

AD-A152 152

NEGATIVE DECLARATION OF ENVIRONMENTAL EFFECTS OF LEITH
CREEK SCOTLAND COU. (U) CORPS OF ENGINEERS CHARLESTON
SC CHARLESTON DISTRICT 1977

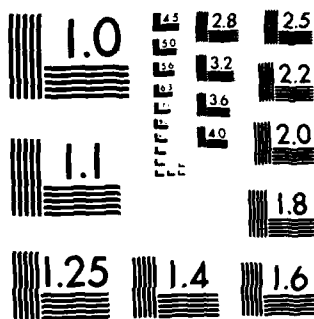
1/1

UNCLASSIFIED

F/G 13/2

NL

			END										
			FILED										
			DTM										



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

AD-A152 152

DTIC FILE COPY

Negative Declaration of Environmental Effects of Leith Creek
Scotland County, N. C., Flood Control Project

1977



Introduction

The Leith Creek Watershed is located in Scotland County in the coastal plains section of North Carolina. The watershed consists of a total area of 13.24 square miles above its confluence with Little Creek southeast of the City of Laurinburg. The Leith Creek flood plain passes through the northeast portion of the City of Laurinburg and forms the boundary between Laurinburg and East Laurinburg in its lower reach. The revised project area is limited to that 1.97 mile portion of Leith Creek between Gill Street and the L & S Railroad just above State Road 1645 (Fertilizer Plant Road). Development within the flood plain of the study reach generally consists of low-cost housing and several small commercial concerns. An estimated \$26,550 in damages occur annually in the study area. Problems of lesser importance are health problems due to septic tank overflow and standing water at flood stages; collection of trash, debris, sediment and large discarded articles in the creek bed; and safety problems due to flooding.

Existing Environmental Setting

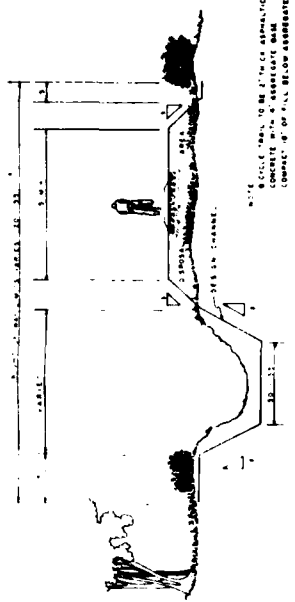
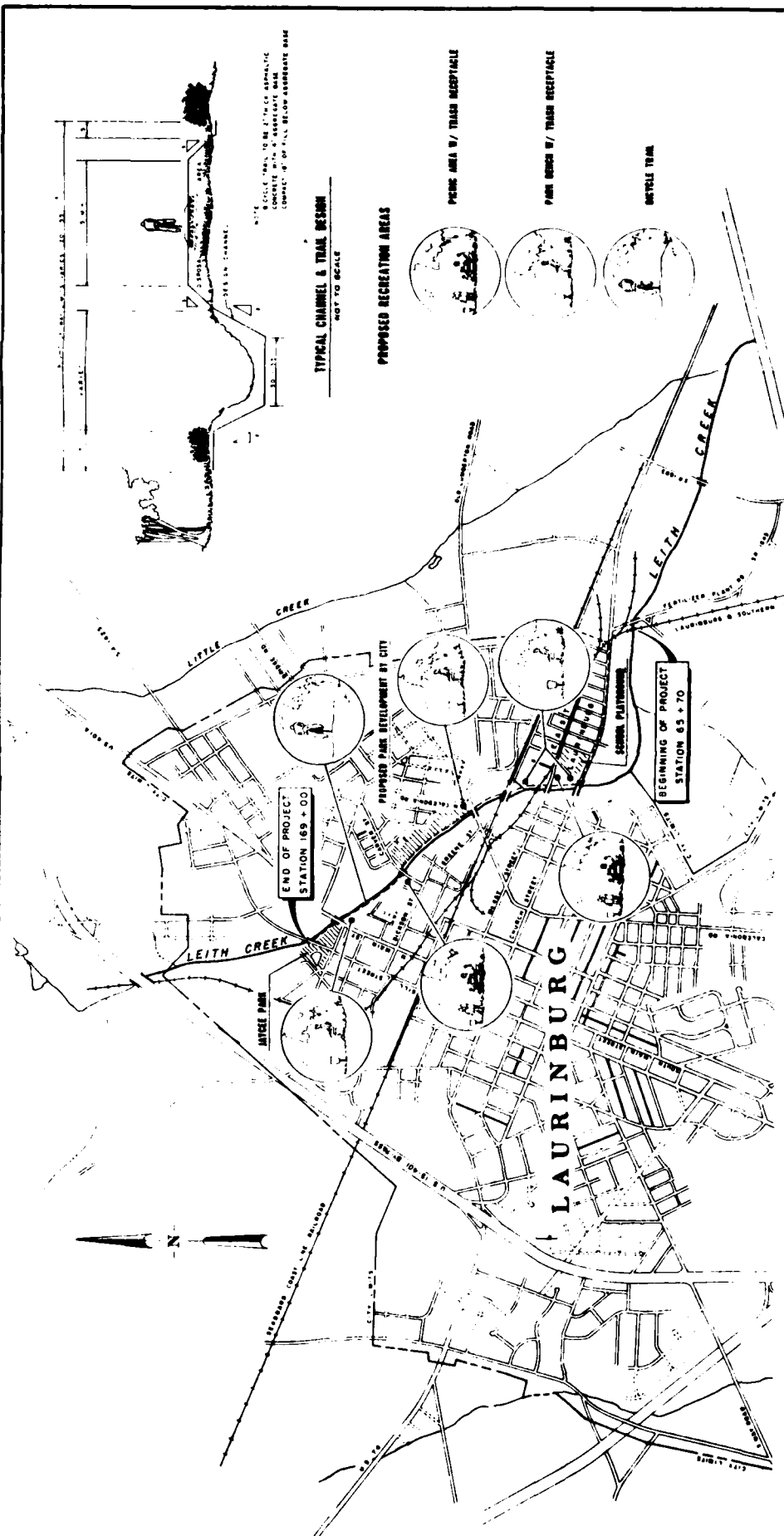
The part of Leith Creek originally under consideration for flood control measures extends 3.23 miles from US 74 Bypass to US 15-401 Bypass. The lower portion of this original study area from US 74 Bypass to the L & S Railroad just above State Road 1645 is wooded swamp characterized by backwater, poorly defined channels and lush vegetation.

85 03 15 080

This low area provides excellent habitat for waterfowl, reptiles, amphibians and mammals common to swamps. Cypress and black gum are the dominant tree types. Redbreast sunfish, redbfin pickerel and largemouth bass are reported, in spite of residual pollution from Laurinburg. Wood ducks, woodcock, hawks, owls and various songbirds are seasonally present.

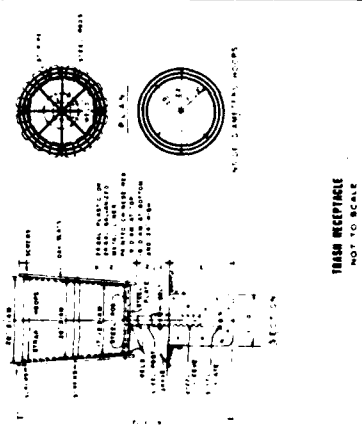
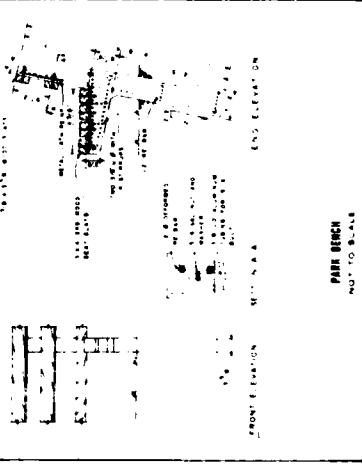
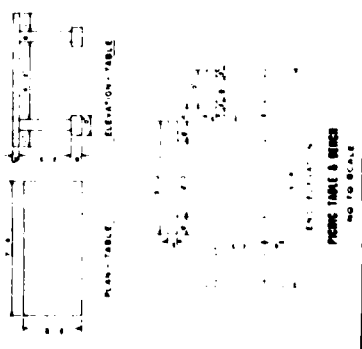
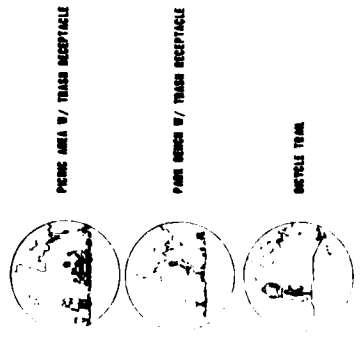
From State Road 1645 to E. Church Street, there is a change to a better defined channel. Tree types change from cypress and black gum to less water tolerant species of sweet gum, sycamore, tulip poplar and a few pines. Black willow, privet, smilax and various shrubs and grasses grow to the water's edge and extend well over the creek. Aquatic vegetation is established on much of the creek's bottom. From E. Church Street to Gill Street, the change to better drained soils and a more sharply defined channel continues. Wildlife in this urban reach is limited to a narrow strip of habitat which is marginal to moderate in value. Trash on the channel bottom, floating debris and scum trapped by clogging vegetation, and trash along the side make the stream aesthetically unpleasing for much of this reach. Sewage and other effluent discharges further degrade water quality.

Above Gill Street more pines appear along with sweet gum, sycamore, tulip poplar and some oak. Land adjacent to the creek is more characteristic of forests, numerous trees having diameters of 24 inches or greater. Habitat is suitable for beaver, squirrels, rabbits, raccoons and other small mammals. The area provides habitat for wood



TYPICAL CHANNEL & TRAIL DESIGN
NOT TO SCALE

PROPOSED RECREATION AREAS



CORPS OF ENGINEERS, U. S. ARMY
CHARLESTON, SOUTH CAROLINA, DISTRICT
LEITH CREEK
LAURINBURG, SCOTLAND COUNTY, N. C.
RECOMMENDED PLAN OF IMPROVEMENT
INTERIOR 1975

The reaches above Gill Street and below the L & S Railroad at RR 1645 have the greatest environmental value but have the smallest potential for flood damages. The proposed plan and alternatives have been modified so that both of these segments are deleted.

The most appropriate plan of improvement in the Leith Creek Basin is a combination structural and nonstructural plan. The structural measures consist of cleaning and widening the existing channel for a total distance of 1.97 miles, replacing two highway bridges and relocating two water mains and one sewer line. Nonstructural measures consist of passage, by the local sponsor, of regulatory measures to control the residual flood plain. The concept of designated floodways is recommended. Recreational facilities in the form of a linear greenway with bike trail and picnic tables are also included as part of the recommended plan. The main features of the recommended plan are as follows:

Widen and deepen the existing channel a total distance of 1.5 miles. Bottom widths vary from 35 feet in the reach between Laurinburg and Southern Railroad (Station 65+70) and N. Main Street (Station 162+60) to 30 feet between N. Main Street and

Avail. 11/1/55
Dist. 11/1/55
A-1

the end of the project at Gill Street (Station 169+00). Channel side slopes are designated as 2 horizontal on 1 vertical.

Bottom slopes range from .0015 ft/ft to .00086 ft/ft.

Remove and replace the existing McKay Street Bridge. Replacement structure will have a minimum low member elevation of 196.4 feet msl and sufficient opening to pass a flow of 1640 cfs with a head loss of no more than 0.2 feet.

Remove and replace the existing Carver Street Bridge. Replacement structure will have a low member elevation of 201.0 feet msl and have sufficient opening to pass a flow of 1570 cfs with a head loss of no more than 0.2 feet.

Relocate the following utility crossings:

- 8 inch water main near McKay Street
- 8 inch sewer main near Caledonia Road
- 6 inch water main near Carver Street

Acquisition of 20.72 acres of permanent right-of-way will be required to implement the proposed plan.

Local sponsor is required to adopt and enforce land use measures to prevent the unwise and uneconomical development of the flood plain. The recommended plan would compliment plans by the City of Laurinburg to construct a park on the western bank between Carver Street and Caledonia Road. Clearing, grading and seeding

would be done such that the project area could be maintained as a greenway from Gill Street to Church Street. Landscaping with ornamental shrubbery, an asphalt bike and walking trail, picnic tables, benches and possibly simple playground items would be provided on a 50-50 cost sharing basis with Scotland County. (See Plate 1)

Probable Impact of the Proposed Plan

The proposed plan would result in \$9,350 net average annual flood control benefits and would alleviate 88 percent of the tangible 50-year flood damage. The plan would remove most of the health hazard due to septic tank overflow into standing water during periods of flooding. Cleaning of the creek bottom would result in the removal of trash, debris and large discarded articles. Cleaning and widening would result in the removal of vegetation which, in places, clogs the channel and collects floating debris and scum. A greenway with paths and landscaping would improve the appearance of the area and provide recreation in a low income portion of the city. Continued maintenance by the local sponsor would provide long-term improvement.

Adverse effects of the proposed plan include the annual expense of \$13,900 to achieve the \$23,250 in flood control benefits, the destruction of existing bottom flora and invertebrates, loss of vegetation from one side of the creek, and a temporary increase in turbidity and sediment load. The plan could also drain some saturated soils immediately adjacent to the creek.

Right-of-way clearing for the plan would result in the selective clearing of 19.5 acres of vegetation. The cover lost would include shrubs and thickets (black willow, privet, honeysuckle and smilax) and some trees (sweet gum, sycamore, black gum, a few pines and small oaks). Work on the channel requiring heavy equipment adjacent to the stream will be done from one side only, and trees on the stream's opposite side will be left for cover. Where possible and where compatible with plans for a greenway, selected trees will be left on both sides. The project area is a narrow strip which is impinged upon from both sides by residential and commercial development, and provides only marginal to moderate habitat for birds, squirrels, rabbits and other small animals. Studies by the North Carolina Wildlife Resources Commission show that the amount of stream cover is the greatest single factor affecting fish populations in streams disturbed by flood control measures. Fish resources in the project area are limited to darters, daces, a few sunfish of minimal size, and possibly small pickerel or small largemouth bass at the lower project limit. Since the proposed plan derives its flood control by widening and deepening of the channel, cover could be reestablished along the edges of the creek without affecting flow.

Existing flora and invertebrates from the existing predominantly sand and silt bottom will be removed, as with all four channel modification plans. The sand and silt bottom should gradually be recolonized from the undisturbed creek bottom above the project.

Erosion, turbidity and sedimentation will be increased during and after construction until vegetation is reestablished. Seeding with grass will be done on all cleared areas. The proposed plan requires 34,700 cubic yards of excavation and 19.5 acres of selective clearing. A small increase in sediment load may occur during periods of high discharge due to increased velocities as a result of confinement of waters to the stream channel. Immediately below the lower project limit the creek slows and widens to form a broad swamp with no defined channel. This area acts as a filter. On days of high volume flow and turbidity in the upper reaches of Leith Creek, clear water can be observed in this lower swampy area. Accumulation of sediment takes place in this lower area under present conditions, but does not appear to affect aquatic plant vigor or fish and wildlife habitat.

The proposed plan calls for deepening to as much as 2 feet along portions of the project to tie in with the bottoms of existing culverts. In the existing channel, excavation would amount to little more than removal of recently deposited sediment and silt. Widening of the channel would result in excavation to this same level, approximately the natural elevation of the creek bottom. Fill material will be placed such that drainage into the creek will not be blocked. Culverts will be provided where necessary. Elevated fill areas and a larger channel could result in better drained soils and fewer lowland hardwoods in the reestablished cover of a very narrow strip immediately adjacent to the creek.

The proposed plan, like all of the structural alternatives, could be made compatible with the plans by the City of Laurinburg to construct

a park on the western bank between Carver Street and Caledonia Road. The proposed plan includes the establishment and maintenance of a greenway along a large portion of the project. Aesthetic and recreational benefits from this greenway would be gained through a 50-50 cost sharing agreement with Scotland County only for the additional cost above normal clearing, grading and seeding for flood control and erosion control.

Alternatives to the Proposed Action

Description of alternative plans and their impacts are contained in Tables 1 and 2. Plans 1-4 are varied channel modification solutions. Plan 5 attempts flood control by permanent removal of adjacent vegetation rather than changing channel dimensions. Plan 6, the non-structural alternative, cannot be economically justified. Plan 3 requires the least Federal and non-Federal costs of the alternatives considered, and alleviates 88% of the total flood damages. Plan 3 provides the greatest net benefits (excess benefits over costs) and has the best benefit/cost ratio. Plan 3 was selected as the National Economic Development (NED) Plan.

Because of the large amount of trash, debris and sediment in the creek, some plan to clean out the bottom for aesthetic, water quality and flood control improvement seems called for. Plan 3 accomplishes this with less disturbance than the other channel modification plans because of less excavation, clearing and shaping. With selective clearing procedures and plans to maintain the area as a greenway, Plan 3 was also selected as the Environmental Quality (EQ) Plan.

Table 1

COMPARISON OF ALTERNATIVE PLANS

the location of areas, even all plans, and the action alternative are all limited to the immediate pliancy area with exception of sediments, the

[illegible]

Table 1
(continued)
SYSTEM OF ACCOUNTS

	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Non-structural Plan 6	No Action Plan 7
Environmental quality degraded	(1) Selective clearing of vegetation (22.3 acres). Cleared area would be seeded with grass, and other vegetation could be re-established. (a) Small portion of habitat in immediate area for birds, squirrels & other small wildlife will be lost until vegetation is re-established. That portion lost is of marginal value. (b) Creek cover for fish habitat will be decreased on one side until vegetation is re-established. (2) Destruction of existing bottom flora and invertebrates. Some re-establishment with time. 1,6,9 (3) Increase in turbidity & sediment load during & after construction until grass & natural vegetation are established on cleared areas. Most will settle out in wide, slow moving, swampy area immediately below project. 1,3,9 (4) In areas where excavation proceeds deeper than the more recent sediment & silt deposits, draining of soils is possible. 1,4,9	(1) Loss of vegetation with same adverse impacts described for Plan 1, except that impacts with Plan 2 would be greater in proportion to the amount of vegetation cleared (35.43 acres for Plan 2). 1,6,9 (2) Same as Plan 1*	(2) Same as Plan 1*	(1) Plan 3 requires the least amount of clearing of all five structural plans. Impacts due to loss of vegetation for Plan 3 would be similar to Plan 1, but less severe, due to the lesser amount of clearing required (12.97 acres). Plan 4 requires more cover loss than Plan 3, and a wider permanent creek bed. 1,6,9 (2) Same as Plan 1*	(1) Impacts due to loss of vegetation with Plan 5 would be similar to all plans, but clearing is required (47.5 acres) than for all other plans. Vegetation could not be re-established as removal of the vegetation provides all the flood control benefits of this plan. 1,6,9 (2) Bottom flora & invertebrates would be disturbed only as required for cleaning bottom. 1,3,9 (3) Because of the large amount of clearing required with Plan 5, the turbidity & increased sediment load would probably be as great or greater than any other plan. 1,3,9 (4) No change in water table.	(1) No clearing or cover loss. (2) No bottom disturbance. (3) No change in turbidity or sediment load. (4) No change in water table.	(1) Same as for Non-structural Plan - No degradation. (a) No clearing or cover loss.
Beneficial Impacts	(1) Flood waters containing raw sewage would be more confined to creek channel. 1,4,9 (2) Slight safety benefits. 1,4,9 (3) Health benefits similar to Plan 1, except that Plan 2 provides less channel capacity.* (4) Same as Plan 1, except that Plan 2 provides greater channel capacity.*	(1) Same as Plan 1, except that Plan 2 provides less channel capacity.* (2) Same as Plan 1, except that Plan 2 provides greater channel capacity.*	(1) Same as Plan 1, except that Plan 3 provides less channel capacity.* (2) Same as Plan 1, except that Plan 3 provides less channel capacity.*	(1) Same as Plan 1 except that Plan 4 provides slightly less channel capacity.* (2) Same as Plan 1 except that Plan 4 provides slightly less channel capacity.*	(1) Health benefits similar to Plan 1, except that Plan 5 provides no channel improvements, & the least control of the five structural plans. (2) Health benefits similar to Plan 1, except that Plan 5 provides no channel improvements, & the least control of the five structural plans.	(1) Removal of some homes from flooded area and health problems. Removal of some open sewerage facilities. Flooding would continue, & those homes susceptible to sewage backup problems which were flood proofed would remain. 1,4,9 (2) Slight safety benefits similar to Plans 1-5, but no improvement in channel capacity. 1,4,9	(1) No benefits.*
Social Well Being							
Health							
Danger of drownings, accidents, structural collapse due to creek flooding, etc. are slight							

3 Social Well Being

SYSTEM OF ACCOUNTS

	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Non-Structural Plan 6	Action Plan 7
1. Adverse impacts	(1) No significant adverse impacts	(1) No significant adverse impacts	(1) No significant adverse impacts	(1) No significant adverse impacts	(1) No significant adverse impacts	(1) Persons whose homes were moved or destroyed and those who lost their property would be compensated with cash, 1-2, 9	(1) No adverse impacts
2. Regional development	(1) Regional flood control & recreational benefits would be identical to those specified for NEB above, 3-5, 9	(1) Regional flood control & recreational benefits would be identical to those specified for NEB above, 3-5, 9	(1) Regional flood control & recreational benefits would be identical to those specified for NEB above, 3-5, 9	(1) Regional flood control & recreational benefits would be identical to those specified for NEB above, 3-5, 9	(1) Regional flood control & recreational benefits would be identical to those specified for NEB above, 3-5, 9	(1) Regional flood control & recreational benefits would be identical to those specified for NEB above, 3-5, 9	(1) No adverse impacts
3. Adverse impacts	(1) That area which would no longer be part of the flood plain after implementation of Plan 1 would be more attractive to building & development. To the extent that this secondary development causes more rapid water runoff, increased discharge of trash or waste, and increased erosion, this growth would be undesirable, 2-2, 9	(1) That area which would no longer be part of the flood plain after implementation of Plan 2 would be more attractive to building & development. To the extent that this secondary development causes more rapid water runoff, increased discharge of trash or waste, and increased erosion, this growth would be undesirable, 2-2, 9	(1) That area which would no longer be part of the flood plain after implementation of Plan 3 would be more attractive to building & development. To the extent that this secondary development causes more rapid water runoff, increased discharge of trash or waste, and increased erosion, this growth would be undesirable, 2-2, 9	(1) That area which would no longer be part of the flood plain after implementation of Plan 4 would be more attractive to building & development. To the extent that this secondary development causes more rapid water runoff, increased discharge of trash or waste, and increased erosion, this growth would be undesirable, 2-2, 9	(1) That area which would no longer be part of the flood plain after implementation of Plan 5 would be more attractive to building & development. To the extent that this secondary development causes more rapid water runoff, increased discharge of trash or waste, and increased erosion, this growth would be undesirable, 2-2, 9	(1) That area which would no longer be part of the flood plain after implementation of Plan 6 would be more attractive to building & development. To the extent that this secondary development causes more rapid water runoff, increased discharge of trash or waste, and increased erosion, this growth would be undesirable, 2-2, 9	(1) Unless a flood management plan is implemented, a limited amount of development could be expected in the flood plain, 2

1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016, 2018, 2020, 2022, 2024, 2026, 2028, 2030, 2032, 2034, 2036, 2038, 2040, 2042, 2044, 2046, 2048, 2050, 2052, 2054, 2056, 2058, 2060, 2062, 2064, 2066, 2068, 2070, 2072, 2074, 2076, 2078, 2080, 2082, 2084, 2086, 2088, 2090, 2092, 2094, 2096, 2098, 2100, 2102, 2104, 2106, 2108, 2110, 2112, 2114, 2116, 2118, 2120, 2122, 2124, 2126, 2128, 2130, 2132, 2134, 2136, 2138, 2140, 2142, 2144, 2146, 2148, 2150, 2152, 2154, 2156, 2158, 2160, 2162, 2164, 2166, 2168, 2170, 2172, 2174, 2176, 2178, 2180, 2182, 2184, 2186, 2188, 2190, 2192, 2194, 2196, 2198, 2200, 2202, 2204, 2206, 2208, 2210, 2212, 2214, 2216, 2218, 2220, 2222, 2224, 2226, 2228, 2230, 2232, 2234, 2236, 2238, 2240, 2242, 2244, 2246, 2248, 2250, 2252, 2254, 2256, 2258, 2260, 2262, 2264, 2266, 2268, 2270, 2272, 2274, 2276, 2278, 2280, 2282, 2284, 2286, 2288, 2290, 2292, 2294, 2296, 2298, 2300, 2302, 2304, 2306, 2308, 2310, 2312, 2314, 2316, 2318, 2320, 2322, 2324, 2326, 2328, 2330, 2332, 2334, 2336, 2338, 2340, 2342, 2344, 2346, 2348, 2350, 2352, 2354, 2356, 2358, 2360, 2362, 2364, 2366, 2368, 2370, 2372, 2374, 2376, 2378, 2380, 2382, 2384, 2386, 2388, 2390, 2392, 2394, 2396, 2398, 2400, 2402, 2404, 2406, 2408, 2410, 2412, 2414, 2416, 2418, 2420, 2422, 2424, 2426, 2428, 2430, 2432, 2434, 2436, 2438, 2440, 2442, 2444, 2446, 2448, 2450, 2452, 2454, 2456, 2458, 2460, 2462, 2464, 2466, 2468, 2470, 2472, 2474, 2476, 2478, 2480, 2482, 2484, 2486, 2488, 2490, 2492, 2494, 2496, 2498, 2500, 2502, 2504, 2506, 2508, 2510, 2512, 2514, 2516, 2518, 2520, 2522, 2524, 2526, 2528, 2530, 2532, 2534, 2536, 2538, 2540, 2542, 2544, 2546, 2548, 2550, 2552, 2554, 2556, 2558, 2560, 2562, 2564, 2566, 2568, 2570, 2572, 2574, 2576, 2578, 2580, 2582, 2584, 2586, 2588, 2590, 2592, 2594, 2596, 2598, 2600, 2602, 2604, 2606, 2608, 2610, 2612, 2614, 2616, 2618, 2620, 2622, 2624, 2626, 2628, 2630, 2632, 2634, 2636, 2638, 2640, 2642, 2644, 2646, 2648, 2650, 2652, 2654, 2656, 2658, 2660, 2662, 2664, 2666, 2668, 2670, 2672, 2674, 2676, 2678, 2680, 2682, 2684, 2686, 2688, 2690, 2692, 2694, 2696, 2698, 2700, 2702, 2704, 2706, 2708, 2710, 2712, 2714, 2716, 2718, 2720, 2722, 2724, 2726, 2728, 2730, 2732, 2734, 2736, 2738, 2740, 2742, 2744, 2746, 2748, 2750, 2752, 2754, 2756, 2758, 2760, 2762, 2764, 2766, 2768, 2770, 2772, 2774, 2776, 2778, 2780, 2782, 2784, 2786, 2788, 2790, 2792, 2794, 2796, 2798, 2800, 2802, 2804, 2806, 2808, 2810, 2812, 2814, 2816, 2818, 2820, 2822, 2824, 2826, 2828, 2830, 2832, 2834, 2836, 2838, 2840, 2842, 2844, 2846, 2848, 2850, 2852, 2854, 2856, 2858, 2860, 2862, 2864, 2866, 2868, 2870, 2872, 2874, 2876, 2878, 2880, 2882, 2884, 2886, 2888, 2890, 2892, 2894, 2896, 2898, 2900, 2902, 2904, 2906, 2908, 2910, 2912, 2914, 2916, 2918, 2920, 2922, 2924, 2926, 2928, 2930, 2932, 2934, 2936, 2938, 2940, 2942, 2944, 2946, 2948, 2950, 2952, 2954, 2956, 2958, 2960, 2962, 2964, 2966, 2968, 2970, 2972, 2974, 2976, 2978, 2980, 2982, 2984, 2986, 2988, 2990, 2992, 2994, 2996, 2998, 3000, 3002, 3004, 3006, 3008, 3010, 3012, 3014, 3016, 3018, 3020, 3022, 3024, 3026, 3028, 3030, 3032, 3034, 3036, 3038, 3040, 3042, 3044, 3046, 3048, 3050, 3052, 3054, 3056, 3058, 3060, 3062, 3064, 3066, 3068, 3070, 3072, 3074, 3076, 3078, 3080, 3082, 3084, 3086, 3088, 3090, 3092, 3094, 3096, 3098, 3100, 3102, 3104, 3106, 3108, 3110, 3112, 3114, 3116, 3118, 3120, 3122, 3124, 3126, 3128, 3130, 3132, 3134, 3136, 3138, 3140, 3142, 3144, 3146, 3148, 3150, 3152, 3154, 3156, 3158, 3160, 3162, 3164, 3166, 3168, 3170, 3172, 3174, 3176, 3178, 3180, 3182, 3184, 3186, 3188, 3190, 3192, 3194, 3196, 3198, 3200, 3202, 3204, 3206, 3208, 3210, 3212, 3214, 3216, 3218, 3220, 3222, 3224, 3226, 3228, 3230, 3232, 3234, 3236, 3238, 3240, 3242, 3244, 3246, 3248, 3250, 3252, 3254, 3256, 3258, 3260, 3262, 3264, 3266, 3268, 3270, 3272, 3274, 3276, 3278, 3280, 3282, 3284, 3286, 3288, 3290, 3292, 3294, 3296, 3298, 3300, 3302, 3304, 3306, 3308, 3310, 3312, 3314, 3316, 3318, 3320, 3322, 3324, 3326, 3328, 3330, 3332, 3334, 3336, 3338, 3340, 3342, 3344, 3346, 3348, 3350, 3352, 3354, 3356, 3358, 3360, 33

...

Table 2
SUMMARY STATE OF ACCOUNTS

A	PLAN DESCRIPTION	PLAN					P. 7
		PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6
B.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
C.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
D.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
E.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
F.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
G.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
H.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
I.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
J.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
K.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
L.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
M.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
N.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
O.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
P.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
Q.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
R.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
S.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
T.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
U.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
V.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
W.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
X.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
Y.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
Z.	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7
	PLAN 1	PLAN 2	PLAN 3	PLAN 4	PLAN 5	PLAN 6	PLAN 7

PLAN EVALUATION

- (1) Contribution to planning objectives
- (2) Relationship to 4 National Accounts
 - (a) NEP
 - Annual costs exceed benefits by \$2,000 total net annual avg. benefits.
 - Benefits (clearing of bottom debris) same as for all other structural plans. Only Plan 6 has more.
 - More cover removed, water table lower, and more turbidity than with Plans 3 or 6.
 - Annual costs exceed benefits by \$2,000.
 - Benefits same as for all other structural plans. Only Plan 6 has more.
 - More cover removed, water table lower, and more turbidity than with Plans 3 or 6.
 - (b) FV
 - Annual costs exceed benefits by \$2,000.
 - Benefits same as for all other structural plans. Only Plan 6 has more.
 - More cover removed, water table lower, and more turbidity than with Plans 3 or 6.
 - Annual costs exceed benefits by \$2,000.
 - Benefits same as for all other structural plans. Only Plan 6 has more.
 - More cover removed, water table lower, and more turbidity than with Plans 3 or 6.

Conclusions

The selected plan will provide net economic and environmental improvements to the area. The proposed action will have no significant adverse effect on the environment and is not environmentally controversial. The following factors were considered pertinent:

1. The environmental value of the affected area

- a. Much of the creek in the project area is polluted and aesthetically unpleasing in its present state.

- b. The creek and adjacent cover in the revised project area provide only marginal habitat for limited types of fish and wildlife.

- c. The area possesses no unique plant or animal life. Similar but more valuable habitat is available in the rest of Leith Creek and the many streams and creeks surrounding Laurinburg.

- d. The most environmentally valuable portions of the original project area were deleted from the plan.

2. The area affected

- a. Less than two miles of Leith Creek are affected.

- b. Only a narrow strip on one side of the creek will require total clearing and placement of fill.

3. Severity of the impact

a. None of the impacts are of such severity as to warrant major concern.

b. The proposed action could be reversed in the time necessary for the original vegetation to reestablish.

c. Cleaning of the creek bottom, landscaping and a continued maintenance program will result in a net improvement to the environment of the area.

d. No controversy has been raised as a result of the project by agencies, groups or individuals.

Coordination with Others

The study of Leith Creek was initiated in response to a request by the City of Laurinburg, North Carolina. A public meeting was held on 20 November 1975 at Laurinburg to present the study findings to all interested parties. An announcement of the public meeting appeared in the area newspaper prior to the meeting date, and by letter of 6 November 1975, numerous individuals, groups and agencies were urged to attend. Oral comments were recorded, and written comments after the meeting were invited. Follow up letters were sent to the North Carolina Department of Natural and Economic Resources and the U. S. Fish and Wildlife Service to solicit comments on the project. Both agencies indicated concurrence with the finding that no significant environmental impacts would occur. The North Carolina State Historic Preservation Officer was furnished copies of the Cultural Resources

Survey and agreed with the findings that no resources were present within the small area of impact. The environmental assessment and negative assessment were sent to local, State, and Federal agencies having jurisdiction or interest in the project, and the general public was notified of its availability. A 404 notice was issued, and after 30 days, only two responses were received. No objections to the project were voiced. All comments have been fully considered and incorporated into the statement.

The detailed project report (DPR) will be released to the cognizant government agencies subject to approval by SAD. A copy will be made available to the public by the local sponsor at Laurinburg, and all groups and individuals expressing interest will be notified of its availability.

Incl

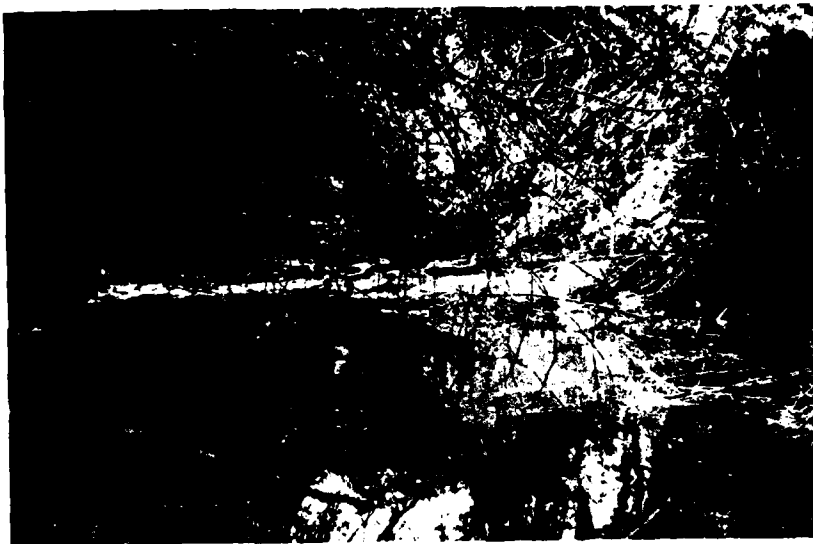
1. Photographs of Leith Creek
2. Letter from N. C. Department of Natural & Economic Resources - 12 June 1976
3. Proposed letter from U. S. Fish & Wildlife Service - 12 December 1975
4. Letter from N. C. Department of Cultural Resources - 6 April 1976
5. Letter from Scotland County Parks & Recreation Commission - 29 October 1976
6. Letter from City of Laurinburg - 8 October 1976
7. Letter from N. C. Department of Natural & Economic Resources - 21 April 1977
8. Letter from N. C. Department of Natural & Economic Resources - 21 April 1977
9. Letter from Scotland County Parks & Recreation Commission - 30 July 1977
10. Archeological Reconnaissance of Leith Creek Flood Control Project Area
11. Section 404 Coordination

DESCRIPTION OF PHOTOGRAPHS

- A. Midway between Gill and Main Streets, facing downstream. Vegetation from one side nearly covers this narrow reach (4-5 feet in width). City of Laurinburg would like to extend the park (in foreground) downstream to Carver Street, possibly farther.
- B. Approximately 1/3 way between Main and Carver Streets, facing downstream. Vegetation and debris trap floating trash, some of which becomes waterlogged and sinks to bottom. Sand and silt constitute the bottom, which is often anoxic due to low velocity, discharges into creek and obstructions to flow.
- C. Immediately below Carver Street. Dense privet, honey suckle and blackberry covers and traps trash and debris.
- D. North Caldonea Road, just above bridge.
- E. Railroad crossing just above Commonwealth Street.
- F. Downstream from Commonwealth Street.
- G. Just below McKay Street, facing upstream. Wider channel, two to six inches deep. Very low banks and some standing water in pools adjacent to channel.
- H. Farther downstream from McKay Street.
- I. Between S.R. 1645 and U. S. 74 Bypass, below project limits. Channel less defined. More wetland vegetation.



A



B



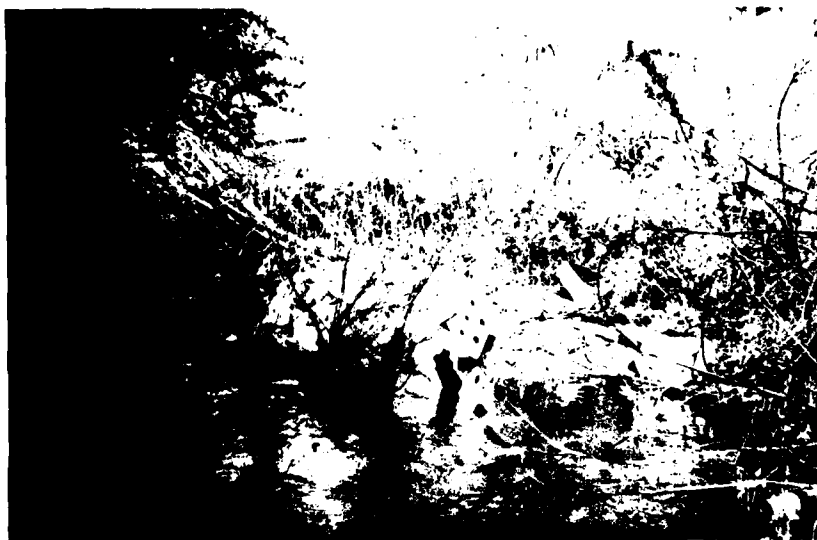
C



D



E



F



G



H



I



North Carolina Department of
Natural & Economic Resources

JAMES F. HODGES, JR., GOVERNOR • George W. Little, SECRETARY

DEPARTMENT
OF NATURAL & ECONOMIC
RESOURCES
STREET ADDRESS
PO BOX 26170
Raleigh, NC 27611

June 14, 1976

Mr. Jack Leseemann, Chief
Engineering Division
Charleston District Corps of Engineers
P. O. Box 919
Charleston, South Carolina 29402

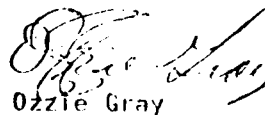
Dear Mr. Leseemann:

In response to your letter of 25 May 1976, personnel from this office conducted an on-site investigation of Leith's Creek keeping in mind your agency's proposed flood control project on that creek for the City of Laurinburg.

We found your proposal to be completely acceptable and concur with that proposal. At this time, no State funds are available for the non-federal share of the project nor has any request been received for such funds. Therefore, we must assume the non-federal share of project costs will be paid entirely by the City of Laurinburg.

Should you have any questions concerning our investigation, please contact Steve Reed of the Water Planning Section or give me a call.

Sincerely,


Ozzie Gray

cc: Steve Reed

PROPOSED LETTER

mailed w/cards 12/11/75

District Engineer
U.S. Army Corps of Engineers
P.O. Box 919
Charleston, South Carolina 29402

Dear Sir:

The Fish and Wildlife Service has made a preliminary review of the Leith Creek, Scotland County, North Carolina, 205 project. We hope our comments and recommendations can be helpful to you in deciding on a final alternative for this project.

Leiths Creek is a slow moving Piedmont stream characterized by poorly defined channels and minimal flow. The largest portion of this project lies within the city limits of Laurinburg, North Carolina. There is excellent wildlife habitat in 2 sections of the proposed project area. These are from the 401-15 bypass to Gill Street and from SR 1645 to the U.S. 74 bypass. The upper location contains a good stand of hardwoods such as tulip poplar, sycamore, sweet gum, black gum and white oak on the better drained soils. Numerous trees have diameters of 24 inches or greater. The understory contains a prolific growth of greenbriar and honeysuckle. The land adjacent to the creek is a low lying, swampy area that provides excellent habitat for wood ducks, woodcock, various species of songbirds and screech owls. In addition, beaver, squirrels, rabbits, raccoons, and other small mammals are found here. Fishery habitat is limited to darters, daces and possibly a few sunfish of minimal size. The

lower portion of the project area contains an excellent wooded swamp that consists primarily of cypress and black gum. This area supports a good wildlife population. Wood ducks, woodcock, hawks, owls, and various songbirds are seasonally present. It is also excellent habitat for mammals and reptiles and amphibians. Aquatic habitat at the U.S. 74 bypass favors such fish species as red-breast sunfish, pickerel, and largemouth bass.

Both of these portions of the stream are unique in that they occur so close to a metropolitan area. In a relatively short distance the habitat types vary considerably. The upper part of Leiths Creek is more characteristic of upland habitat and the lower portion is composed of wooded swamp and associated biota.

At numerous points along the creek, septic tank overflow empties directly into the water. This is easily seen on the east side of Church Street bridge, where a gray, foul-smelling effluent enters the stream. This adds to the degraded water quality and marginal stream habitat in this portion of the creek. The wooded swamp below S.R. 1645 acts as an effective biological filter in controlling pollutants in the stream and when the water reaches the U.S. 74 bypass the quality has improved to the point that aquatic life is apparent. Water quality tests would be needed to determine how widespread the water pollution is and to what extent the cypress swamp filters the water.

Fish and wildlife habitat between Cull Street bridge and S.R. 1645 is marginal at best. A heavy growth of honeysuckle and greenbriar

cover the ground and trees adjacent to the creek. Garbage and trash is scattered throughout this portion of the stream and on the stream banks. Flooding potential appears to be greatest at this location.

Since flood damage would appear to be minimal and fish and wildlife habitat is very good to excellent above Gills Street bridge and below S.R. 1645, we recommend that all flood plans be revised so these areas may be omitted in the final plan. If they are omitted, any of the 5 alternatives are acceptable to the Service at this time; however, Plan 5 appears preferable.

We look forward to providing you with a Fish and Wildlife Coordination Report when a final plan is adopted. Please keep us informed of progress in this matter.

Sincerely yours,

Regional Director

Cernohous:Pobinson:pm



STATE OF NORTH CAROLINA
Department of Cultural Resources
Raleigh 27611

James E. Holshouser, Jr.
Governor

April 6, 1976

Grace J. Rohrer
Secretary

Division of Archives and History
Larry E. Tise, Director
State Historic Preservation Officer

Colonel Harry S. Wilson, Jr.
US Army Corps of Engineers
Post Office Box 919
Charleston, South Carolina 29402

Dear Colonel Wilson:

Archaeology Section staff have reviewed a report from Dr. David McClean of St. Andrews College concerning an archaeological survey that he conducted on Leith Creek, Laurinburg, North Carolina. This survey was conducted under contract with your office in connection with the Leith Creek Alternative Channel Conveyance Plan Project for Laurinburg.

Dr. McClean reported that his archaeological survey revealed no sites of any kind were present in the project area. The Archaeology Section concurs with Dr. McClean's report, and recommends that immediate archaeological clearance be granted for this project.

In view of Dr. McClean's report, we remove our objection of November 24, 1975. Thank you for your cooperation in this matter. Please call upon us if we can be of further service.

Sincerely yours,

Larry E. Tise

LET:e

cc: Dr. David McClean

The foregoing comments are rendered as a free service of the State Historic Preservation Officer and the staff of the Division of Archives and History, Department of Cultural Resources to assist applicants, governmental agencies, and other institutions in complying with the requirements of one or more of the following laws, orders, or statutes: P.L. 89-293, 74-292, 85-624, 89-265, 91-120, 93-291, 93-383; Executive Order 11593; 36 CFR 800; G. S. 70, 113-222, 113-1, 121-4, 121-8, 121-12, 121-22, 136-42.1. Further information on the review process and legal requirements regarding historical and archaeological resources may be found in "Environmental Assessments of Historical Archaeological Resources: Policies and Procedures of the North Carolina State Historic Preservation Officer and the Department of Cultural Resources," a copy of which will be sent to interested citizens upon written request.

INCL 4

Scotland County Parks and Recreation Commission

HENRY McLEOD, JR., CHAIRMAN
SAMUEL SNEAD, VICE-CHAIRMAN
H. REGINALD POTEAT
W. L. BAKER
J. ROBERT GORDON
JAMES E. MILLIGAN
JONATHAN McLEAN
TOM WHITLOCK
DUNCAN MCKAY
NANCY SHELLEY
MARLEE JOHNSTON
ELOUISE JACKSON

WILLIAM J. SCOTT,
EXECUTIVE DIRECTOR-SECRETARY

P. O. Box 1910 -- 1835 South Main Street -- Phone 919 270-0112
LAURINBURG, NORTH CAROLINA 28352



October 29, 1976

Mr. Steve Morrison
Corp of Engineers
Charleston District
P.O. Box 919
Charleston, SC 29401

Dear Mr. Morrison:

I enjoyed your recent visit to Laurinburg and a chance to learn of your interest in providing park facilities in your projects. I have discussed the Leith Creek Project at length with my Parks & Recreation Commission and we feel this is a very viable and lasting project for our county. However, we have had so many requests for parks in other parts of our county, that our Commission has agreed not to acquire additional park lands until a county-wide master plan can be completed.

I feel that the project can be incorporated into this master plan hopefully in time to jointly develop this area with the Corp and the City of Laurinburg. Please keep me informed on the time frame of the projects and any changes on any matters related to park development.

Sincerely,
William J. Scott
William J. Scott
Executive Director

WJS/dw

cc: Steve Floyd
Ed Forbes

INCL 5

City of Laurinburg



October 8, 1976

Mr. Steve Morrison
U. S. Army Corps of Engineers
P.O. Box 919
Charleston, SC 29402

Dear Mr. Morrison:

We enjoyed your visit on September 22 and were especially glad to hear of the possibility of developing the Leith Creek Flood Control Project as a recreation area.

Over the past several years, I have heard many people talk of developing Leith Creek as a recreational greenbelt and we view the Corps's efforts with the Leith Creek Project as the key to this hope.

We appreciate your sharing this information with us and look forward to working with you and your office in making Leith Creek a lasting benefit to the Laurinburg community.

Sincerely yours,

A handwritten signature in dark ink, reading "Stephen C. Floyd".

Stephen C. Floyd
Acting City Manager

SCF/brc

303 WEST CHURCH STREET • P.O. BOX 786 • LAURINBURG, N. C. • 919 275-6324

INCL 6



North Carolina Department of
Natural & Economic Resources

JAMES B. HUNT, JR., GOVERNOR

HOWARD N. LEE, SECRETARY

P. O. BOX 27687
RALEIGH 27611

TELEPHONE 919 733 4961

April 21, 1977

Colonel Harry S. Wilson, Jr.
District Engineer
Charleston District, Corps of Engineers
P. O. Box 919
Charleston, South Carolina 29401

Dear Colonel Wilson:

This letter is to inform you of the State's position on the proposed Leith Creek Flood Control Project (Sec. 205) in Laurinburg, Scotland County, North Carolina.

On April 14, 1977, the Environmental Management Commission, upon receiving a favorable recommendation from the staff of this Department, unconditionally approved the Detailed Project Report. The Commission has the statutory responsibility to review projects of this type. Their action, therefore, is the State's final approval for the Leith Creek project.

With kindest regards and best wishes, I am

Respectfully yours,

A handwritten signature in black ink, appearing to read 'H. N. Lee', written over the typed name 'Howard N. Lee'.

INCL 7



North Carolina Department of
Natural & Economic Resources

JAMES B. HUNT, JR., GOVERNOR

HOWARD N. LEE, SECRETARY

P. O. BOX 27687
RALEIGH 27611

TELEPHONE 919/32-4740

April 21, 1977

Colonel Harry S. Wilson, Jr.
District Engineer
Charleston District, Corps of Engineers
P. O. Box 919
Charleston, South Carolina 29401

Dear Colonel Wilson:

A staff review of the Leith Creek Project (Sec. 205) was conducted to prepare recommendations to the Environmental Management Commission. Follow-up on the comments indicated that some of them were over-stated. For example, an elaborate sediment monitoring plan does not seem to be justified in this case. We do urge you to use sediment basins or other means to keep the downstream sediment load to a minimum during and after construction.

I have attached copies of some of the substantive comments on the project. These are provided for your information and consideration in carrying out this and other projects. The comments are not requirements or conditions of project approval. As Secretary Lee stated in his letter to you, the Environmental Management Commission has approved the project unconditionally.

Please let me know if I can be of assistance with this project or with other activities of your District.

Sincerely yours,

John Morris
Water Resources Development

Attachments

INCL 8

January 20, 1977

MEMORANDUM

TO: Tom Fahnestock

FROM: W. E. Knight

SUBJECT: Leith Creek Flood Control Detailed Project Report

We have completed our review of the small flood control project which the U. S. Army Corps of Engineers proposes to construct on Leith Creek in Scotland County.

While not crucial to the analysis of the project, there are some inaccuracies in the socio-economic description of the county. The projected population of 46,000 in 2020 shown in paragraph 29, page 8-12, appendix I is based on Series "C" rather than Series "E". The April 1976 projections for North Carolina based on disaggregated OBERS "E" for North Carolina give 34,900 for 2020. However, projections by the North Carolina Department of Natural and Economic Resources are considerably higher than disaggregated OBERS. Our projections for Scotland County for 2020 are 57,200 Series C; and 48,400 Series E. On July 1, 1975 Scotland was estimated to have a population of 30,000. This was an increase of 11.3 percent from 1970, and far exceeded the average increase for the State of 7.2 percent. This is a departure from past trends; if it continues the population will greatly exceed projections which indicate the county will grow less rapidly than the State.

The April 1976 BEA disaggregations of North Carolina published by the South Atlantic Division of the Corps projects per capita income in the county in 2020 at \$9,906 in 1967 dollars. This is considerably less than the projection in paragraph 31, and reflects the fact that per capita income in the county is less than that for the Yadkin-Pee Dee Basin.

We have no objections to the plan recommended by the District Engineer. The benefit-cost ratio is favorable and there appears to be a minimum of environmental disruption. The recommended plan will certainly reduce damages to existing structures. The Cities of Laurinburg and East Laurinburg should be required to pass flood plain ordinances to insure that there is no development on lands protected by the channel improvements. The development of a greenway and associated recreation seems a most progressive idea, and we gladly endorse it. The recreation benefits seem to be calculated very conservatively making this phase of the project even better than shown.

bm

State of North Carolina
Wildlife Resources Commission

RALEIGH, N. C. 27611

JACE E. CASE, Hendersonville
Chairman
J. ANDERSON, Newland
LIAM C. BOYD, Winston-Salem
A. HUNEYCUTT, Locust
LIAM W. IVEY, Asheboro

January 26, 1977

ROBERT B. HAZEL, Raleigh
Executive Director
HENRY E. MOORE, JR., Charlotte
ROSCOE D. SANDLIN, Jacksonville
DEWEY W. WELLS, Camden
V. E. WILSON, III, Rocky Mount

MEMORANDUM

TO: Tom Fahnestock

FROM: Frank B. Barick *FBB*

SUBJECT: Leith Creek Flood Control Project

The subject document has been reviewed and we concur in the relatively minor adverse impacts to fish and wildlife resources which will result from the proposed plan.

Some mitigation of losses has been effected by reducing the length of channel excavation from that which was originally proposed.

We feel that the Principles and Standards evaluation procedure which was followed by the Corps has resulted in a more cost effective and less environmentally damaging project.

We feel constrained to point out, however, that widening the channel from eight feet to 35-40 feet will reduce the depth of water to one-fourth of its present depth. Considering the fact that the stream is described as having a "small" volume, it follows that during non-flood, low or average flow conditions, there will be very little water in the new stream bed. During much of the time it could be a 20 to 30 foot wide mud strip through the city with the primary source of water being from residential sewer drain fields. It seems to us that this would not constitute an asset to a high use recreational park situation. This could be much improved by shaping the new channel so as to maintain one side of it considerably lower than the other and encouraging a grass growth well into the channel on the tapered shallow side. The deep side should, of course, be on the far side where the trees and other vegetation are not as completely removed. This would provide for continuous stream flow and preservation of fish habitat whereas a 35 foot wide flat bottom would result in no livable habitat for fish during periods of normal or low flow.

MEMO TO Tom Palmestock

-2-

January 26, 1977

Another way to accomplish this objective would be to install one or two low dams to maintain a ribbon of water 35 feet wide and two or three feet deep through the park. This might be aesthetically more pleasing than the design described above. It would, however, require periodic removal of accumulated sediment. One way to reduce clogging the 1.97 miles with sediment would be to install two or three sediment traps at points of easy access and dip them out as needed.

TSC:en

DIVISION OF ENVIRONMENTAL MANAGEMENT

AIR QUALITY SECTION

January 19, 1977

M E M O R A N D U M

TO: Lafayette Jones, Field Office Manager

FROM: Alan P. Grainger, Engineering Technician III *hrg*
Air Quality Section

SUBJECT: Leith Creek Flood Control Project
Scotland County, North Carolina

The document listed above has been reviewed, and the following comments are provided:

Any open burning conducted for this project must be in compliance with the North Carolina Open Burning Regulation (No.1.)

Proper steps should be taken to minimize dust created by this project.

APG/gc

cc: Central File

February 17, 1977

MEMORANDUM TO: Lafayette N. Jones, Field Office Manager
South Central Field Office

FROM: Floyd R. Williams, Land Quality Section *fw*

SUBJECT: Leith Creek Flood Control Project

If greater than one acre of land is to be disturbed, an erosion control plan will be required. This plan should be submitted to the Land Quality Section, D-NER, at least 30 days prior to commencement of the land-disturbing activity. The plan must be reviewed before construction can begin.

FRW/fbc

WATER QUALITY COMMENTS ON THE DETAILED PROJECT REPORT

Leith's Creek Channelization Project

The major adverse impact on surface water quality resulting from the project will be an increased sediment load to Leith Creek (Class C Swamp, 7Q1G-0.04 cfs). The methods by which the levels of sediment loading are predicted contain assumptions and arbitrarily fixed parameters which may produce considerable error in the results. Thus, it is not possible to accurately predict the occurrence of water quality standard contraventions due to increased levels of turbidity. However, based on the experience of Division of Environmental Management personnel with similar Corps of Engineers projects in other regions, turbidity standard contraventions are anticipated in the 1.97 miles to be channelized by the project and in a two mile segment immediately downstream from the project reach. This is approximately the same segment of stream which assimilates the effluents from a number of treatment plants in the area. The bottom of the dissolved oxygen sag curve resulting from the effluents discharged by the Laurinburg Industrial (0.024 MGD) and Eaton Corporation (0.005 MGD) wastewater treatment plants is predicted to occur 75 feet upstream from the upper end of the proposed channel. A similar type of sag point due to the discharge from the City of Laurinburg's Leith Creek Wastewater Treatment Plant (2.0 MGD) occurs two miles below the confluence of Leith Creek and Little Creek. This location is approximately one mile downstream from the furthest point expected to experience turbidity violations. The stream bottom in the section proposed for channelization is expected to have considerable amounts of oxygen demanding compounds in it, some from natural conditions and some as a result of the treatment plant effluents. These materials will be re-suspended by the project and may exert oxygen demand in a stream segment already in continual danger of dissolved oxygen standard contraventions (several are noted in the basin plan). None of the mentioned treatment facilities are currently producing an effluent of sufficient quality ($BOD_5=5\text{mg/l}$; $NH_3=2\text{mg/l}$) to maintain the stream for its assigned best use, fish propagation. The 0.005 MGD discharged by Eaton Corporation must comply with final effluent limits before July 1, 1977, but the others are scheduled to be upgraded according to the Laurinburg-Maxton 201 Facilities Plan (currently in State review), which probably will not reach the construction phase until after the completion of the proposed channelization and following the time of the major adverse impact (six months to a year following the project).

It is recommended that the proposed project be amended to include in-stream sediment basins to reduce downstream sedimentation and a turbidity and suspended solids monitoring program to establish the magnitude of the impact due to sediment transport.

One basin should be located at the downstream end of the proposed channel, and three more basins should be placed at appropriate sites at one half mile intervals upstream from the first basin. These basins should be maintained throughout the construction phase of the project. The basins may have the additional benefit of providing sanctuaries for fish during low flow periods, although by virtue of their intended purpose, they will not be permanent.

The turbidity and suspended solids monitoring program should include the following sampling stations:

1. Leith Creek at the L & S Railroad culvert or the bridge on SR 1645, the downstream end of the proposed channel.
2. Leith Creek at the Gill Street bridge, the upstream end of the proposed channel.
3. Leith Creek at the SR 1603 bridge, approximately 0.6 mile below the downstream end of the proposed channel.
4. Little Creek at the U.S. 74 (Business) bridge.
5. Leith Creek at the U.S. 74 (Bypass) bridge, approximately 0.8 mile below the downstream end of the proposed channel.
6. Leith Creek at the SR 1609 bridge, approximately 1.5 miles below the downstream end of the proposed channel.
7. Leith Creek at the SR 1619 bridge, approximately 3.9 miles below the downstream end of the proposed channel.

Sampling frequencies should vary depending on when and where they are taken, with the following suggested schedule:

1. Pre-project grab samples should be obtained from all stations and analyzed for three non rainfall days and three rainfall days.
2. During the project, all stations should be monitored daily by grab samples.
3. For the first six month period following the completion of the project, all stations should be monitored weekly by grab samples.
4. Following the first six month period after construction, sampling frequency will depend on the results obtained from the previous analysis. At a minimum, this sampling should be bimonthly by grab sample and should last until five years following the completion of construction.

Scotland County Parks and Recreation Commission

HENRY McLEOD, Chairman
DUNCAN McKay, Vice Chairman
J. ROBERT GORDON
O. M. GRAHAM
ELOUISE JACKSON
HARLEE JOHNSTON
DAVID McNAIR
JAMES E. MILLIGAN
H. REGINALD POTEAT
NANCY SHELLEY
SAMUEL SNEAD
ALLAN THAMES
DR. DAVID WILLIAMS

WILLIAM J. SCOTT, Secretary
Executive Director

P.O. Box 1910 — 1835 South Main Street
Laurinburg, North Carolina 28352
Telephone (919) 276-0412

July 20, 1977

Mr. David Harris
Corps of Engineers Office
P.O. Box 919
Charleston, SC 29402

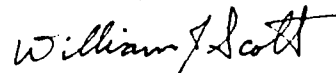
Dear Mr. Harris:

The Scotland County Parks & Recreation Commission met July 12 and officially endorsed the Leith Creek Project in Laurinburg. The Parks & Recreation Commission voted unanimously to support the project which includes the strip park along the creek.

This project will benefit Laurinburg and Scotland County for many years and will provide a better quality of life for the citizens.

Please keep us informed on your plans and thank you for the opportunity to express our interest in this development.

Sincerely,



William J. Scott
Executive Director

WJS/dmc

INCL 9

ARCHAEOLOGICAL RECONNAISSANCE OF
LEITH CREEK FLOOD CONTROL
PROJECT AREA

APPLICANT: U.S. Army Engineer District, Charleston Corps
of Engineers

PROJECT NAME: Alternative Channel Conveyance Improvement Plan
Leith Creek, Laurinburg, N.C.

LOCATION: The area of Leith Creek under consideration, begins
at the bridge over Leith Creek on Gill St. Laurinburg
N.C. and continues to the L & S Railroad near State
Road 1645, also within City Limits of Laurinburg.

CLEARINGHOUSE: U.S. Army Engineer District, Charleston Corps
of Engineers --P.O. Box 919 Charleston
S.C. 29402

Dates OF INSPECTION: March 19, 23 and 24, 1976

SURVEY MADE BY: Dr. David A. McLean, Archaeologist, and crew.
St. Andrews Presbyterian College
Laurinburg, N.C. 28352

AGREEMENT BETWEEN: St. Andrews Presbyterian College, Dr. David A.
McLean and U.S. Army Engineer District, Charleston
Corps of Engineers, Charleston, S.C.

CONTRACT PROPOSAL NO: 118

P R O C E D U R E

1.

Survey began at the Bridge on Gill St. and followed the
Northern bank of Leith Creek covering 100 feet from said
Creek to the L & S Railroad near State Road 1645. Wherever
Land appeared above water samples of soil (50' x 50') sifted
and inspected. No evidence of prehistoric or historic occupation
was found.

Beginning at L & S Railroad near State Road 1645 and returning
up Leith Creek on the Southern side to Bridge on Gill St.
Samples were taken (50' x 50') wherever possible. No evidence
of prehistoric or historic occupation was found. Approximately
350 tests were made. (See Glossary).

Most of the terrain was muddy, swampy, and where you could walk
on dry land, congested with briars and privet bushes.

2.

Latest edition of the National Register of Historic Places
(Federal Register, Vol. 40 No. 24, Tuesday, February 14, 1975)

ENC 10

ARCHAEOLOGICAL RECONNAISSANCE OF LEITH CREEK

Page 2

and all monthly supplements were consulted to ascertain if any of the property located within 100 feet on either side of Leith Creek, Laurinburg, N.C. from Gill St. to the L & S Railroad near State Road 1645, contained areas nominated to the Register.. NONE WERE FOUND

3.

Mr. Pat Garrou of the North Carolina Bureau of Archives and History, Archaeology Section, was consulted. He researched the project under investigation and reported that as far as he could ascertain, the property was clear of any site, either prehistoric or historic as recorded in the National Registry or nominated to same.

President of the Local Historical Society was consulted and he stated that there were no sites on the above property that had ever been, or now being recommended to the National Registry of Historic Places.

4.

Research into literature and documentary papers revealed no evidence of either historic or prehistoric sites.

5.

On-the-ground (and water) reconnaissance was conducted as previously mentioned in Section # 1 of this report. No evidence of sites either prehistoric or historic were found.

AS FAR AS I AM ABLE TO ASCERTAIN, THERE ARE NO PREHISTORIC OR HISTORIC SITES OF ANY SORT ON THE PROPERTY 100' ON EITHER SIDE OF LEITH CREEK FROM GILL ST. TO THE L & S RAILROAD NEAR STATE ROAD # 1645.

March 25, 1976

David A. M. Jones, Ph.D.
Archaeologist,
St. Andrews College
Laurinburg, N.C. 28352

GLOSSARY OF TERMS USED

Diagnostic Sites

Site: Where one or more artifacts are found

Insignificant Site: Where surface collection is adequate to document previous occupation or activities. No reason to impede construction or destruction of site.

Important Site: Where surface collection is inadequate to document previous occupation and indicate that there is more to be found underground, but not enough to be nominated to the National Registry, but enough to recommend salvage archaeology.

Significant Site: Site or sites with important artifacts that would indicate the need for careful excavation and preservation. Such a site would be recommended for nomination to the National Registry.

Methods of Surface Examination

Dogleash Technique: Where one end of a ten metre string is tied to the searcher and the other to a post in the center of the site. The searcher rotates in the site until string is wound up. This insures careful survey of site.

50' by 50' Technique: Where visibility of the ground is poor and recovery of artifacts by the walkover technique is poor or impossible, then samples of earth (12 qts.) are removed at 50 sq. intervals, sifted to recover artifacts.

Walkover reconnaissance technique: Where visibility of the ground or earth is good and artifact recovery is good, searcher covers the ground in approximately 10 ft. intervals collecting artifacts lying on top of ground.

Salvage Archaeology: When survey indicates that mitigating action is necessary and a delay in construction is requested while rapid excavation is made to ascertain and recover as much information as possible before site is destroyed.

EVALUATION OF FACTORS INVOLVED IN THE DISCHARGE
OF DREDGED OR FILL MATERIALS IN NAVIGABLE WATERS.
CRITERIA FROM 40 CFR 230

<u>Paragraph</u>	<u>Criteria</u>	<u>Relation to Selected Plan</u>
230.4-1(a)	PHYSICAL EFFECTS	
230.4-1(a)(1)	Wetlands	Excavated material from the creek bottom would be placed in a series of narrow mounds along a 2,500-foot portion of the low area adjacent to Leith Creek, just below the sewage treatment plant (see Plate 2). The area affected is intermittently flooded wetlands, the dominant aquatic species being arrow-aram and broad leaved arrow-head, which would be completely and permanently covered. The area is poor to marginal for fish and wildlife because of its closeness to residential and commercial development, trash deposited in the creek from these areas, and pollutant discharges into the water. The area does not qualify as "highly productive" in that it does not provide the important functions specified in paragraph 230.4-1(a)(1). Breaks in the mounds would be provided such that drainage in adjacent areas would not be impaired.
230.4-1(a)(2)	Water Column	Material would be placed to a height of four feet to minimize the area required for disposal. No water column would remain in the disposal area which is now intermittently inundated. The placement of material adjacent to the creek would result in an increase in turbidity following construction until vegetation is reestablished. The existing channel bottom is sand and silt along most of the project area, and the resultant heavy siltation does not now appear to impair the vigor of vegetation in the broad, slow-moving area below the project where most of the sediment would continue to fall out. No major impacts are anticipated in areas far downstream.
230.4-1(a)(3)	Benthos	Benthic organisms in the disposal area which are unable to move to adjacent, unaffected areas would be destroyed. The low value of this area has been described in 230.4-1(a)(1).
230.4-1(b)	CHEMICAL-BIOLOGICAL INTERACTIVE EFFECTS	
230.4-1(b)(1)	Exclusion Criteria	Material will be placed on land adjacent to the creek, which is very similar to the source of the excavated material. The material is not sufficiently removed from sources of pollution to qualify under the exclusion criteria.
230.4-1(b)(2)	Water Column Effects	No water column in resultant filled area. Elutriate tests are not applicable. Because the material would be elevated above the normal water level, the potential for any pollutants entering the adjacent waters by leaching would be less than for the existing situation where these pollutants remain available in bottom sediments.
230.4-1(b)(3)	Effect on Benthos	Chemical effects on benthos in adjacent areas, like water quality effects, would be about the same or less than with existing conditions. Trash would be cleaned from the creek bottom.
230.4-1(c)	Comparison of Sites	The disposal site is adjacent to the area from which material is to be excavated. The disposal area after use will support upland vegetation. A detailed comparison of the sites in this case would not be useful.
230.4-2	Water Quality	Water quality in the project area is generally poor in this Class C - swamp stream. No violation of water quality standards established in 40 CFR 230 or "Rules, Regulations, Classifications, and Water Quality Standards Applicable to the Surface Waters of North Carolina" can be predicted as a result of the project. Turbidity will increase during construction until vegetation is reestablished.

EVALUATION OF FACTORS INVOLVED IN THE DISCHARGE
OF DREDGED OR FILL MATERIALS IN NAVIGABLE WATERS.
CRITERIA FROM 40 CFR 230
(continued)

<u>Paragraph</u>	<u>Criteria</u>	<u>Relation to Selected Plan</u>
230.5	SELECTION OF DISPOSAL SITES	
230.5(a)	Need for the Proposed Activity	Structural modifications are required if flood control benefits in excess of costs are to be realized.
230.5(a)	Alternative Disposal Sites and Methods of Disposal	Trucking material to upland sites would require more fill due to the access required than the proposed action. Pumping of the excavated material is possible; however, special equipment would be required, and the increased costs can not be justified to protect a poor to marginal area.
230.5(b)	Degradation of Water Uses at Proposed Disposal Sites	
230.5(b)(1)	Municipal Water Supply	No intakes are located near the proposed disposal sites.
230.5(b)(2)	Shellfish	None.
230.5(b)(3)	Fisheries	No significant fishery in the project area.
230.5(b)(4)	Wildlife	Impact not significant because of the poor to marginal habitat for limited types of wildlife.
230.5(b)(5)	Recreation	Recreation improved by greenway, trail, tables, and benches.
230.5(b)(6)	Threatened or Endangered Species	No threatened or endangered species are known to occur in the project area.
230.5(b)(7)	Benthic Life	See paragraphs 230.4-1(a)(3) and 230.4-1(b)(3). Loss to benthos not significant.
230.5(b)(8)	Wetlands	See paragraphs 230.4-1(a)(1). The proposed action is directly related to water, and will not cause a permanent unacceptable disruption to water quality uses.
230.5(b)(9)	Submerged Vegetation	Disposal is not in an area where submerged vegetation is important to overall biological productivity.
230.5(b)(10)	Size of Disposal Site	Size held to minimum which would not result in failure of slopes or severe erosion.
230.5(c)	Other Factors Considered to Minimize Adverse Impacts	Appropriate scientific literature was consulted and various methods of disposal were considered.
230.5(d)	Contaminated Fill Material Restrictions	Polluted material placed in upland mounds would result in less release to adjacent waters than from the existing pollutants in bottom sediments.
230.5(e)	Mixing Zone	Mixing zone not applicable to disposal site which will be filled above water level.

END

FILMED

4-85

DTIC