Collaboration with DuPont's Charles M. Cooper and his staff on plutonium separation facilities began even before Seaborg succeeded in isolating a sample of plutonium. Seaborg was reluctant to drop any of the approaches then under consideration, and Cooper agreed. The two decided to pursue all four methods of plutonium separation but put first priority on the lanthanum fluoride process Seaborg had already developed. Cooper's staff ran into problems with the lanthanum fluoride method in late 1942, but by then Seaborg had become interested in phosphate carriers. Work led by Stanley G. Thompson found that bismuth phosphate retained over ninety-eight percent plutonium in a precipitate. With bismuth phosphate as a backup for the lanthanum fluoride, Cooper moved ahead on a semiworks near Stagg Field.

DuPont Joins the Team

Compton's original plans to build the experimental pile and chemical separation plant on the University of Chicago campus changed during fall 1942. The S-1 Executive Committee concurred that it would be safer to put Fermi's pile in Argonne and build the pilot plant and separation facilities in Oak Ridge than to place these experiments in a populous area. On October 3 DuPont agreed to design and build the chemical separation plant. Groves tried to entice further DuPont participation at Oak Ridge by having the firm prepare an appraisal of the pile project and by placing three DuPont staff members on the Lewis committee. Because DuPont was sensitive about its public image (the company was still smarting from charges that it profiteered during World War I), Groves ultimately obtained the services of the giant chemical company for the sum of one dollar over actual costs. In addition, DuPont vowed to stay out of the bomb business after the war and offered all patents to the United States government.

Groves had done well in convincing DuPont to join the Manhattan Project. DuPont's proven administrative structure assured excellent coordination (Crawford Greenewalt was given the responsibility of coordinating DuPont and Met Lab planning), and Groves and Compton welcomed the company's demand that it be put in full charge of the Oak Ridge plutonium project. DuPont had a strong organization and had studied every aspect of the Met Lab's program thoroughly before accepting the assignment. While deeply involved in the overall war effort, DuPont expected to be able to divert personnel and other resources from explosives work in time to throw its full weight into the Oak Ridge project.

Moving the pilot plutonium plant to Oak Ridge left too little room for the full-scale production plant at the X-10 site and also left too little generating power for yet another major facility. Furthermore, the site was uncomfortably close to Knoxville should a catastrophe occur. Thus the search for an alternate location for the full-scale plutonium facility began soon after DuPont joined the production team. Compton's scientists needed an area of approximately 225 square miles. Three or four piles and one or two chemical separation complexes would be at least a mile apart for security purposes, while nothing would be allowed within four miles of the separation complexes for fear of radioactive accidents. Towns, highways, rail lines, and laboratories would be several miles further away.

Hanford

December 16, 1942, found Colonel Franklin T. Matthias of Groves's staff and two DuPont engineers headed for the Pacific Northwest and southern California to investigate possible production sites. Of the possible sites available, none had a better combination of isolation, long construction season, and abundant water for hydroelectric power than those found along the Columbia and Colorado Rivers. After viewing six locations in Washington, Oregon, and California, the group agreed that the area around Hanford, Washington, best met the criteria established by the Met Lab scientists and DuPont engineers. The Grand Coulee and Bonneville Dams offered substantial hydroelectric power, while the flat but rocky terrain would provide excellent support for the huge plutonium production buildings. The ample site of nearly one-half million acres was far enough inland to meet security requirements, while existing transportation facilities could quickly be improved and labor was readily available. Pleased with the committee's unanimous report, Groves accepted its recommendation and authorized the establishment of the Hanford Engineer Works, codenamed Site W.

Now that DuPont would be building the plutonium production complex in the Northwest, Compton saw no reason for any pile facilities in Oak Ridge and proposed to conduct Met Lab research in either Chicago or Argonne. DuPont, on the other hand, continued to support a semiworks at Oak Ridge and asked the Met Lab scientists to operate it. Compton demurred on the grounds that