely detection of leaks. Any anomalies found during the inspection are assessed, flagged and addressed or repaired by operations and maintenance personnel; and
- Reservoir modelling, monitoring of reservoir performance, and undertaking periodic shut-in inventory analyses.

The integrity assessment and monitoring methods identify design, construction, operational or maintenance threats that could undermine well integrity and drive further action by SoCalGas. Based on the results of these assessment and monitoring activities, SoCalGas evaluates available data to determine whether to solely continue to monitor and collect data regarding the integrity of the asset, or take additional action to respond, reduce, repair or replace the asset. In all cases, monitoring activities are ongoing and repeated at conservative intervals to identify Time Dependent and Time Independent threats that could arise between assessment intervals, as well as Stable threats.

Response Activities

If a realized or potential threat to an asset's integrity is identified, SoCalGas first mobilizes resources to respond to the threat and make safe. SoCalGas' facility-wide Emergency Response Plan guides response activities in the event of an emergency and SoCalGas' Spill Contingency Plan guides response activities in the event of a release of liquids as the result of a surface facility failure. The Emergency Response Plan, specifies action to address the safety of customers, the general public, employees and the protection of property, and includes emergency preparedness, crisis management, and business resumption planning in the event of an emergency. Additional policies and plans, such as SoCalGas' Aliso Canyon Well Pressure Monitoring Policy and Procedure⁴ and Aliso Canyon Air Quality Notification Plan, specify actions to respond to changes in operating conditions and promptly notify appropriate agencies and area residents in the event of a reportable release of natural gas.

⁴ Provided in Attachment B, folder Checklist #9.

Pressure Reductions

At Aliso Canyon, wells that have not yet completed all integrity assessments required by DOGGR have been temporarily plugged and isolated from the reservoir. Temporarily plugging and isolating the well from the reservoir reduces pressure on these facilities to the lowest possible level pending completion of the baseline integrity assessment, effectively taking them out of service in a safe condition.

As part of the DOGGR well assessment protocol, injection and withdrawal well casings have been tested to 115% of their MAOP of 3,150 psi. As part of the recommencement of injection, the maximum reservoir pressure for the 2016-2017 withdrawal season has been reduced by DOGGR to 2,978 psi. As a result of this reduction in maximum reservoir pressure for the 2016-2017 withdrawal season, all active gas storage wells will have a lower maximum operating pressure (MOP) of 2,532 psi, which increases the margin of safety by an additional 25%.

Repair Activities

Through the activities discussed above, SoCalGas either determined that the wells to be used for injection and withdrawal operations at Aliso Canyon were either fit for service as-is or completed repairs to the satisfaction of DOGGR. Upon completion of those repairs, the integrity assessment method that identified the integrity threat was performed again to the satisfaction of DOGGR to confirm that the identified threat was successfully mitigated by the repair activity.

Replacement

For underground storage wells, permanent removal from service is accomplished through compliance with the plugging and abandonment process outlined under DOGGR regulations.

III. Conclusion

As described above, SoCalGas completed a comprehensive fit for service analysis of the Aliso Canyon storage facility, which included an assessment of the design, construction, operation and maintenance of the Aliso Canyon surface facilities, underground storage wells and reservoir. Fitness for service of the surface storage facilities has been validated through compliance with applicable federal and state regulations governing the design, construction, operation and maintenance of these assets. Fitness for service of the underground storage wells and reservoir has been validated through: (1) completion of a comprehensive suite of integrity assessments, including those completed under the direction and oversight of DOGGR, in consultation with independent technical experts from the Lawrence Berkeley, Lawrence Livermore, and Sandia National Laboratories; (2) reconstruction of the wells to be utilized for injection or withdrawal of natural gas with new tubing and packer configurations (with new steel pipe) to flow natural gas solely through the inner tubing and operate with two complete barriers to mitigate the potential for an uncontrolled release of natural gas; (3) operating and monitoring within the minimum and maximum reservoir pressure set for the facility, performing geotechnical and geologic studies, and undertaking periodic shut-in inventory analyses; and (4) implementation of a comprehensive program for monitoring, testing and inspection of the underground storage wells and reservoir

going forward. These integrity assessments, using multiple methods to validate the integrity of the tubing, casing, and cement bonds, coupled with SoCalGas' installation of new tubing and reconstruction of the wells to provide a second barrier, as specified by DOGGR and recommended by the Interagency Task Force, establish fitness for service of the Aliso Canyon storage facility irrespective of the results of the root cause analysis of the SS-25 well failure. Accordingly, this fitness for service analysis demonstrates how the Aliso Canyon Storage facility is fit for service and safe to resume injection prior to the completion of the root cause analysis.

Sincerely,

A handwritten signature in black ink, appearing to read "Bret Lane", written in a cursive style.

Bret Lane
President and Chief Operating Officer