From: Kathy Angus
To: Ronen, Hillary; Beinart, Amy (BOS); BOS Legislation, (BOS)
Subject: BOS File # 200800
Date: Friday, September 11, 2020 12:04:15 PM
Attachments: Underberg email BOS File No. 200800, 3516 and 3526 Folsom Street hearing on 9_15_2020, continued from 8_11_2020 and 9_1_2020.pdf

September 11, 2020

TO: Hillary Ronen, District 9 Supervisor
President Yee and SF Board of Supervisors

Critical relevant arguments and documented evidence related to the Revised Final Mitigated Negative Declaration for 3516 and 3626 Folsom Street, BOS Motion 17-152.

As we uncover layers of technical errors and omissions in the documents submitted for this project, including the one attached, I don't want to lose sight of the biggest issue and concern, which is the fact that the neither the terms of the CEQA law nor the motion passed by the Board of Supervisors have been met. In order to insure the safety of the public, there are clear mandates in both documents for site-specific vibration management and emergency response plans.

Under CEQA Guidelines Section 15070, a mitigated negative declaration is only appropriate where *"There is a substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment."* (Emphasis added.)

> *[A]doption of a mitigated negative declaration is proper only where the* ***conditions imposed on the project reduce its adverse environmental impacts to a level of insignificance.*** *(§21064.5; Guidelines, § 15064, subd. (±)(2).) By statutory definition, a mitigated negative declaration is one in which (I) the proposed conditions "avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (§21064.5, emphasis added.)*
> Architectural Heritage Ass'n v. County of Monterey (2004) 122 Cal.App.4th 1095, 1118-19)

In this case, there is substantial evidence of at least three critical defects that reveal

significant environmental risks, and therefore the current RFMND does not meet the "level of insignificance" required by CEQA.

In our appeal dated April 24, we highlighted many errors and omissions in the Vibration Management Report, lack of environmental review of potential hazard of street construction on the pipeline, and lack of evaluation by a "highly qualified" independent analysis., and absence of detailed site-specific protocols for Emergency Response and evacuation. This is the only opportunity in the process moving forward to require the project to meet all CEQA law. Because of this, a significant risk still exists and must be mitigated before any CEQA approval is given.

CEQA DETERMINATION REVOKED 4 TIMES BECAUSE OF APPELLANTS EXPERT ANALYSIS AND TESTIMONY

While the Planning Department is charged with determining and mitigating the environmental hazards to protect the public from harm, four times the Planning Department has presented flawed and incomplete CEQA determinations that were revoked or rescinded only when experts engaged by the Appellants issued signed and stamped analysis pointing out the flaws and omissions. In none of these cases did the Planning Department seek rigorous analysis by independent highly-qualified experts in transmission pipeline safety or geotechnical vibration management as it relates to pipeline safety. This is particularly concerning since PG&E has been found guilty of criminal negligence in previous pipeline accidents, namely the one in 2010 in San Bruno.

How can Planning be trusted to put the safety of the citizens of San Francisco first when they have submitted so many CEQA determinations that are clearly deficient.

PROJECT DESCRIPTION and PLANS FOR STREET CONSTRUCTION

The project description, as stated in the August 3 response to the appeal from the Planning Department describes the project to include: "...construction of the connecting segment of Folsom Street to provide vehicle and pedestrian access to the project site and the construction of a stairway between Folsom Street and Bernal Heights Boulevard." While the construction of the street will need to be approved by DPW, there is no opportunity of environmental review for the street construction once the building permits for the homes are issued. This lack of environmental review of the engineered plans and the impact on the pipeline presents a dangerous and potentially catastrophic situation that will more likely be avoided with a complete EIR.

VIBRATION MANAGEMENT REPORT

The Vibration and Monitoring Plan does not include the construction of the street and sidewalk, which is proposed to be built directly over the pipeline. The motion states, "This Board of Supervisors directs the Planning Department to provide additional information and analysis regarding whether the proposed project construction would result in vibration impacts on PG&E Pipeline No. 109 that could create a risk to public safety."

There has been no statement by the Planning Department that the Project, as described in the Planning Department's Project Description, which includes construction of the street, could not create a risk to public safety."

There is no evidence in the file that shows that site-specific information was used to determine the safety of the pipeline in regards to the pressure values of this pipeline on a steep slope with a bend near the site. In fact, it is clear that the consultant hired by PG&E specifically noted that this information was not provided to him.

SLOPE

As we previously asserted, the entire slope of the project is 40%, which is the slope that must be excavated and driven across during the construction of the street. While there is evidence from potholing that the slope of the pipeline is about 35% in front of the 2 homes, there is no evidence relating to the slope of either the pipeline or the Folsom Street extension between Chapman and the northern edge of the project site either before or after improvements. Both actual numbers are essential in analyzing the safety of the project and the pipeline. An estimate from Powhattan to Bernal Heights Boulevard is not adequate evidence to establish the actual slope.

The Department also asserts that the pipeline is located on various steep portions of hills with 25% or more slope. There is no indication that a construction project like this one by a private developer has been approved for construction over a high-pressure transmission line on a slope over 35%, which is significantly steeper than a 25% slope. The added levels of risk in this project due to lack of consideration of the slope and evaluation of the pipeline have not been considered and can lead to serious environmental and personal harm.

RIGOROUS ANALYSIS

Neither the Planning Department, the Project Sponsor or PG&E itself asked for as-built, detailed historical maintenance reports, and other records to analyze and make available to experts. These exact records were an essential piece of prior investigations into the San Bruno explosion in 2010, yet Planning did not consider them important for this

project, even though construction is a primary cause of pipeline accidents, which can be catastrophic and fatal.

The additional information submitted by PG&E as of 9/5/2020 also contains omissions and flaws that were not addressed by the utility. Nor did the Planning Department ever ask for documents related to PG&E's review to verify their rigor, even though PG&E had been found guilty of a related felony.

The Vibration Management Plan was created by an engineer who specializes in acoustic and noise vibrations, not ground vibrations. Nor does the company, Illingworth and Rodkin, have any Gas Transmission Pipeline experience listed among the credentials on their website. Furthermore, the "independent expert" hired to review the project, David Buehler is also an Acoustical Engineer with no pipeline experience. On the other hand, experts engaged by the Appellants are highly qualified civil and geotech engineers who signed and stamped their analysis revealed major flaws and omissions in the data and analysis presented.

Instead of following very thorough safety precautions issued in the November 2010 PIPA report for site specific evaluations, those recommendations were not considered for this project. Examples include: the extremely steep slope, vibration from excavation and construction equipment for the entire project, and special circumstances like an L near the site and tree roots located dangerously near the pipeline.

Without rigorous analysis by highly-qualified pipeline geotech experts who have access to all PG&E and Planning Department data related to the case and have standing to request more information if it is needed to properly assess the safety of the project.

EMERGENCY RESPONSE

We realize the specific implementation of the plan by the local fire station will be established before construction begins, but a site-specific plan has not been created that dictates the protocols that must be followed under the proposed conditions at this particular site, taking into consideration all types of potential hazards as part of the CEQA process in order to insure safety for all who might be impacted. The very unusual and dangerous conditions at this site, particularly the pipeline, the slope, and the potential for a catastrophic accident due to construction, require protocols beyond the normal construction project which can only be provided as part of the CEQA determination, not after the project is approved.

The Planning Department and the Fire Department seem to have no concern for either the PAPA guidelines regarding Emergency Response and Evacuation during construction over or near a gas transmission pipeline. Nor has the Planning Department provided the information necessary to fulfill the requirements of Board Motion M17-152, which

states, “A site-specific Emergency Response and Evacuation Plan be prepared to ensure adequate access for emergency response and the ability for a safe and timely evacuation.”

When lives are at risk, an Emergency Response Plan is critical for ensuring the safety of all residents and users of vulnerable areas, which the PAPA recommendations state is 1000 feet from the pipeline. The plan submitted and approved by the Fire Department has residents gathering in the same places that gas flows and does not provide any guidance for emergency access or escape in the event of an explosion or major gas leak. There are several elderly and disabled residents in the immediate area, as well as families with children and teenagers. Without a detailed and well communicated plan, one that confirms that each resident and visitor to the area knows all protocols and has immediate access to transportation for evacuation to a safe location.

In addition, there is a critical access point that there is a high likelihood would be blocked on and off during construction and may not be available if an emergency, whether related to the pipeline or not, occurs and the fire equipment would have no access to over 20 homes.

Bernal Heights Boulevard is a heavily travelled road and sidewalk, which is adjacent to the project site. The safety of everyone using the 1000 foot radius area (as recommended by PAPA) must be considered and assured before the project is approved to avoid deadly consequences in the event of an accident.

It is time to stop this project until site-specific plans that are created that insure the safety of everyone concerned through a complete, thoroughly researched, Environmental Impact Report is produced and all concerns have been addressed. When lives are at stake and dangerous situations are created where none existed before, it is imperative that all stakeholders and affected parties can depend on the City to protect them.

Sincerely,

Kathy Angus, Co-chair
Bernal Heights South Slope Organization

Attachment: Partial list of errors, omissions, and concerns that have not been addressed, submitted by Barbara Underberg.

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Kathy Angus

BOS File No. 200800, 3516 and 3526 Folsom Street hearing on 9/15/2020, continued from 8/11/2020 and 9/1/2020

barbara underberg <bjunderberg@yahoo.com> Fri, Sep 11, 2020 at 11:06 AM
To: Kathy Angus <kathyangus@gmail.com>

How can a hazard mitigation plan be finalized if the resolution of factors that could trigger the hazard remain unexamined or unresolved?

The following details have not been adequately addressed to satisfy neighborhood safety concerns. They have been ignored, overlooked, deferred, trivialized, misstated or misunderstood. Bottom line, they remain unresolved safety issues.

The bullet points below are some of the unresolved topics from the Revised Final Mitigated Negative Declaration (RFMND) that affect the Vibration Management Plan (VMP) and/or the adequacy of PG&E's review and approval. Some details may appear to be redundant due to the interrelated nature of various topics.

Overall design of the Folsom Street extension

• Changes to resolve one design issue of the Folsom Street right-of-way could affect compliance with requirements and approvals of the following plans and agencies (partial list):
Pipeline safety requirements (PG&E)
Stormwater Management Plan (SFPUC)
Slope and Seismic Hazard Zone Protection Act (DBI)

• **The impacts of roadway slope (vertical and lateral)**

Detail: steep slope will require roadway foundations
[Detail overlooked. Affects VMP and approvals by PG&E, DPW, BSUM, DBI (and probably SFPUC regarding the sewer).]
[Discussion: see section below on VMP Assumptions.]

Detail: the proposed roadway is warped. This is contrary to city standards, according to Civil Engineer, Pat Buscovich.
[Detail ignored and/or deferred. Affects Stormwater Management Plan and approvals by BSUM and SFMTA.]

Detail: steep slope affects selection and usage of construction equipment
[Detail ignored. Affects VMP and PG&E approval.]
[Discussion: see section below on VMP Assumptions.]

• **Location and depth of pipeline relative to the proposed roadway and utility clearances**

Detail: the location and depth of the pipeline is not accurately located on a topographic survey
[Detail ignored. Affects observance of BOS Motion M17-152, and approvals by PG&E, SFPUC, DPW and BSUM.]

[Discussion: The defining feature of a two-dimensional topographical map is its contour lines. Topographic maps are three-dimensional representations of landmass that use contour lines to depict elevation. The pipeline was never accurately located on a topographic survey. The elevation of the pipeline was determined at two points and located relative to property lines on a site map (horizontal dimension), but does not locate it relative to any surface features as the terrain varies in elevation (vertical dimension). This prevents assessment of compliance with required clearances between the pipeline, utilities and roadway. In turn, it interferes with adequately assessing construction approaches, their environmental impacts and attendant safety concerns.]

[Furthermore, when the Westover Site Survey dated 6/20/13 was revised on 12/19/17 to locate the pipeline and its two elevation points, the revision simultaneously removed all contour lines from the survey, thus invalidating it as a topographic survey. This begs some questions. Was this in error or on purpose? Was this sloppiness or to obfuscate? Why wasn't the independent expert curious about the topography surrounding the pipeline?]

Documentation: CPC project file "Location, Depth and Condition of Pipeline No. 109" contains the first two documents.

(1) Project sponsor Lannoye's 12/19/17 email to Hillary and Amy states, "we will have our surveyor take measurements and accurately locate the pipeline on the topographic survey."
(2) Westover Site Survey revision dated 12/19/17, Location & Elevation of PG&E Gas Main (attached)
(3) Original Westover Site Survey dated 6/20/13 (attached)

Detail: the location and depth of L109 is not accurately located on drawings of Cross Sections Through 3516 and 3526 Folsom Street.
[Detail deferred. Affects VMP and approvals by PG&E, DPW, BSUM, DBI and SFPUC.]
[Discussion: As depicted in the Cross Section drawings, no portion of L109 is beneath any portion of the roadway or curb of the Folsom Street extension. This is not accurate. Instead, 16 inches of L109 are covered by roadway and curb, and 10 inches are covered by a planting strip. The degree to which the pipeline is or is not under the roadway and its depth affects the construction of foundations for the roadway, clearances of utilities between the pipeline and the roadway, and the transmission of vibrations.]

Documentation: The Franco Utility & Dimension Plans agree with the Westover Survey. The Utility Plan shows that the centerline of L109 lines up with the centerline of the west curb of the Folsom Street extension. The Dimension Plan locates the roadway (not including the curb) at 9.75 ft. from the property lines. A curb is 6 inches wide, which means the roadway including the curb is located 9.25 ft. from the property lines. The Survey locates the centerline of L109 at 9.5 ft. from the property lines along the west side of Folsom Street.
(1) Cross Section Through 3516 Folsom Street
(2) Cross Section Through 3526 Folsom Street
(3) Franco Civil Engineering Utility & Dimension Plans dated August 2016
(4) Westover Site Survey dated 12/19/17, Location & Elevation of PG&E Gas Main

Detail: sewer laterals do not meet minimum clearance requirement between L109 and the roadway
[Detail deferred. Affects SFPUC approval.]

Documentation: "The upstream end of the lower lateral shall have a minimum depth of 4 feet to crown of pipe, measured from existing ground surface or edge of adjacent roadway, whichever is lower."
(1) SFPUC Sewer Lateral Specification, Part 1, 1.6 Depth and Cover)
(2) Cross Section Through 3516 Folsom Street
(3) Cross Section Through 3526 Folsom Street

- **Treatment of the 2.75-ft. planting strip between the Folsom Street roadway extension and the sidewalk, where L109 intrudes by 10 inches**

Detail: street light located between the sidewalk and roadway violates PG&E and SFPUC guidelines
[Detail overlooked. Affects PG&E, DPW and SFPUC approvals.]

[Discussion: According to SFPUC's definition, a permanent structure is "any structure or furnishing that is not readily moveable without the need of a special tradesman (e.g., street lights)." According to PG&E's guidelines: "Permanent structures must be located a minimum distance of 10 ft. from edge of pipe." Although the street light is located within the 2.75-ft. planting strip, only 1'11" is vertically clear of L109 (see discussion of Cross Section drawings above). In addition, at a depth of 8'6", the street light pole foundation intrudes on the 24" clearance zone for L109. This street light structure was on the plans before PG&E indicated any approvals. It is not clear if PG&E approves of the street light location or if it was overlooked.]

Documentation:
(1) SFPUC Asset Protection Standards
(2) PG&E memo dated 3/30/17 from John Dolcini
(3) SFPUC Streetlight Guidelines
(4) SFPUC Foundation for Streetlight Poles

Detail: potential conflict between PG&E and SFPUC regarding function of planting strip above L109 and adjacent to joint utility trench
[Detail deferred. Affects PG&E, SFPUC and DPW approvals.]

[Discussion: According to the RFMND, "the proposed project is required to comply with the Stormwater Management Ordinance, which requires the project to maintain or reduce the existing volume and rate of stormwater runoff at the site by retaining runoff onsite, promoting stormwater reuse, and limiting site discharges before entering the combined sewer collection system." According to the Streetscape Design Advisory Team (SDAT), "Due to the steepness of the site, these [sidewalks] may be considered to be stepped or terraced and should incorporate planting strips that also perform a storm water retention function." As defined in the PG&E greenbook, "a bioswale is a long, channeled depression or trench that receives rainwater runoff and uses vegetation and organic matter to slow water infiltration and filter-out pollutants. A

bioswale is considered a wet location and applicants must not install PG&E facilities that go through or close to a bioswale. Bioswale areas should be avoided and PG&E facilities should be designed to go around them."]

[Furthermore, according to the PG&E Jon Freedman memo, "Parallel utilities, electroliers, water lines, 'kicker blocks', **storm drain inlets**, drainage outlets, water meters, valves, back pressure devices or other utility substructures cannot be allowed in the PG&E easement/right of way or within 10 feet of the pipeline, whichever is greater." With the addition of more than 5,000 sq. ft. of impervious surface, no storm drains and the limitations for storm water retention in the planting strips on the west side of the Folsom Street extension, it is not clear that the requirements of the Stormwater Management Ordinance can be met.]

Documentation:
(1) RFMND, page 95/pdf page 103
(2) Streetscape Design Advisory Team (SDAT) meeting notes dated 2/28/14, CPC packet 2013.1383DRP_2016-04-28
(3) PG&E Electric & Gas Service Requirements 2017-2018 (greenbook), Section 3.3.10, Bioswales, page 3-14/pdf page 124
(4) PG&E undated "To Whom It May Concern" memo from Jon Freedman, Section 3, Substructures

Detail: Post-construction monitoring of pipeline intrusions
[Detail trivialized. Does not affect any approvals, but worries the neighborhood.]

Although vibration management includes monitoring weight loads during construction, per RFMND Mitigation Measure M-NO-3, it does not acknowledge that this could be an issue even after construction. L109 will not be completely covered by the roadway. In fact, 10 inches of L109 will extend into the unprotected planting strip. In other words, there will be nothing to prevent any type, any weight vehicle from driving over the curb into the planting strip and on top of the pipeline. This issue has been raised previously. According to the memo dated 10/17/19 from David Buehler, the independent qualified expert enlisted by the Planning Department:

"Prior appellants have provided comments on the Plan which are captured in a summary document prepared by the City. The following are my responses to two comments provided by prior appellants.

"*Comment 1. The Plan does not monitor or address activity after construction directly above the pipeline between the proposed sidewalk and street (i.e., within the 10-ft. zone PG&E requires to be monitored during construction).*

"Response to Comment 1: After construction is complete vehicular activity on the street and residence driveways is expected to be the same as currently exists above the existing pipeline and is therefore not expected to create increased risk of damage to the pipeline. Certainly PG&E would not allow any ongoing activity on the street and driveway if it created an increased risk of damage to the pipeline."

Response to Response: After construction is complete, vehicular activity on the street and residence driveways, unequivocally, will **not** be the same as currently exists above the existing pipeline and, therefore, could create increased risk of damage to the pipeline. After construction, there will be vehicular activity on the extension, where previously there was none. Or, if the intention was to compare the newly constructed Folsom extension to Folsom Street below Chapman, it, too, is not comparable. With the exception of the Folsom extension, where L109 lies below Folsom Street it lies entirely below Folsom Street -- all 26 inches of its diameter. To-date, PG&E has not acknowledged this issue. It is not clear if PG&E approves or has overlooked it.

Vibration Monitoring Plan (VMP) Assumptions

There are problems with the assumptions used by the VMP. According to the RFMND (page 66/pdf page 74):

"The analysis assumed work on the proposed project would include:"

"• For the foundations, the excavation and the installation of a 12-inch to 18-inch thick concrete slab, with a potential of drilling holes for piers. If needed, compaction of the site would be done by hand, and there is potential of hand operated jack hammering being required."

[**Detail** overlooked: By omission, the VMP assumes no foundation for the roadway. Due to its steep slope, the Roadway foundations would intrude on the pipeline 24" clearance zone and on the pipeline itself. Unanalyzed drilling for the roadway piers would be closer to the pipeline than the vibration analysis of drilling for the house foundations.]

"• For the utility trenches, excavation would be done at distances no closer than 5 feet from Pipeline 109. For the street extension, top soil up to as much as 12 inches will be removed, and a cement concrete road surface with a thickness of 8 to 10 inches would be installed."

[**Detail** misstated. According to drawings of Cross Sections Through 3516 and 3526 Folsom Street, the joint utility trench is 3 feet from the pipeline and, at 18 inches wide, is entirely within 5 feet of the pipeline.]

[Discussion: Table 2 of the VMP (Table 5 in the RFMND) shows a value of 2.01 inches/second as the Highest Estimated PPV for an "Excavator -- Utility Trenches" at a Minimum Distance to Pipeline of 5 feet. However, the drawings (which, undated and unattributed, can be seen in the Planning Department project file) show the entirety of the 18-inch utility trench is located within 5 feet of the pipeline, as close as 3 feet. The VMP states, "as the distance becomes shorter than 25 feet, the vibration values increase exponentially." This indicates that the excavator should not be approved for digging the utility trenches. This also brings into question the rigor with which the VMP was reviewed and approved by PG&E and the independent expert.]

"• For both the foundations and the street extension, the soils from the sites would be transported out by a conveyor belt to Bernal Heights Boulevard."

[**Detail** ignored: The question of how soils will be transported across L109, from the street extension (on the east side of L109) to the conveyor belt (on the far west side of L109), is not addressed (e.g., type of equipment, its vibrations, its weights loaded and unloaded, and its center of gravity).]

[Discussion: Vibration management includes monitoring weight loads during construction, per RFMND Mitigation Measure M-NO-3. According to John Dolcini of PG&E, "To prevent damage to the buried gas pipelines, there are weight limits that must be enforced whenever any equipment gets within 10 feet of traversing a pipeline." When fully loaded with soil, will the vehicle exceed the maximum weight allowed by PG&E on the pipeline? How will the weight limits of soil loads crossing the pipeline be monitored? What is the center of gravity of the equipment that will traverse the steep Folsom Street right-of-way? There is a history of construction vehicles rolling over and causing damage within the 2-block area of this construction site on lesser grades.]

Monitoring weight limits of soil loads crossing L109. This question has been raised previously and specifically not answered. According to the memo dated 10/17/19 from David Buehler, the independent qualified expert enlisted by the Planning Department:

"Prior appellants have provided comments on the Plan which are captured in a summary document prepared by the City. The following are my responses to two comments provided by prior appellants.

"*Comment 2. Plan does not account for the process of moving soil excavated from the east side of the pipeline to the conveyor belt on the west side of the pipeline, which would include vibration impacts. The Plan does not describe how the weight limits of soil loads crossing the pipeline are monitored.*

"Response to Comment 2: The project sponsor states that the conveyor belt would be placed at the rear of the lot, outside of the proposed footprint of the houses. The sponsor states that this will place the conveyor belt approximately 50 to 60 feet away from the pipeline. Conveyor systems are not a significant generator of ground vibration so the vibration level at 50 to 60 feet is expected to be well below the damage threshold."

Avoiding equipment rollovers and their impacts. Perhaps soil will not be loaded and transported across L109, but pushed. According to the VMP: "As the existing soil is removed, the small bulldozer (or the Takeuchi TB175 configured with a blade and no excavator) could be operating at a distance of 1 foot from the gas line." According to the FMND: "The proposed road improvement would require 92 cubic yards of material to be removed from the project site, which would result in approximately seven haul truck trips." If pushed and not transported, 92 cubic yards is a lot of soil to be pushed across a 40% slope over L109, and it is contrary to best practices for operating dozers and excavators on steep slopes. According to Interstate Natural Gas Association of America (INGAA), dozers and excavators, "avoid traveling across slopes as much as practical and travel straight up and down slopes."

History of construction vehicle rollovers within 2-block neighborhood. In particular, during construction of infrastructure improvements in this immediate neighborhood, there were two noteworthy rollovers: (1) a cement truck at the intersection of Powhattan and Folsom and (2) an earthmover on Banks between Chapman and Powhattan. The cement truck ruptured a water main knocking out service to four blocks for seven hours. The earthmover damaged a house and totaled a car. Within 24 hours, the city attorney called the homeowner to make clear that the city had zero liability for this incident. In turn, this begs questions of liability if there were to be a catastrophic event as a result of this project. Who would be liable? Would affected parties be adequately compensated for their losses?

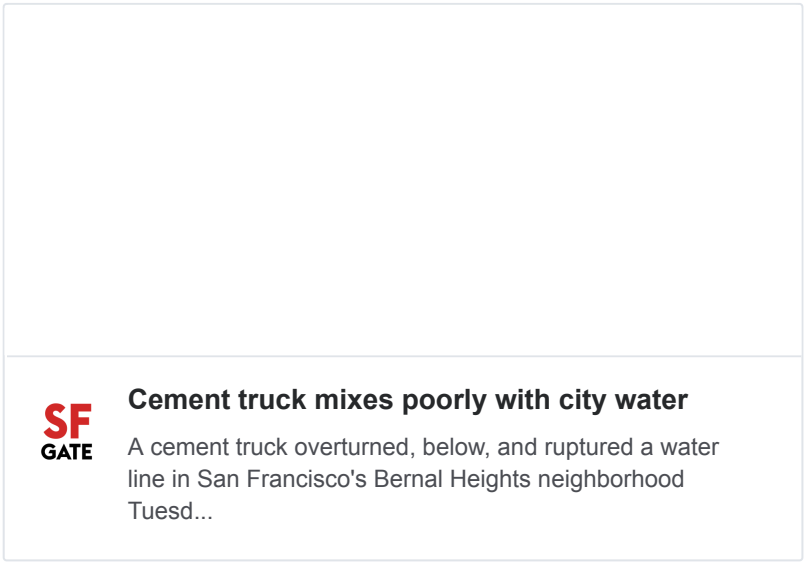
Documentation:

(1) RFMND Mitigation Measure M-NO-3, and page 21/pdf page 29.

(2) PG&E memo dated 3/30/17 from John Dolcini, Section 7, Construction Loading

(3) Buehler, David, Review of Vibration Management Plan Prepared for 3516-3526 Folsom Residential Construction, 10/17/19

(4) Vibration Management Plan, page 5
(5) The INGAA (Interstate Natural Gas Association of America) Foundation, Inc., Steep Slope Construction Guideline, 1/9/19,
Sections 5.6.10 and 5.6.18
https://www.ingaa.org/File.aspx?id=35699&v=c81081e1
(6) BOS File No. 200800, Item 12, Brian Rink email dated 8/9/20, Public Safety Issue 3
(7) SFGate, Cement truck mixes poorly with city water, 8/22/07:
Cement truck mixes poorly with city water



PG&E analysis of reasonable PPV for L109, a 26-inch pipeline on a 40% incline with a 90-degree bend

We keep emphasizing that this is a uniquely dangerous location, not just because the pipeline exists, but because it is on a steep incline and has a 90-degree bend at the top of the incline. PG&E did not take the location into account when evaluating the acceptable PPV. In fact, the response to the question, "Is PGV = 2 inches per second a reasonable criteria?" specifically states: "We neglected issues like bends and branches and appurtenances in the PG&E gas pipe (bends and branches will tend to have higher stresses than in straight pipe). Other discontinuities might exist." This is one of the conditions we keep asking to be taken into consideration.

The other major condition is the incline of the pipe. If PG&E's main assumption "to compute stresses in buried pipelines due to ground shaking" is "that the pipe moves with the ground, with no slippage between the pipe wall and the fill in the pipe trench," is it reasonable to assume that there will be no slippage when the pipe is inclined at a possible slope of 40%? This has not been addressed.

We have been highlighting these conditions for quite some time. In fact, Rune Storesund, a practicing Geotechnical Engineer, who provides gas pipeline risk reviews, participates in forensic engineering projects, and is the Executive Director of the Center for Catastrophic Risk Management at UC Berkeley, was so alarmed about the safety implications of this project that he provided his reviews pro bono. With respect to the above two conditions, he writes in his review dated 6/5/2017:

"I raised the concern about impact to pipeline integrity. While a discussion was presented by Illingworth & Rodkin, Inc. about anticipated Peak Particle Velocities (PPVs), there was no explicit analysis of actual impact to the pipeline integrity. Illingworth & Rodkin, Inc. infer in their analyses that typical PPV thresholds apply to Line 109. However, there are a number of site-specific factors that make this site unique that do not appear to have been accounted for in the analyses. For example, the pipeline is situated on an incline with a 90-degree bend at the top of the hill. Most conventional pipelines are horizontal in utility trenches on much flatter ground. Ground vibrations will have a different extensional effect on an inclined pipe than a horizontal pipe. The only reliable method to ascertain the impact of these simplifications and generalizations is to calculate pipeline integrity model bias (comparison of predicted value vs actual value). No model bias value for this site was presented."

In addition to ignoring the pipeline's bend and incline, the technical basis for the PG&E response fails to take into account the actual characteristics of L109. Instead, it presumes certain characteristics of a 24-inch gas pipeline because no "as built" drawings or details for the 26-inch gas pipeline were provided for the analysis. For example, it presumes the

gas pipe steel material is grade X42 (it is API 5L-Grade B steel pipe) and that there are no slip joints or Dresser couplings within 1,000 ft. of the vicinity (are there any?). How is the 90-degree bend at the top of the Folsom Street right-of-way constructed?

To provide a "detailed engineering review," the details ought to be examined.

Other observations regarding PG&E's supporting material from its review of L109

• Lack of awareness and/or misunderstanding of the relative locations of the pipeline, utilities and the Folsom Street extension

Detail: Permanent structures
[Detail overlooked. Affects approvals by PG&E and BSUM.]
[Discussion: According to John Dolcini of PG&E: "Permanent structures must be located a minimum distance of 10 ft. from edge of pipe." Christine Cowsert of PG&E identifies stairs and foundations as such structures. The plans clearly incorporate stairs in the 4-ft. sidewalk located only 1'11" from the pipeline. PG&E, nonetheless, appears to be approving them. Or, based on their requirements, they have been overlooked.

Documentation:
(1) PG&E memo dated 3/30/17 from John Dolcini
(2) PG&E email dated 8/12/20 from Christine Cowsert
(3) Franco Civil Engineering Plans dated August 2016

Detail: Pipeline is not completely covered by pavement
[Detail misunderstood. Affects VMP and approval by PG&E.]
[Discussion: see discussion of Cross Sections in section "Location and depth of pipeline" above.]

Other topics about L109 that remain unaddressed

• Pipeline slope and configuration have been ignored.

"Most conventional pipelines are horizontal in utility trenches on much flatter ground. Ground vibrations will have a different extensional effect on an inclined pipe than a horizontal pipe." (Storesund, Rune, 6/5/2017, Independent Project Review)
[Detail ignored. Affects VMP and PG&E approvals.]
[Discussion: Site-specific factors making this site unique have not been taken into account by the VMP or PG&E approvals. Combined with the lack of "as built" drawings of the pipeline, raises the question of the actual slope of the pipeline between Powhattan and BHB. Are there more bends in the pipe before it reaches the 90-degree bend at BHB? Does this affect the analysis of vibrations in the pipeline?]

• Effect of in-service vibrations on the pipeline has been trivialized.

Lawrence Karp, geotechnical engineer, expressed concern about "not recognizing the real problem of low cycle fatigue of the pipeline's weld metal at the longitudinal weld lines from constant vibrations in service transmitted to L-109 by the intended sub grade supported concrete structure." (Karp, Lawrence, "Unacceptable Extension of 1861 Protracted Folsom Street, Bernal Heights, Structure on 40.3% Gradient Slope Upon Large Gas Pipeline in Landslide Area," 9/12/17)

• Effect of partially covered pipeline of the vibrations on the pipeline has been trivialized.

PG&E third party consultant, John Eidinger, states "there are many references that describe how to compute stresses in buried pipelines due to ground shaking . . . The main assumption is that the pipe moves with the ground, with no slippage between the pipe wall and the fill in the pipe trench." If, longitudinally, the cover conditions of approximately one-half of the pipeline are different from the conditions of the other half, would that not affect vibration analyses? (For example, construction of the roadway requires compaction of the roadbed before laying concrete. No such compaction would be conducted on the other longitudinal half of the pipeline.) Eidinger was not aware of this condition and, therefore, could not be expected to consider it in his analysis.

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2 attachments

3500 Folsom Site Survey 20171219 Pipeline Location and Elevation.pdf
242K

3500 Folsom Site Survey 20130620.pdf
280K