Efficient address register allocation has been shown to be a central problem in code generation for processors with restricted addressing modes. This paper extends previous work on Global Array Reference Allocation (GARA), the problem of allocating address registers to array references in loops. It describes two heuristics to the problem, presenting experimental data to support them. In addition, it proposes an approach to solve GARA optimally which, albeit computationally exponential, is useful to measure the efficiency of other methods. Experimental results, using the MediaBench benchmark and profiling information, reveal that the proposed heuristics can solve the majority of the benchmark loops near optimality in polynomial-time. A substantial execution time speedup is reported for the benchmark programs, after compiled with the original and the optimized versions of GCC.