

7.0 PREFERRED ROUTE SELECTION

7.1 PBS&J'S ENVIRONMENTAL EVALUATION

The purpose of this study was to identify and evaluate the most viable alternative routes for SPS's proposed 230-kV transmission line between the existing Hitchland Substation and the existing Moore County Substation and to recommend the routes having the least adverse impacts.

PBS&J completed the environmental analysis of the eight primary alternative routes (Section 4.0), the results of which are shown in Table 7-1. The environmental evaluation was a comparison of alternatives strictly from an environmental viewpoint, based upon the measurement of 35 separate environmental criteria and the consensus opinion of PBS&J's group of evaluators. SPS used this information along with engineering, construction, maintenance, and operational factors to select a preferred route and several alternate routes. PBS&J's evaluation is discussed below.

PBS&J professionals with expertise in different environmental disciplines (wildlife biology, plant ecology, land use/planning, and archeology) evaluated the eight alternative routes based upon environmental conditions present along each route (augmented by aerial photo interpretation and field surveys, where possible) and the general routing methodology used by PBS&J and SPS. Each PBS&J staff person independently analyzed the routes and the environmental data presented in Table 7-1. The evaluators then discussed their independent results. The relationship and relative sensitivity among the major environmental factors were determined by the group as a whole. The group then selected a recommended preferred and alternative routes based strictly upon the environmental data.

During the initial discussion of the eight primary alternative routes (Figures 7-1a–d), it was the opinion of the group of evaluators that each of the alternative routes would be environmentally acceptable alternatives for this project. The final decision in the selection of a preferred route was reached by comparing the advantages and disadvantages of these routes and recommending one least-impacting route, and several alternative routes.

From a land use perspective, Alternative Route 8 was selected as the preferred route as it affects the least amount of habitable structures within 300 ft of the route centerline. Alternative Route 2 is the second preferred route from a land use perspective as it is the shortest and very few habitable structures will be affected within 300 ft of the route centerline.

From an ecological perspective, Alternative Route 5 was selected as the preferred route as it crosses the least number of streams, parallels the least amount of streams within 100 ft and impacts very little rangeland. Alternative Route 2 is the second preferred route as it would cross the least amount of open water and pastureland and very few emergent wetlands.

Based on the amount of recorded cultural resource sites, Alternative Route 3 is preferred as it encounters the least amount of high archeological/historical site potential followed by Alternative Route 5.

Following the evaluation by discipline, the group of PBS&J evaluators discussed the relative importance and sensitivity of the various criteria as applied to the eight primary alternative routes and the study area. Among these alternatives the environmental and land use data from Table 7-1 was used to determine the preferred route. Following this decision, the group selected Alternative Route 8 as the consensus-preferred route and then agreed on a consensus ranking for the remaining alternatives, starting with the least-impacting alternative route. This ranking is shown in Table 7-2. The decision to recommend the preferred route was based primarily on the following advantages for Alternative Route 8 among the objective criteria:

- minimum impact to habitable structures within 300 ft of the route centerline
- length of route is the average of all alternative routes
- no impact on private airstrips
- least amount of impact on FAA registered airports
- minimal amount of high archeological/historical site potential.

Table 7-2
Environmental Ranking of Primary Alternative Routes

Category/Ranking	Alternative Routes							
	1	2	3	4	5	6	7	8
Land Use	8	2	6	5	4	3	1	7
Ecology	5	2	6	1	4	3	8	7
Cultural Resources	3	5	4	6	1	8	7	2
Project Manager	8	2	6	5	4	1	3	7
Group Consensus	8	2	6	5	4	1	3	7

PBS&J's project manager for the Hitchland to Moore project reviewed all of the data and evaluations produced by the task managers and concurred with the rankings and recommendations for the alternative routes. Therefore, based upon its evaluation of this particular project and its experience and expertise in the field of transmission line routing, PBS&J recommends Alternative Route 8 as the preferred route and the remaining routes as alternates. Considering all pertinent factors, it is PBS&J's opinion that these routes best satisfy the criteria specified in Section 37.056(c)(4) of the Texas Utilities Code for consideration in the granting of CCNs.

Table 7-1
Environmental Data for Alternative Route Evaluation
Hitchland to Moore Substation

	Routes ³							
	1	2	3	4	5	6	7	8
1. Length of alternative route	311,492	288,336	330,304	332,502	324,689	316,105	322,398	324,128
2. Length of route parallel, adjacent to, or utilizing existing transmission lines	198,804	271,667	13,909	109,275	215,259	141,448	54,518	13,909
3. Length of route parallel and adjacent to existing public roads/highways	152,806	45,525	177,184	164,618	146,067	110,404	165,796	135,640
4. Length of route parallel and adjacent to existing pipelines	12,688	10,031	52,247	36,242	12,392	20,955	49,590	33,793
5. Length of route parallel to apparent property boundaries	215,382	143,284	288,972	301,597	277,001	242,374	270,925	274,231
6. Total length of route parallel to existing corridors (including apparent property boundaries) ⁴	265,374	287,770	295,114	317,726	318,102	280,894	315,473	280,373
7. Total number of habitable structures ¹ within 300 ft of the route centerline	14	6	9	9	11	7	9	5
8. Number of newly affected habitable structures ¹ within 300 ft of route centerline	5	0	8	3	1	1	8	4
9. Length of route across parks/recreational areas ²	0	0	0	0	0	0	0	0
10. Number of additional parks or recreational areas within 1,000 ft of the route centerline	0	0	0	0	0	0	0	0
11. Length of route across pastureland	61,837	29,703	165,112	107,467	123,817	112,274	165,112	107,992
12. Length of route across rangeland	154,099	192,524	135,824	189,340	133,747	128,366	132,936	181,443
13. Length of route across land with irrigation systems	85,561	61,134	19,374	34,145	65,574	65,472	19,374	24,699
14. Length of route across upland brushland	9,994	4,976	9,994	1,550	1,550	9,994	4,976	9,994
15. Length of route across riparian woodland	0	0	0	0	0	0	0	0
16. Length of route across aquatic/hydric	0	0	0	0	0	0	0	0
17. Length of route across emergent wetlands	1,681	1,010	1,648	2,091	469	428	1,648	2,050
18. Number of streams crossed by the route	18	16	25	16	7	18	24	28
19. Length of route parallel to streams (within 100 ft)	129	951	1,826	401	0	1,425	2,777	1,826
20. Number of known rare/unique plant locations within the ROW	0	0	0	0	0	0	0	0
21. Length of route through known habitat of endangered or threatened species	0	0	0	0	0	0	0	0
22. Number of recorded cultural resource sites crossed by the route	0	0	2	0	0	0	2	1
23. Number of additional recorded cultural resource sites within 1,000 ft of the route centerline	0	2	0	1	1	1	0	0
24. Length of route across areas of high archeological/historical site potential	114,072	107,840	148,764	101,724	68,696	107,504	151,452	136,416
25. Number of FAA-registered airstrips within 20,000 ft of the route centerline	1	1	2	2	2	1	2	1
26. Number of private airstrips within 10,000 ft of the route centerline	0	0	1	0	0	0	1	0
27. Number of heliports within 5,000 ft of the route centerline	0	0	0	0	0	0	0	0

	Routes ³							
	1	2	3	4	5	6	7	8
28. Length of route across open water (lakes, ponds)	0	0	3,024	3,824	1,528	0	3,024	168
29. Number of commercial AM radio transmitters within 10,000 ft of route centerline	0	0	0	0	0	0	0	0
30. Number of FM radio transmitters, microwave relay stations, and other electronic installations w/in 2,000 ft	1	1	1	1	1	1	1	1
31. Number of U.S. or State Highways crossed by the route	2	2	2	2	2	2	2	2
32. Number of farm-to-market (FM), county roads, or other streets crossed by the route	82	70	67	86	96	77	68	66
33. Number of railroads crossed by the route	1	1	1	3	3	1	1	1
34. Length of route within visual foreground zone of park/recreational areas (½ mile unobstructed)	0	0	0	0	0	0	0	0
35. Length of route within visual foreground zone of State and U.S. Highways (½ mile unobstructed)	51,124	30,069	26,171	104,229	104,229	38,210	18,590	38,210

¹ Structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis. Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, and schools.

² Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.

³ Route 1 = A-D-F-K-K1-X, Route 2 = A-C-G-J-P-K1-X, Route 3 = A-D-F-H-I-M-Q-S-U-W-X, Route 4 = B-L-N-R-S-T-W-X, Route 5 = B-L-O-P-K1-X, Route 6 = A-D-F-H-I-L-O-P-K1-X, Route 7 = A-C-G-I-M-Q-S-U-W-X; Route 8 = A-D-F-H-I-LN-R-S-U-W-X

⁴ The total amounts found in Line 6 reflect only the amount of the route that parallels and is adjacent to an existing corridor. In some cases, the route may follow a pipeline, property line and existing electric transmission line all within the same corridor. Therefore, Line 6 would not be a total of Lines 2, 3, 4, and 5.

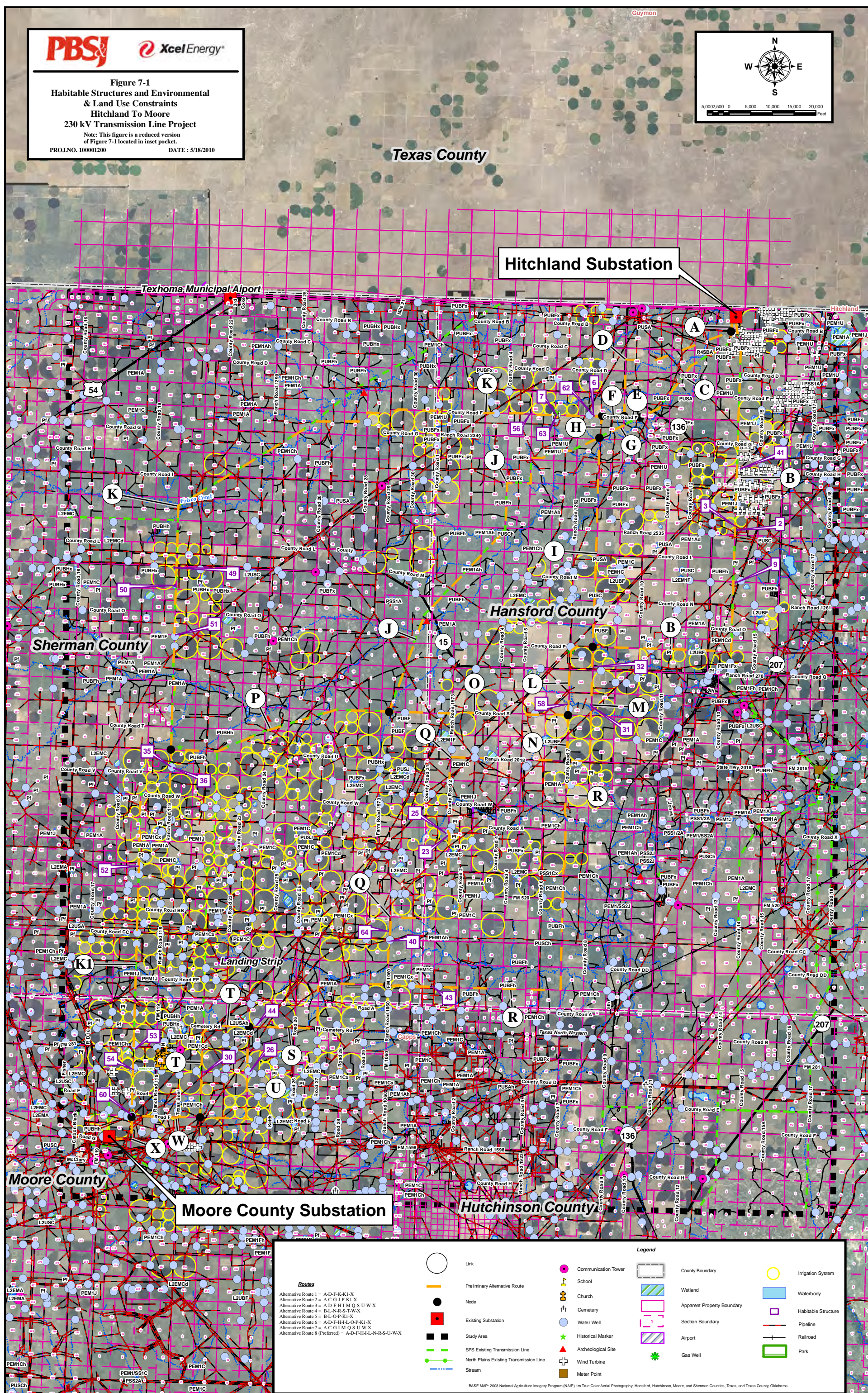
Note: All length measurements in ft. All linear measurements were obtained from aerial photography flown in 2008, with the exception of areas of high archeological/historical site potential which were measured from the USGS Topographic Quadrangles.

The aerial photography was ortho-rectified to National Map Accuracy Standards of +/- 15 ft.



Note: This figure is a reduced version
of Figure 7-1 located in inset pocket.

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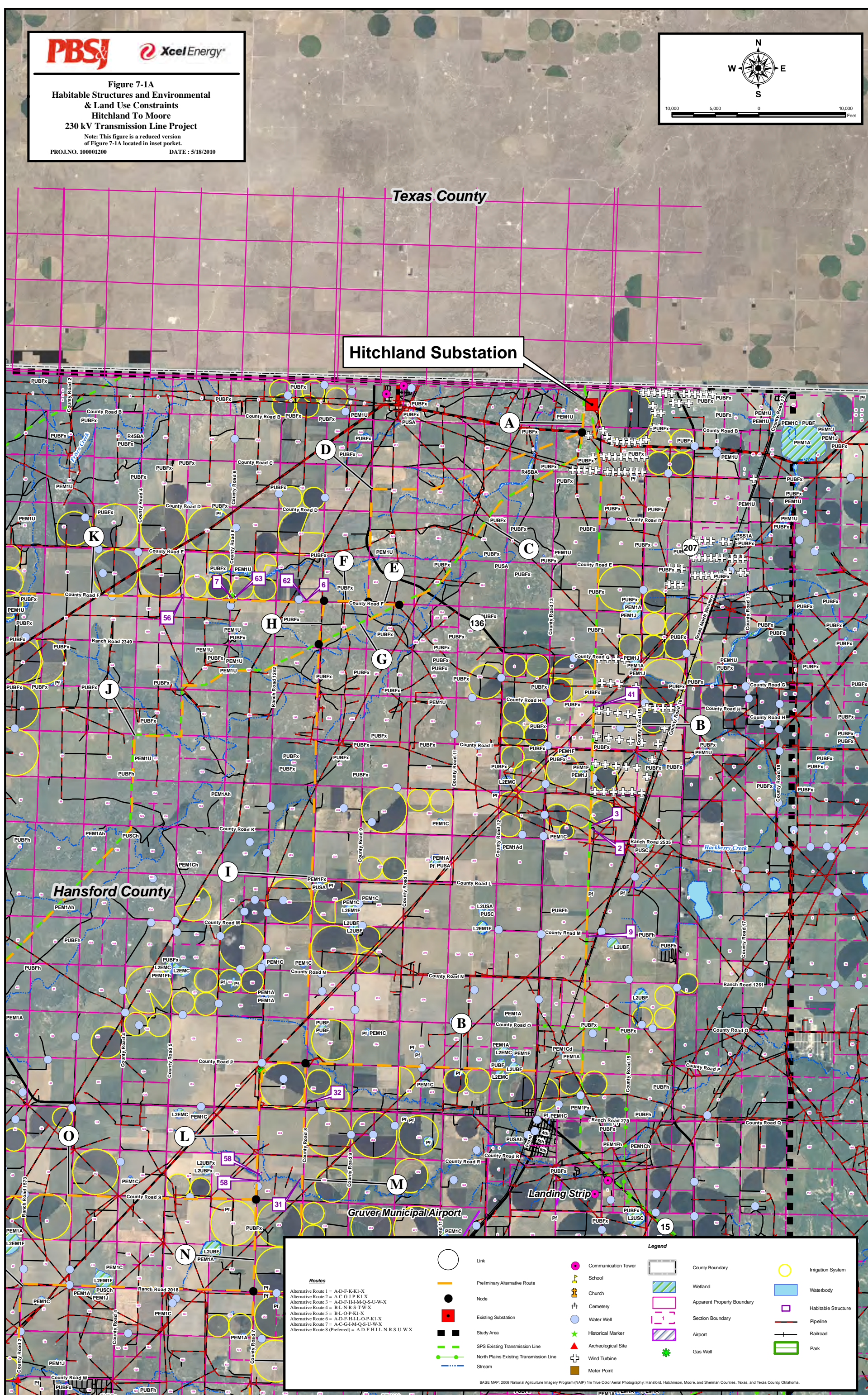
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Note: This figure is a reduced version
of Figure 7-1A located in inset pocket.

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