SEPTEMBER 24, 1966 VERSION

THESE WORK ITEMS WERE DEVELOPED TO HELP NEW ECONOMISTS IDENTIFY THINGS THAT NEED TO BE ACCOMPLISHED, AND REMIND EXPERIENCED ECONOMISTS OF STEPS NEEDED, TO EVALUATE A PROJECT

2004G PRELIMINARY STAFF PROJECT EVALUATION

INFORMATION ABOUT A POTENTIAL PROJECT HAS BEEN RECEIVED. PROJECT POTENTIAL IS DETERMINED BY THE STAFF ACCESSING THE FOLLOWING:

A. IDENTIFY THE RESOURCE PROBLEMS
   1. QUANTIFY PROBLEMS
   2. DETERMINE IF PROBLEM FITS PURPOSE LISTED UNDER PL-568 (URBAN FLOOD, AG. FLOOD, WATER-SHED PROTECTION, IRRIGATION, ETC.)
   3. DETERMINE IF PROJECT CAN BEST BE SOLVED UNDER THE PL-568 PROGRAM
   4. DETERMINE POTENTIAL FOR PROJECT ECONOMIC FEASIBILITY

B. IDENTIFY OBJECTIVES OF LOCAL PEOPLE AND DETERMINE POTENTIAL SPONSORS
   1. COMPARE SPONSOR OBJECTIVES TO PROGRAM REQUIREMENTS
   2. DETERMINE RANGE OF ALTERNATIVES THAT ARE SocialLY ACCEPTABLE

C. ASSIST IN PREPARING A PRELIMINARY REPORT AND IF PROJECT PLANNING CONTINUES, USE THE FOLLOWING WORK ITEMS TO GUIDE THE ECONOMIC ANALYSIS

201UR DEVELOP A STUDY PLAN, ECONOMICS PORTION.

A. LIST IN TIME SEQUENCE ALL ECONOMIC WORK ITEMS NEEDED TO SOLVE THE PROBLEMS IDENTIFIED IN THE PROJECT. USE THE WORK ITEMS DESCRIBED BELOW. ADD AND DELETE WORK ITEMS TO MAKE THE PLAN OF WORK SPECIFIC TO THE PROJECT BEING PLANNED.
   COORDINATE WITH APPROPRIATE STAFF AND TSC ECONOMISTS AS NEEDED. (BEGINNING OF POST APPLICATION PLANNING 502.31(A) NAVM)

B. DESCRIBE PROCEDURES FOR ACCOMPLISHING EACH WORK ITEM WITH WORK DAYS REQUIRED. PROVIDE TO STUDY LEADER.

C. OBTAIN COPY OF THE OVERALL SCHEDULE AND USE IT TO SCHEDULE THE ECONOMIST WORK ITEMS ON Gantt CALENDAR, INDIVIDUAL ANNUAL PLAN OF OPERATIONS OR STATE ANNUAL PLAN OF OPERATIONS.

202UR ASSEMBLE BASIC STAFF RESOURCE DATA

A. ASSEMBLE ON A WATERSHED OR COUNTY BASIS AS APPLICABLE. GATHER ONLY DATA THAT IS USEFUL FOR THE PROJECT EVALUATION AND NARRATIVE
   1. BASIC ECONOMY OF THE AREA
      A. POPULATION- BOTH RURAL AND URBAN, AGE, EDUCATION, MINORITIES
B. EMPLOYMENT BY SECTOR, E.G. AG, MFG., COMMERCIAL, ETC.
C. INCOME
   (1) RANGE
   (2) MEDIAN
   (3) COMPARE TO STATE AND NATION
D. FARM AND RANCH ENTERPRISES
   (1) TYPE- DAIRY, BEEF, SPECIALIZED, CASH CROP, ETC.
   (2) SIZE
203UR CHOOSE ONE OF HY PROCEDURES TO USE FOR EVALUATION

A. FREQUENCY METHOD (PREFERRED BY P&S)
   1. DEFINED CHANNEL AND VALLEY
      A. CALCULATE DAMAGES BASED ON DEPTH
      B. CALCULATE DAMAGES BASED ON DURATION
   2. OVERLAND FLOW
      A. CALCULATE DAMAGES BASED ON AVERAGE FLOOD PATH

B. HISTORICAL SERIES METHOD (P&S LIMITS ITS USE)
   NEED FREQUENT FLOODING AND MAJOR DAMAGE TO CROPS

SOURCE: EHWR 621-A

204UR COMPUTER PROGRAMS

A. DETERMINE POTENTIAL FOR USE OF COMPUTER PROGRAMS
   1. URB 1-CALCULATE FLOODWATER DAMAGES TO BUILDINGS AND CONTENTS

205UR PROBLEM AREA

A. AERIAL PHOTOS OR MOSAIC OR OTHER SUITABLE BASE
AND FLOOD PLAIN PROFILE SHOWING ELEVATION OF SIGNIFICANT PROPERTIES, PROBLEM AREAS, (FLOOD PLAINS), REACHES, AND CROSS SECTIONS.

6. DETERMINE IF FLOOD DAMAGES WILL COVER ALL THE AREA OR IF A SAMPLE WILL BE USED.

Hy C. DEFINE NUMBER AND LOCATION OF REACHES IN ORDER TO PROPERLY STRATIFY RESOURCE PROBLEMS FOR ANALYSIS. THINGS TO CONSIDER:

1. ROAD CROSSINGS IN THE FLOODPLAIN
2. HEIGHT OF ROADS CROSSING THE FLOODPLAIN
208UR INVENTORY HY
FLOODPLAIN CHARACTERISTICS

A. LIST INHERENT CHARACTERISTICS OF FLOODPLAIN
   1. DESCRIBE FLOOD SITUATION, HIGH HAZARD AREA, DEPTHS OF FLOODING, VELOCITY, DURATION, DEBRIS CONTENT
   2. DESCRIBE AND SHOW AREAS OF FLOODWAY OR NATURAL STORAGE THAT IF URBANIZED OR STRUCTURALLY PROTECTED WOULD AFFECT NATURAL STORAGE, VELOCITY, STAGE, OR FLOOD FLOWS ELSEWHERE.
   3. SHOW AREAS WITH NATURAL AND BENEFICIAL VALUES SUCH AS OPEN SPACE, RECREATION, WILDLIFE, AND WETLANDS.
   4. SHOW TRANSPORTATION SITES (RAILROADS, HIGHWAYS, PIPELINES, AND WATER-ORIENTED TRANSPORTATION.
   5. LIST OTHER ATTRIBUTES OF FLOODPLAIN
   B. PHYSICAL CHARACTERISTICS THAT ARE PERIENNAL SUCH AS SLOPE, SOIL TYPES, WATER TABLE, MINERAL DEPOSITS, WASTE DISPOSAL, AND WATER SUPPLY
   C. AVAILABLE SERVICES SUCH AS TRANSPORTATION, POWER, SEWERAGE, WATER, LABOR, ACCESS TO MARKETS AND PROXIMITY TO FLOODPLAIN
   D. SHOW EXISTING ACTIVITIES IN THE FLOODPLAIN, NUMBER OF ACRES, DENSITY, ARE, AND VALUE OF STRUCTURE FOR EACH ACTIVITY TYPE BY FLOOD HAZARD ZONE.

REFERENCE: P&G 2.4.6

207UR PROJECT ECONOMIC ACTIVITIES IN AFFECTED AREA

A. ESTIMATE FUTURE POPULATION, PERSONAL INCOME, RECREATION DEMAND, MANUFACTURING, EMPLOYMENT, AND OUTPUT. SHOW BASIS FOR PROJECTIONS.

REFERENCE: P&G 2.4.7

208UR ESTIMATE POTENTIAL LAND USE

A. ESTIMATE POTENTIAL LAND USE WITHIN AFFECTED AREA BASED ON WORK ITEM 208UR AND SIMILAR AREAS

REFERENCE: P&G 2.4.8

209UR PROJECT LAND USE

A. ALLOCATE LAND USE DEMAND BASED ON WORK ITEM 208UR AND 209UR BETWEEN FLOODPLAIN AND NON-FLOODPLAIN LANDS
   1. ALLOCATE BASED ON FLOODPLAIN CHARACTERISTICS, CHARACTERISTICS SOUGHT BY POTENTIAL OCCUPANTS, AND AVAILABILITY OF BOUGHT-AFTER CHARACTERISTICS IN THE NON-FLOODPLAIN PORTIONS OF THE AFFECTED AREA
   2. SHOW FLOODPLAIN HAS SIGNIFICANT ECONOMIC ADVANTAGE TO USERS COMPARED TO LAND OUTSIDE OF THE FLOODPLAIN. SHOW THIS ECONOMIC ADVANTAGE TO BE GREATER THAN POTENTIAL FLOOD LOSSES, POTENTIAL FLOODPROOFING COSTS, AND OTHER
HAZARDS

REFERENCE: P&G 2.4.5

210UR DETERMINE HY
EXISTING FLOOD DAMAGES

211UR DETERMINE RESIDENTIAL DAMAGES

DEVELOP PRESENT AVERAGE ANNUAL DAMAGES USING THE WORK ITEMS 212-217

A. INTERVIEW RESIDENTS IN FLOODPLAIN TO DETERMINE CURRENT RESIDENTIAL DAMAGES USING FORM SCS-EDN-002. IF INTERVIEW INFORMATION IS INADEQUATE, DO SECTION
NTC ECONOMIST FOR AN ADEQUATE SAMPLE SIZE.
1. DETERMINE PROPERTY VALUE
2. DETERMINE LAND VALUE
3. DETERMINE STRUCTURAL VALUE
4. DETERMINE CONTENT VALUE & DAMAGE BY DEPTH

B. OBTAIN DEPTH DAMAGE FACTORS FROM VARIOUS AGENCIES FOR DIFFERENT TYPES OF CONSTRUCTION FOR STRUCTURES AND CONTENTS
C. OBTAIN DEPTH DAMAGE FACTORS FROM OTHER SCS FLOOD PROJECTS FOR STRUCTURES AND CONTENTS
D. COMPARE DEPTH DAMAGE FACTORS OF OTHER AGENCIES AND OTHER SCS FLOOD PROJECTS TO THE DAMAGES OBTAINED FROM INTERVIEWS
E. MAKE ADJUSTMENTS TO EXISTING DEPTH DAMAGE FACTORS TO FIT THE PROJECT FOR EACH TYPE OF CONSTRUCTION.
1. DEVELOP FACTORS FOR STRUCTURAL DAMAGE VERSUS VALUE OF STRUCTURE
REFERENCE: MARSHALL & SWIFT, ASSESSORS

2. DEVELOP FACTORS FOR CONTENT DAMAGE VERSUS VALUE OF STRUCTURE

HY
F. DEVELOP A MAP SHOWING FLOODPLAIN, CROSS SECTIONS, 100 YEAR AND 500 YEAR FLOOD LINES, AND TABLES LISTING FIRST FLOOR ELEVATION OF EACH PROPERTY, ELEVATION WATER ENTERS THE STRUCTURE AND GROUND ELEVATION
G. CALCULATE DAMAGES FOR WITHOUT PROJECT BY FREQUENCY FOR EACH PROPERTY
1. CALCULATE DAMAGES TO STRUCTURES
2. CALCULATE DAMAGES TO CONTENTS
H. SUM UP DAMAGES FOR EACH SIZE STORM FOR THE RESIDENTIAL PROPERTIES
METHOD: EHWR 623

A. INTERVIEW ALL COMMERCIAL AND INDUSTRIAL BUSINESSES TO DETERMINE EXISTING DAMAGES USING FORM SCS-ECD-003. DUE TO THE UNIQUENESS OF THESE DAMAGES PLACE GREATER EMPHASIS ON THE INTERVIEW DATA THAN SECONDARY DATA FROM OTHER SOURCES. IF THE NUMBER OF BUSINESSES IS INADEQUATE DO PARTS B, C AND THE COMPARISON PART OF D. CONSULT THE NTC ECONOMIST FOR ASSISTANCE ON DETERMINING AN ADEQUATE SAMPLE SIZE.
1. DETERMINE PROPERTY VALUE
2. DETERMINE LAND VALUE
3. DETERMINE STRUCTURAL VALUE
4. DEVELOP FACTORS FOR STRUCTURAL DAMAGE VERSUS VALUE OF STRUCTURE
5. DETERMINE CONTENT VALUE & DAMAGE VALUE BY DEPTH
8. Develop factors for content damage versus value of structure

B. Obtain depth damage factors for different types of businesses for structures and contents

C. Obtain depth damage factors from other SCS flood projects for different types of businesses for structures and contents

D. Compare depth damage factors of other agencies and other SCS flood projects to the damages ob-
TAINED FROM INTERVIEW

E. CALCULATE DAMAGES FOR WITHOUT PROJECT BY FREQUENCY FOR EACH PROPERTY FOR EACH SIZE STORM.
   1. CALCULATE DAMAGES TO STRUCTURES
   2. CALCULATE DAMAGES TO CONTENTS
   F. SUM UP DAMAGES BY FREQUENCY FOR THE COMMERCIAL AND INDUSTRIAL PROPERTIES.
   METHOD: EWR 623

218UR DETERMINE TRANSPORTATION AND UTILITY DAMAGES

A. INTERVIEW PEOPLE TO DETERMINE DAMAGES TO ROADS, BRIDGES, RAILROADS, AND UTILITIES USING FORM SCS-ECN-004
   1. SEPARATE DAMAGES BETWEEN FLOOD DAMAGES AND NORMAL MAINTENANCE
   2. MAKE SURE DAMAGES REPORTED ARE TOTAL FLOOD DAMAGES AND NOT TEMPORARY REPAIRS OR REPAIRS MADE UP TO A BUDGETED MAXIMUM.
   3. CROSS CHECK FLOOD DAMAGE ESTIMATES RECEIVED FROM OFFICIALS WITH PEOPLE LIVING NEAR THE FLOODED AREA TO BE SURE ALL ITEMS ARE INCLUDED.

B. DETERMINE CONDITION OF THE FACILITY AT TIME OF FLOODING. MAKE ADJUSTMENTS TO DAMAGES IF FACILITY WAS REPLACED BY A BETTER STRUCTURE, ONE LESS SUBJECT TO FLOODING, OR IF FACILITY WAS WORN OUT

C. OBTAIN DESIGN LIFE OF STRUCTURES FROM PUBLIC AGENCY

D. AN ALTERNATE WAY OF ESTIMATING ROAD AND BRIDGE DAMAGE IS TO ESTIMATE THE COST TO RESTORE TRANSPORTATION SERVICE

E. CALCULATE DAMAGES FOR EACH FACILITY FOR WITHOUT PROJECT BY FREQUENCY.

F. SUM UP DAMAGES BY FREQUENCY FOR THE TRANSPORTATION AND UTILITY DAMAGES.
   METHOD: EWR 623

214UR OTHER URBAN DAMAGES

A. ESTIMATE ANY OTHER DAMAGES THAT HAVE NOT BEEN SUMMARIZED.

1. POWER PLANT FLOODED CAUSING POWER OUTAGES AND DAMAGES TO FOOD IN FREEZERS OFF SITE.

2. EXTRA COST TO VEHICLES FOR EXTRA MILES TRAVELED AS A RESULT OF BRIDGE DAMAGES

3. COST OF TRAFFIC ROUTING AND SIGNING FOR BRIDGE AND ROAD DAMAGE

4. EXTRA COST OF DAMAGED GOODS DISPOSAL
   METHOD: EWR 623

215UR LOSS OF INCOME DAS...S

A. LOSS OF WAGES OR NET PROFITS TO BUSINESS AS A RESULT OF FLOODING NEED TO BE ESTIMATED. WHEN INTERVIEWING BUSINESSES INCLUDE ONLY THE DAMAGE THAT WAS NOT POSTPONED OR TRANSFERRED TO OTHER
A. INTERVIEW POLICE AND PUBLIC OFFICIALS TO DETERMINE EXPENSES OF EVACUATION, REOCUPATION, FLOOD FIGHTING, AND DISASTER RELIEF.

1. ALLOCATE COSTS BY SEVERITY OF PROBLEM OR EFFORT REQUIRED.

REFERENCE: P&G 2.4.2
217UR PROJECT FUTURE FLOOD DAMAGES

A. IF FUTURE DEVELOPMENT IS PLANNED IN THE PROJECT AREA USE WORK ITEMS 200 AND 210 TO ESTIMATE THE ASSOCIATED DAMAGES THAT WILL OCCUR IN THE FUTURE AND DISCOUNT TO THE BASE YEAR.

1. ESTIMATE THE NUMBER AND SIZE OF PHYSICAL UNITS WITH POTENTIAL TO USE THE FLOODPLAIN
2. DETERMINE WHETHER EXISTING STRUCTURES WILL CONTINUE TO OCCUPY THE FLOODPLAIN
3. ESTIMATE THE FUTURE VALUE OF THE UNITS. INCREASES MAY RESULT FROM EXPANSION OF FACILITIES OR NEW CONSTRUCTION.
   A. OBERS CAN BE USED TO ESTIMATE PER CAPITA INCOME INCREASES AND RESULTING INCREASES IN VALUE OF CONTENTS
   B. LIMIT VALUE OF CONTENTS TO MAXIMUM OF 75 PERCENT OF STRUCTURE AND DON’T PROJECT INCREASE IN VALUE BEYOND 50 YEARS. A USUAL VALUE OF CONTENTS VERSUS STRUCTURES IS 40 TO 50 PERCENT.
4. DETERMINE THE SUSCEPTIBILITY TO DAMAGE FOR THE UNITS. CONSIDER STREAM CHARACTERISTICS, LOCATION, TYPE OF FLOOD PROOFING, AND TYPE OF CONSTRUCTION.

REFERENCE: P&G 2.4.11

B. ESTIMATE FUTURE INCOME LOSSES BASED ON PROJECTED LAND USE NOT INCREASES IN PHYSICAL LOSSES.

REFERENCE: P&G 2.4.11

C. ESTIMATE FUTURE EMERGENCY COSTS BASED ON THE OCCUPANCY OF THE FLOODPLAIN NOT VALUE OF DEVELOPMENT OR PHYSICAL LOSSES.

REFERENCE: P&G 2.4.11

218UR DETERMINE OTHER COSTS OF USING FLOODPLAIN

A. ESTIMATE COSTS OF FLOODPROOFING
   1. ESTIMATE FOR FUTURE BUILDING
   2. ESTIMATE FOR EXISTING STRUCTURES FOR STATES THAT REQUIRE IT

B. ESTIMATE INCREASED COSTS OF NATIONAL FLOOD INSURANCE PROGRAM
   1. CONTACT FIA TO GET ESTIMATE OF INCREASED ADMINISTRATION COSTS

REFERENCE: P&G 2.4.12

219UR COLLECT LAND MARKET VALUE AND RELATED DATA

THIS WORK ITEM NEEDS TO BE DONE BY A QUALIFIED REAL ESTATE APPRAISER.

A. DETERMINE IF LAND USE WILL CHANGE WITH AS COMPARED TO WITHOUT PROJECT
   1. LAND USE IS DIFFERENT
      A. ESTIMATE VALUE OF FLOOD FREE LAND
      B. ESTIMATE VALUE OF FLOODPLAIN LAND
C. ESTIMATE THE CHANGE IN NET INCOME
D. ESTIMATE THE ENCUMBERED VALUE OF LAND IF EVACUATION IS AN ALTERNATIVE

2. LAND USE IS THE SAME
A. ESTIMATE THE CHANGE IN LAND VALUE
220UR ESTIMATE LOCATION BENEFITS

This is the preferred method of evaluating undeveloped land that will have a change in use due to project action.

A. Determine if future development is cheaper in floodplain versus an alternate location
   1. Determine if there is demand for additional land for development
   2. Determine future without project cost of development in floodplain with flooding

B. Determine cost of development in alternative area
   A. Include roads, utilities, drainage facilities
   4. The difference in cost between 2 and 3 is the locational benefit.

Reference: P&G 2.4.14
EHR 623

221UR ESTIMATE PROJECT BENEFITS

Refer to Table 2.4.14 in P&G to determine benefits that are claimable for different alternatives

27 DEVELOP ALTER- PE

Use all combinations of structural and nonstructural measures to develop alternatives. Use incremental analysis to add increments to each alternative. Parts of nonstructural measures such as floodproofing should be considered with smaller scale structural measures such as 25 year level of protection to develop the NEO plan. Investigate ranges of protection from a low level to a high level of protection.

Estimates are made by planning staff based on recent installation experience.

A. Construction cost - NWSM 501.30K, EHR 630.01
B. Engineering Services - NWSM 501.30E
C. Land Rights - NWSM 501.30G, EHR 629
D. Water Rights - NWSM 501.30F
E. Project Administration Cost - NWSM 501.30J
F. Relocation Cost - NWSM 501.30K

G. Operation, maintenance and replacement - Estimates made by planning staff and local sponsors based on simulated or recent O&M experiences.
   NWSM 501.30L, EHR 630.01B
H. Associated cost - NWSM 501.30M, EHR 630.02
I. External Diseconomies - NWSM 501.300, EHR 630.01C
J. Nonproject Cost - NWSM 501.30P
DO INCREMENTAL ANALYSIS TO ADD STRUCTURAL AND NONSTRUCTURAL ITEMS TO DEVELOP THE NED PLAN. DESIGNATE THE NED ALTERNATIVE AND DOCUMENT IN TABULAR FORM.

METHOD: CONSULT NTC ECONOMIST FOR ASSISTANCE

ASSIST IN SELECTION OF MEASURES FOR EACH ALTERNATIVE PLAN. DETERMINE CONTRIBUTION MADE TO COMPONENT NEEDS. DOCUMENT IN TABULAR FORM WITH APPRO-
PRIVATE NARRATIVE DES

EMPLOYMENT BENEFITS CAN BE CLAIMED IN AREAS OF UNEMPLOYED OR UNDEREMPLOYED LABOR.
METHOD: EMW 627

WHERE NECESSARY DEVELOP A SOCIAL WELL BEING ACCOUNT TO DISPLAY PROJECT EFFECTS RELEVANT TO DECISION-MAKERS. USE CENSUS DATA AND OTHER APPROPRIATE REFERENCES TO DEVELOP INCOME CLASS AND PERCENTAGES FOR EACH CLASS.

USE COST ALLOCATION WORKSHEET. NAAS 501.31.
METHOD: NAAS 505.60

A. ASSIST STUDY LEADERS TO PREPARE FOR PUBLIC MEETINGS AND REPORTS. THE NECESSARY MAPS, TABLES, AND DISPLAYS TO CLEARLY DESCRIBE NED MEASURES AND EFFECTS: USE DATA FROM COMPLETED WORK ITEMS ABOVE.
B. PROVIDE SIGNIFICANT NED EFFECTS FOR THE FOUR ACCOUNT TABLES AS NEEDED. (INCLUDE TIME FOR REVISIONS AS A RESULT OF PUBLIC INPUT.)

A. PREPARE, AS ASSIGNED, ECONOMIC PORTIONS OF THE PLAN, EIS, ENV. ASSESS, SUMMARY, I&A REPORT, ETC.
B. ASSEMBLE ALL RELEVANT ECONOMIC DOCUMENTATION IN NOTEBOOKS (PREFERABLY ONE) SUITABLE FOR REVIEW. REFER TO ORGANIZATION OF DOCUMENTATION CHECKLIST IN THIS GUIDE.
C. PARTICIPATE IN RESOLVING STATE AND TSC COMMENTS.