January 30, 2018

Planning and Development
County of Santa Barbara
123 E Anapamu Street
Santa Barbara, CA 93101

RE:  Line 901 and Line 903 Replacement Project
Potential Impacts and Conceptual Oak Tree Mitigation Analysis

On behalf of Plains Pipeline, L.P. (Plains), SCS Engineers (SCS) prepared this memorandum which analyzes potential oak tree impacts and conceptual mitigation opportunities associated with the Line 901 and Line 903 Pipeline Replacement Project (Project). The proposed Project consists of the installation and operation of approximately 123.4 miles of replacement pipelines (Line 901R and 903R) within Santa Barbara, San Luis Obispo, and Kern Counties.

<table>
<thead>
<tr>
<th>TABLE 1. PROJECT MILEAGE PER COUNTY</th>
</tr>
</thead>
<tbody>
<tr>
<td>JURISDICTION</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Santa Barbara County</td>
</tr>
<tr>
<td>San Luis Obispo County</td>
</tr>
<tr>
<td>Kern County</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Existing Pipeline L901 & 903, Oak Tree Impacts, and Mitigation Efforts
The existing pipeline system, Line 901 and 903, was constructed in 1985 and 1986 by Celeron and subsequently acquired by Plains. Prior to construction, the project was subject to Federal and State environmental review under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). As a result of the environmental review, potential oak tree impacts were determined to be significant and would therefore require mitigation.

Construction of the existing pipeline system in the 1980s included standard practices such as the clearing of an approximately 100-foot wide right-of-way (ROW) to allow for ditch excavation, spoil placement, pipe stringing and welding, and passing room for equipment. However, there were efforts made to avoid oak trees during original project construction of the pipeline in certain instances:

- Where terrain allowed for a narrower construction corridor, the right-of-way width was reduced from approximately 100 feet to 50 feet in oak woodlands.
Where space allowed, individual trees were avoided within the construction ROW. Despite these avoidance efforts, approximately 2,263 oak trees were removed during construction of the original pipeline system. Although the pipeline traversed three counties, all of the trees removed were within Santa Barbara County. After construction was complete, a plan for oak tree mitigation was approved for “off site” planting at three locations within Santa Barbara County as summarized in Table 2 below.

**Table 2. Line 901 & 903 Oak Removal, Original Mitigation, and Progress in 1992**

<table>
<thead>
<tr>
<th>Species</th>
<th>Removed</th>
<th>Mitigation Requirement</th>
<th>Surviving in 1992</th>
<th>Outstanding Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue Oak</td>
<td>878</td>
<td>10,000 acorns planted + research funding USFS</td>
<td>None</td>
<td>N/A</td>
</tr>
<tr>
<td>Valley Oak</td>
<td>82</td>
<td>400 trees (plan did not disclose mitigation ratio, or other conditional factors)</td>
<td>386</td>
<td>Waiting for 6 ft release height. No other information was available regarding survival after 1992.</td>
</tr>
<tr>
<td>Cost Live Oak</td>
<td>1,303</td>
<td>1,303 trees (1:1 ratio)</td>
<td>69</td>
<td>1,234</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,263</strong></td>
<td><strong>11,703</strong></td>
<td><strong>455</strong></td>
<td><strong>1,234</strong></td>
</tr>
</tbody>
</table>

Table 2 details the limited successes of off-site plantings as of 1992. Due to the lack of success after a four-year effort, an alternative mitigation program was required by Santa Barbara County. Ultimately, the oak tree impacts were mitigated with an endowment fund from Celeron for The Santa Barbara County Oak Tree Restoration Program (Program). Funding and research for the Program was initiated in 1995 at the Sedgwick Reserve.

**Large Scale, Local Oak Tree Mitigation Projects**
The Line 901 and 903 pipeline was one of the first local projects which required extensive native oak tree mitigation. There are other past and present local projects which also entailed large scale oak tree mitigation requirements throughout the region with various levels of success. A summary of these oak mitigation projects are included Table 3 below.

---

### Table 3. Large Scale, Local Oak Mitigation Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Year</th>
<th>Replacement Ratio</th>
<th>Mitigation Required</th>
<th>Result/Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 901 &amp; 903</td>
<td>1985 &amp; 1986</td>
<td>1:1 for coast live oak; valley oak and blue oak “experimental”</td>
<td>11,703</td>
<td>Effort to grow replacement oaks ceased circa 1992 and alternative mitigation was completed in 1994 by funding of Program at Sedgwick Reserve</td>
</tr>
<tr>
<td>Point Pedernales Pipeline: Platform Irene to LOGP</td>
<td>1986 &amp; 1997</td>
<td>3:1 - 1986 10:1 - 1997</td>
<td>539</td>
<td>In 2014, program ongoing within only 143 trees (27%) successfully released from the program. An additional 396 mitigation trees (73%) are still needed to complete the program after 20 years of active mitigation effort.</td>
</tr>
<tr>
<td>Point Pedernales Pipeline: LOGP to Orcutt Pump Station</td>
<td>1986</td>
<td>3:1</td>
<td>75 (approximately)</td>
<td>Completed in 2015</td>
</tr>
<tr>
<td>Cachuma Lake Oak Tree Restoration Project</td>
<td>2005</td>
<td>2:1</td>
<td>4,722 by year 2025 (based on tree loss around lakeshore between 2005 – 2015)</td>
<td>As in January 2017 there were 3,583 trees (76% of requirement) still surviving since planting started in 2005. However 1,733 (38% of requirement) of the surviving trees were planted between 2014-2016.</td>
</tr>
<tr>
<td>Willow Road Extension Project (SLO County)</td>
<td>2013</td>
<td>4:1 – coast live oak</td>
<td>3,187 after 7 years</td>
<td>In the first 3 years of the program only 1,820 trees survived (57%). In February 2017 there were 2,513 surviving (78%). However, 693 of them were replanted in 2016.</td>
</tr>
</tbody>
</table>

The projects included in Table 3 are local projects requiring the mitigation of large scale oak impacts. Comparing these projects shows that the artificial planting and establishment of replacement oak trees in mass quantity is challenging and often unsuccessful. Higher rates of
success are largely dependent upon the availability of irrigation during the initial establishment period, protection of the mitigation area from further disturbance and wildlife or cattle predation, and the identification of mitigation plantings areas with appropriate soil and hydrologic conditions which are favorable to new oak tree growth. For instance, one of the primary challenges for the Point Pedernales Pipeline Project is the requirement to replant mitigation oaks within the pipeline’s right-of-way. This has created a scenario by which mitigation oak trees, which took several years to propagate were subsequently removed during ongoing pipeline maintenance activities, forcing the repetitious planting of new oaks after 20 years of an active mitigation program. While some projects have successfully completed mitigation requirements, such as the LOGP to Orcutt Pump Station project, these projects have taken decades to achieve success.

Legal and Policy Driven Mitigation Requirements
In order to preserve native oak trees and woodlands, several counties have adopted ordinances in the recent past. The ordinances have always been intended to: 1) encourage the protection of oak tree and woodlands from development, and 2) implement required replacement ratios if trees are removed or impacted by development. Currently, the Santa Barbara County replacement ratios\(^2\) are 15:1 for valley and blue oak; and 10:1 for coast live oak. Although these replacement ratios were not implemented by the County until 2003, the scientific basis for the ratios dates back to a symposium publication in 1987\(^3\). The following is an excerpt from this publication:

\[
\text{Mortality of 50\% or greater has been reported for caged oak seedlings monitored on a regular basis. Therefore, we recommend a replacement ratio of ten caged seedlings for each tree removed. This ratio can also be achieved by planting an excess of viable acorns and thinning to ten seedlings. It is suggested that a goal be set for five sapling trees per tree removed at the time monitoring is discontinued, in the hope that one might reach maturity and replace the tree originally lost. This is a reasonable number based on the causes of sapling mortality outlined above. This recommendation reflects silvicultural wisdom of many decades: plant large stands, and if necessary, thin to the desired density.}
\]

The publication states that the 10:1 replacement ratio for planting is not intended to ensure that all trees will survive into the future. In fact, survival of just one tree into the future is the true success criteria.

Beyond the local County ordinance, the state of California’s Senate Bill (SB) 1334, specifically referenced PRC § 21083.4(b)(2)(A)-(C) also addresses the need for oak tree mitigation. Below sections (A) – (C) are listed:

(A) Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees.

(B) The requirement to maintain trees pursuant to this paragraph terminates seven years after the trees are planted.

(C) Mitigation pursuant to this paragraph shall not fulfill more than one-half of the mitigation requirement for the project.

In contract to the County requirements which focus on planting of large quantities of new oaks, Item C. in State law restrains planting as a mitigation option and is clearly evidence that the conservation of existing oak trees is the preferred (and mandated) mitigation method at the State level. Conservation is also encouraged by the County. In the Comprehensive Plan Conservation Element Oak Tree Supplement (Republished May 2009), “the program calls for the development of incentives for landowners to protect and increase oak resources, including funding for conservation easements.”

Satisfying the somewhat contradictory request by the County, for large-scale oak planting and replacement, versus the State’s request for conservation of existing oaks presents a unique challenge.
However, a concept as defined in subsequent sections of the memorandum below provides a method to satisfy both conservation and new oak propagation efforts.

**Proposed Pipeline L901R & 903R**

In accordance with the various policy requirements summarized above, avoidance and protection of existing oak trees and woodland to the extent feasible is the preferred mitigation effort. Therefore, prior to the selection of a final location for the proposed replacement pipelines Line 901R and Line 903R, intensive environmental surveys were conducted to document the location of various environmental resources including but not limited to oak trees.

For instance, a thorough inventory of oak trees was created during the field surveys completed by Sage Institute, Inc. (Sage) between January and August 2017. Field surveys included collection of location (GPS), species type, and diameter at breast height (DBH) for native oak trees within the Biological Study Area (BSA). The BSA is defined as a 300-foot wide corridor along the proposed pipeline route. The oak tree inventory includes 11,813 data points representing approximately 11,900 trees.

Through this effort it became readily apparent that the pipeline corridor traverses a region where topographic constraints force the project to bisect areas with widespread and unavoidable masses of oak woodland. Within this regional dispersion of oak woodland, construction of the existing pipeline system in the 1980s (including the associated removal of 2,263 oaks), combined with ongoing maintenance of the pipelines and slow growth cycle of oak species, have retained an approximately 50-70 foot wide corridor, which is still devoid of mature oaks today as illustrated in Figure 2 below.

Therefore, with the exception of three (3) route deviations needed to avoid cultural resources, riparian vegetation, and the urban fringes of the City of Buellton it was determined that constructing the replacement pipeline systems in close proximity and parallel to the existing pipeline system was the environmentally superior location. The Project includes the installation of approximately 123.4 miles of replacement pipeline. The proposed route of the replacement pipeline system has been designed primarily to follow the existing Line 901 and 903 corridor, for various beneficial reasons including but not limited to:

- Line 901 and 903 underwent extensive environmental review in the late 1980s and their current locations were identified as the environmentally superior alternative based upon the need to avoid or mitigate impacts to various environmental resources (topography, viewshed, watersheds, etc.), which remain largely unchanged over the subsequent thirty-five (35) years.
- The original construction of Line 901 and 903 disturbed a corridor approximately 100-feet in width, resulting in the removal of mature vegetation such as oak trees and minor alterations to existing landforms which are now part of the baseline environmental conditions throughout the region.
- Ongoing operation and maintenance of Line 901 and 903 have kept the existing pipeline right-of-way relatively devoid of mature vegetation, manmade structures, and other obstructions.
- In some instances, short segments of the existing pipelines and casing can be utilized to facilitate installation of the replacement pipelines with associated reductions in grading/trenching disturbance.
- The existing pipeline routes through topographically steep terrain were often the safest feasible location for pipeline construction.
- Private landowners and public agencies have made long-term property development and planning decisions based upon the location of the existing pipelines.

Figure 2- Example Pipeline Corridor
Similar to the construction of the original pipeline system, development of the replacement Pipelines Line 901R and 903R will generally require the clearance of a *Temporary Construction Corridor* which would generally be 100-feet in width as depicted in Figure 3 below.

**Figure 3- Typical Temporary Construction Corridor**

![Diagram of Temporary Construction Corridor](image)

However, in many instances, the *Temporary Construction Corridor* narrows to less than 100-feet in width to avoid environmental impacts such as oak tree removal. As illustrated in Figure 4 below, the careful modification of the *Temporary Construction Corridor* limits has eliminated potential impacts to approximately 2,000 additional oak trees currently located on the fringes of the Project area.
Figure 4- Example *Temporary Construction Corridor*

- **Limits of Temporary Construction Corridor**
- **Limits of Permanent Maintenance Corridor**
- **Secondary Staging Area**
- **Typical Oak Tree Avoidance**
- **Replacement Pipeline**

---

**Figure Caption:**

The figure illustrates an example of a *Temporary Construction Corridor* with delineated limits for both permanent maintenance and temporary construction areas. The diagram includes a secondary staging area and typical oak tree avoidance, with specified distances for other features such as 190 ft., 80 ft., and 50 ft. marks.
Potential Line 901R & Line 903R Impacts
Despite the various efforts to minimize oak tree impacts to the extent feasible as described above, some level of oak tree removal or trimming will be inevitable. A summary of potential oak tree impacts related to the Project are outlined in detail Section 6.2 of the Sage Biological Resources Assessment (Report). Potential impacts were estimated by assessing the disturbance of the Project footprint, oak tree data gathered from field surveys, and Development Standards 1 and 2 of the Santa Barbara County Comprehensive Plan Conservation Element Oak Tree Supplement. The results of anticipated oak tree impacts included in the Report are summarized in Table 4 below. The oak tree numbers presented in Table 4 are the basis of the conceptual oak tree mitigation options discussed in this memorandum.

<table>
<thead>
<tr>
<th>TABLE 4. POTENTIAL OAK TREE IMPACTS FROM PROJECT CONSTRUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE REFERENCE</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Dev. Standard 1 - Oak Removal (All species)</td>
</tr>
<tr>
<td>Dev. Standard 2 - Dripline Encroachment (Valley Oak)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

Based on extensive field surveys and mapping, Plains anticipates a worst case scenario of approximately 879 impacted oak trees. As discussed above, approximately 2,263 oak trees were removed as a result of construction of the original pipeline system. The decrease in number of trees impacted when comparing the original pipeline system and the Project is expected as the Project replicates the L901 & 903 route and disturbance footprint (with several short deviations). The increase of Valley Oak impacts, 82 removed by L901 & 903 compared to 267 potentially impacted by the Project, is due to the use of County Standards 1 & 2 which required identification of trees with potential disturbance within six (6) feet of a dripline. A large portion of the Valley Oaks potentially impacted by the replacement pipeline Project are included in this estimate because of expected dripline encroachment (244 of 267 total, or 91%), not total removal of the tree, so it is likely that many of these trees would survive after construction is complete. For instance, there are dozens of large diameter, mature oak trees near the Project ROW (See Figure 5. below) which were clearly avoided during original construction of the existing pipeline due to their size and it is anticipated that they can be avoided again. However, there is no guarantee these trees will not be impacted so, to be conservative, they were included in the number of oak trees potentially impacted.
A priority Project goal for Plains is to ensure the final oak tree impacts after Project construction are a small fraction of the 879 potential tree impacts included in the Report. If these 879 oak trees are impacted as a result of construction, SCS estimates that strict adherence to County of Santa Barbara mitigation ratios would require the replanting of approximately 11,400 oak trees.

**Conceptual Oak Tree Mitigation and Off-Site Property Analysis**

In accordance with the fact that the Project, despite all feasible avoidance efforts being implemented, would result in some level of oak tree removal and impact, Plains and SCS have begun to develop an appropriate mitigation strategy. As discussed in the background sections above, large-scale artificial propagation of oaks is a challenging endeavor. Therefore, at a minimum SCS suggests that any required oak tree mitigation be conducted outside of the Project site boundaries. This will ensure that future activities related to long-term pipeline operations and maintenance will not impact the oak tree mitigation efforts as has occurred on comparable in pipeline project in the past. This would require Plains to either 1) acquire an offsite property specifically intended to host oak tree mitigation activity, or 2) partner with an existing conservation organization and contribute funds or similar support to their ongoing oak tree preservation effort.
To illustrate that this offsite mitigation approach is feasible, SCS has provided below is a summary of private properties, which are currently for sale in the Project vicinity and which provide a representative sample of what types of property would be available in the future for conservation via Plains funding and/or purchase. A vicinity map and parcel maps of these properties are included in Appendix 2. It is important to note that these properties have been identified solely for the purpose of establishing the feasibility and availability of off-site oak tree mitigation areas. Plains has not actively contracted or engaged these private land owners due to the fact that the Project design is subject to change throughout the prolonged permitting and environmental review process. As the Project proceeds closer to final agency approval and potential oak impacts can be estimated in greater detail, efforts will be made to solidify adequate offsite mitigation areas.

- **Happy Canyon Ranch Parcels, Santa Ynez**: 200 Acres APN’s 141-020-035 & 141-020-036
  - Approximately 100 Valley oak trees and 150-200 Coast Live oak trees on property

- **Jalama Canyon Ranch, Lompoc**: 1,000 Acres APN’s 083-270-004 & 083-270-005
  - Located on the northern boundary of the recent Jack and Laura Dangermond Preserve (~24,000 acres) with approximately 200 + acres of dense Coast Live oak woodland and thousands of oak trees. The current sale includes two 500 acre parcels.

- **Rancho Santa Rosa, between Los Alamos and Hwy 246**: 1,500 acres situated on 14 parcels (APN 099-070-040 located in center of Ranch)
  - Approximately 500 acres of Coast Live oak woodland with thousands of oak trees.

- **Tims Road Parcel, Santa Ynez**: 20 acres APN 135-300-005
  - Entire parcel composed of oak woodland/savannah with approximately 130 Coast Live oak trees and 10-20 Valley oak trees.

Provided below is a summary of current properties under existing perpetual conservation easements. These provide a representative sample of properties that are currently protected and are therefore potential candidates for offsite tree planting. A vicinity map of these properties is included in Appendix 2.

- **Hanson Ranch, North of Gaviota**, 14,000 acres conserved by the California Rangeland Trust;

- **Rancho La Purisima, Buellton**, 1,000 acres conserved by the Land Trust for Santa Barbara County;

- **Great Oak Ranch, Santa Ynez Valley**, 1,128 acres conserved by the Land Trust for Santa Barbara County;

- **San Lucas Ranch, Santa Ynez Valley**, 1,534 acres conserved by the California Rangeland Trust;
• Sedgewick Reserve, Santa Ynez Valley, 782 acres previously funded by L901 & 903 Pipeline;
• Rancho San Lorenzo, Los Alamos Valley, 594 acres conserved by the California Rangeland Trust, the Land Trust for Santa Barbara County, the Wildlife Conservation Board, and U.S. Fish and Wildlife Service with funding from Proposition 117 and the 2001 Recovery Land Acquisition Program;
• Long Canyon Ranch, South of Orcutt Hill and East of Los Alamos: 592 acres conserved by the Land Trust for Santa Barbara County.
• Jack and Laura Dangermond Preserve, Point Conception: 24,000 acres conserved by The Nature Conservancy.

In order to achieve successful offsite mitigation for oak tree impacts, a property with perpetual protection in place will be necessary. Therefore, SCS has reached out to organizations with local experience and previous success in the establishment of long-term conservation properties. The Land Trust for Santa Barbara County, the Cachuma Resource Conservation District, and the California Rangeland Trust have all been informed about the Project and Plains’ potential need for oak tree mitigation via offsite property and conservation. Plains is hopeful to work with these organizations in order to prepare, execute, and complete successful mitigation for impacted oak resources resulting from this Project.

**Conceptual Mitigation Strategies**
As previously discussed, the variable which will structure the mitigation strategy is the final number of trees impacted after construction of the pipeline. Again, the final number of trees is anticipated to be much less than the estimated 879 trees presented in the Report. Should the number of oak trees actually impacted by the Project be substantially lower than the current estimate, then a partnership with an existing conservation entity and support of oak tree planting on lands already under their conservatorship may be the most appropriate solution. However, if large-scale oak mitigation requirements are needed, potentially numbering in the thousands of new oaks to be propagated, then the acquisition of new lands may be needed.

In the event that new lands are acquired and are placed into conservation, Plains proposes to identify a property which possesses at least a 1:1 ratio of mature oaks in comparison to trees removed or significantly damaged by the Project. In other words, if approximately 879 trees are impacted by the Project, then a property with at least 879 or more existing mature oak trees would be acquired and placed into permanent conservation. This would adequately satisfy applicable State law which requires 50% or more of mitigation to consist of conservation rather than new planting.

Additionally, conservation of existing oak resources will be supplemented by the application of modern oak woodland management techniques, which will in-turn result in the natural propagation of new oak trees as required by County policy. For instance, recent studies indicate that either the implementation of total cattle grazing exclusion or strategic grazing practices is likely to increase the number of acorns germinating and surviving the seedling stage through the first 1-2 years of an oak tree’s life cycle. For instance, in a 2012 field study which took place on...
two similar and adjacent properties in Monterey County\(^4\), coast live oak regeneration numbers were drastically greater on the ungrazed property (refer to Figure 6). Additionally, a Northern California study in 2014 found that the density of oak seedlings and saplings was less than half in areas where cattle were present compared to areas without cattle\(^5\).

**Figure 6- Effects of Grazing on Oak Tree Growth**

![Cattle Grazing and Coast Live Oak Density (Trees/Hectare) Monterey County, CA (2012)](image)

The data indicates that in a promising scenario the implementation of cattle grazing management techniques results in a net increase of approximately 400 new oak tree seedlings per hectare which equates to approximately 160 additional oak tree seedlings per acre. Utilizing this method, nature is likely to be a much more effective nurturer of new oak trees in a quantity sufficient to satisfy County requirements. Accordingly the active management of approximately 71 acres of oak woodland could yield the propagation of approximately 11,400 new oak trees as required by standard County mitigation. As listed above, SCS has identified multiple properties which have 200 acres or more of existing oak woodland which could be utilized in such a program. This strategy would need to be further refined with careful consultation with the County biologist and pertinent success/monitoring criteria would be conditions of the *Project*.

---


Conclusion
As clarified in this memorandum, the proposed Project currently includes an estimate of 879 oak trees potentially impacted. Impacting this number of trees is possible, but actual Project construction is likely to impact fewer trees based upon conditions observed related to existing pipeline construction and oak impacts in the 1980s.

Although avoidance and preservation of oak trees has been made a top priority of the Project design, impacts to some oak trees will be unavoidable and therefore future mitigation will be necessary. Future mitigation for this Project depends greatly on the number of trees impacted and Plains is committed to making avoidance a priority during construction to limit impacts as much as possible. Plains proposes to either 1) fund and contract with a qualified third party to manage an offsite planting program should Project construction succeed in minimizing tree impacts to a manageable number (i.e. mitigation requires less than 1,000 new oaks to be planted), or 2) fund and contract with a qualified third party to manage the conservation of offsite property and implement modern oak woodland management techniques such as cattle grazing limitations. Additionally, example properties were included in order to provide a conceptual set of property types which may be used to fulfill these mitigation strategies in the future. Properties included private lands currently for sale with significant oak tree resources, and private lands currently under conservation easements. Plains will continue to communicate with local conservation organizations to encourage the development of conservation opportunities in the future.

Appendices

Appendix 1 – Oak Tree Inventory (Digital Excel Workbook)
Appendix 2 – Maps
Appendix 1 – Oak Tree Inventory (Digital Excel Workbook)
Appendix 2 – Maps