

SEPT. 19, 1986 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

IRRIGATION

2001R PRELIMINARY
PROJECT EVALUATION

STAFF 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-566 (URBAN FLOOD, AG. FLOOD, WATERSHED PROTECTION, IRRIGATION, ETC.)
 - 3. DETERMINE IF PROJECT CAN BEST BE SOLVED UNDER THE PL-566 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

2011R 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) NWSM)
- 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 DESK CALENDAR, INDIVIDUAL ANNUAL PLAN OF OPERATIONS OR STATE ANNUAL PLAN OF OPERATIONS.

2021R 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
 - (3) NUMBER
 - (4) TENURE
 - (5) AVERAGE VALUE OF BUILDINGS
- E. OFF-FARM EMPLOYMENT
 - (1) NUMBER OF DAYS
 - (2) KINDS, IF KNOWN

- 2. PROJECT BASE MAP.
- 3. SOILS INFORMATION
- 4. DRAINAGE AREA
- 5. COUNTY MAPS
- 6. AERIAL MOSAICS
- 7. WATERSHED LAND USE (PRESENT AND FUTURE)
- 8. WATER AND LAND RESOURCE PROBLEMS

SOURCE: PUBLISHED SOIL SURVEYS, AERIAL PHOTOS, CITY & COUNTY DATA BOOK, AG. CENSUS, STATE AG. STATISTICS, ONSITE FIELD EXAMINATION, APPLICATION FOR ASSISTANCE, AND OTHER SUCH SOURCES.

B. OTHER DATA: (MOST RECENT PRICES AND INTEREST TO BE USED IN PLAN.)

- 1. PRICE DATA: EHWR 620-C
PRICES PAID AND PRICES RECEIVED BY COMMODITY GROWN.
- 2. INTEREST RATES EHWR 620.02(C)
- 3. EVALUATION PERIOD EHWR 620.02(D)
- 4. COST RETURN STUDIES
- 5. YIELD DATA

SOURCE: NATIONAL BULLETINS, EXTENSION SERVICE, AG. STATISTICS, AG. COMMISSIONERS

- A. EVALUATION BASED ON:
 - 1. DAMAGE REDUCTION BENEFITS
 - 2. PROCEDURE FOR REPAIR AND REHABILITATION OF SYSTEM SUBJECT TO SUDDEN FAILURE
 - 3. PROCEDURE FOR SYSTEM SUBJECT TO FAILURE FROM A STORM

A. IF THERE IS A PROJECTED CHANGE IN CROPPING PATTERN WITH PROJECT AND THE PROJECTED CROP IS ONE OF THE TEN CROPS, THEN BASE THE EVALUATION ON ONE OF THE FOLLOWING:

- 1. CROP BUDGET ANALYSIS
- 2. LAND VALUE ANALYSIS

B. DETERMINE IF EFFICIENCY BENEFITS ARE PART OF THE EVALUATION

DETERMINE THE POTENTIAL FOR USE OF COMPUTER PROGRAMS.

203IR DETERMINE PROCEDURES TO USE FOR EVALUATION

204IR INTENSIFICATION BENEFITS

207 7 COMPUTER PROGRAMS

20 PROBLEM AREA
LC ION

A. USE AERIAL PHOTOS OR MOSAICS OR OTHER SUITABLE
BASE SHOWING NUMBER OF ACRES BENEFITED

207IR DETERMINE CUR-
RENT LAND USE

DEVELOP CROPPING PATTERNS FOR AREA AND DISPLAY
ON BASE MAPS AND IN A TABLE WITH ACRES
AND/OR PERCENT LAND USE AND CROPS GROWN.

20 PROJECT FUTURE
LAND USE AND CROPPING
PATTERNS

DETERMINE WHAT CHANGE IS EXPECTED FROM THE CURRENT
CONDITION. PROJECT BY APPROPRIATE TIME PERIOD AND
DISPLAY ON BASE MAP AND IN TABLE. PROJECTIONS
SHOULD BE BASED ON INTERVIEWS WITH FARMERS,
LOCAL RESIDENTS, EXTENSION
PERSONNEL, AND OTHER KNOWL-
EDGEABLE PEOPLE.

209IR ESTABLISH CUR- AG
RENT YIELDS WITH
WATER SHORT PROBLEM

YIELDS DETERMINED FROM QUESTIONAIRES FROM
LOCAL RESIDENTS. AVERAGE MANAGEMENT IS
ASSUMED. YIELDS REFLECT CURRENT PROBLEM
AND OTHER HAZARDS THAT EXIST

210IR ESTABLISH CUR- AG
RENT PROBLEM-FREE
YIELD

YIELDS SHOULD BE BASED ON INFORMATION OBTAINED
FROM ON-SITE INTERVIEWS AND SIMILAR PROBLEM
FREE CONDITIONS. STATISTICAL REPORTING SERVICE
COUNTY AVERAGES AND SOILS 5 YIELDS MAY BE HELPFUL.
AVERAGE MANAGEMENT IS ASSUMED. DISPLAY IN TABLE
FORM.

211IR PROJECT FUTURE AG
PROBLEM FREE YIELDS

DETERMINE CHANGE EXPECTED FROM CURRENT CONDITIONS
PROJECT BY TIME PERIOD. DISPLAY THE RESULTS IN A
TABLE.

212IR DEVELOP CROP
COST AND RETURN IN-
FLATION

A. EVALUATE CURRENTLY AVAILABLE CROP BUDGET DATA
AND THE NEED TO DEVELOP NEW DATA. CONSIDER IF
PRESENT BUDGETS CAN BE MODIFIED OR IF NEW ONES
NEED TO BE DEVELOPED.
B. INTERVIEW FARMERS IN THE AREA TO DETERMINE
THEIR CULTURAL PRACTICES, MANAGEMENT TECHNIQUES,
AND COST OF PRODUCTION FOR THE CROPS BEING
ANALYSED FOR THE PURPOSE OF DEVELOPING FULL OR
PARTIAL BUDGETS. NECESSARY DATA TO BE DEVELOPED
FOR PRESENT CONDITIONS AND PROJECT ALTERNATIVES
INCLUDES:

1. DETERMINE TYPICAL FARM SIZE
2. DETERMINE SIZE, COST, EFFICIENCIES OF
TILLAGE OPERATIONS, FUEL CONSUMPTION, FUEL
COST, YEARS OF OWNERSHIP, AND HOURS OF
ANNUAL USE OF EACH MACHINE USED
3. DETERMINE SEQUENCE OF OPERATIONS FOR EACH
CROP
4. DETERMINE AMOUNT AND COST OF SEED, FER-
TILIZER, CHEMICALS, AND OTHER INPUTS OF PRO-
DUCTION.
5. DETERMINE THE COST OF LABOR FOR FARM
WORKERS IN THE AREA
6. DETERMINE COST OF CUSTOM WORK PERFORMED
BY OTHERS FOR THE CROP

C. INTERVIEW RESEARCHER, PHYSICAL SCIENTISTS,
UNIVERSITY PERSONNEL, AND STATE AND FEDERAL

AGENCIES TO OBTAIN ANY ADDITIONAL DATA NEEDED AND TO VERIFY DATA OBTAINED FROM PRODUCERS

D. USE CROP BUDGETS TO CALCULATE THE CHANGE IN NET RETURNS FOR EACH CROP

1. CALCULATE FUTURE WITHOUT PROJECT
2. CALCULATE RETURNS FOR EACH ALTERNATIVE

213IR DETERMINE
TYPE OF EVALUATION

TWO THINGS HAVE TO BE DETERMINED BEFORE THE CORRECT WORK ITEMS CAN BE DETERMINED--TYPE OF IRRIGATION EVALUATION AND TYPE OF CROP EVALUATION
A. IF THE EVALUATION IS FOR NEW IRRIGATED LAND OR SUPPLEMENTAL WATER TO EXISTING IRRIGATED LAND, THEN WORK ITEM 214 WILL DETERMINE THE CROP USE EVALUATION.

- B. IF THE EVALUATION IS FOR PRIMARILY THE REPAIR OF A SYSTEM AS A RESULT OF SUDDEN FAILURE FROM A STORM, USE WORK ITEM 214 TO DETERMINE THE CROP USE EVALUATION AND THEN USE WORK ITEMS 227-239 FOR THE IRRIGATION PORTION OF THE EVALUATION.
- C. IF THE EVALUATION IS FOR PRIMARILY REHABILITATION USE WORK ITEM 214 TO DETERMINE THE CROP USE EVALUATION AND THEN USE WORK ITEMS 240-256 FOR THE IRRIGATION PORTION OF THE EVALUATION.

214IR DETERMINE
CHANGE IN CROP USE

DETERMINE IF THERE IS A CHANGE IN THE PERCENT OF NON BASIC 10 CROPS.

- A. IF THE CHANGE IN LAND USE IS RESTRICTED TO THE 10 BASIC CROPS OR IF THE PERCENT OF NON BASIC 10 CROPS DOES NOT CHANGE GO TO WORK ITEM 215.
- B. IF THERE IS A PERCENT CHANGE IN THE NON BASIC 10 CROPS, THEN GO TO WORK ITEMS 216-222 IF THE BENEFIT ANALYSIS IS BASED ON CROP BUDGETS OR GO TO WORK ITEMS 223-226 IF THE BENEFIT ANALYSIS IS BASED ON THE LAND VALUE APPROACH.

215IR BENEFITS FOR NO
CHANGE IN CROPS

COMPARE THE DIFFERENCE IN NET RETURN FOR CROP BUDGETS DEVELOPED IN WORK ITEM 212IR THE CROP BUDGETS SHOULD REFLECT THE DIFFERENCE IN CROP YIELDS AND PRODUCTION EXPENSES ASSOCIATED WITH THE DIFFERENT ALTERNATIVES THE BENEFITS ARE BASED ON THE REDUCED DAMAGE TO CROPS FROM DROUGHT AND REDUCED COSTS ASSOCIATED WITH USING WATER AND LAND RESOURCES FOR THE PRODUCTION OF CROPS. BENEFITS ARE

- A. CHANGES IN COSTS OF EQUIPMENT OWNERSHIP
- B. CHANGES IN COSTS OF EQUIPMENT OPERATION
- C. CHANGES IN PRODUCTION MATERIALS
- D. CHANGES IN LABOR AND MANAGEMENT
- E. CHANGES IN SYSTEM OPERATION, MAINTENANCE, AND REPLACEMENT

216IR BENEFITS FOR A
CHANGE IN CROPS

THESE BENEFITS ARE BASED ON FOLLOWING THE PROCEDURE OF USING A CROP BUDGET ANALYSIS

METHOD: P&G 2.3.5 STEPS 4-8

217IR TEN BASIC
CROPS

DETERMINE IF ANY CROPS GROWN IN THE PROJECT AREA ARE NOT BASIC CROPS

METHOD: P&G 2.3.2 (B)

218IR DETERMINE IF
OTHER CROPS WILL BE
TREATED AS BASIC CROPS

A. SELECT A SAMPLE OF FARM OPERATORS ON LANDS COMPARABLE TO LANDS BENEFITING FROM THE PROJECT UNDER WITH-PROJECT CONDITIONS.

1. FOR EACH FARM OPERATION DETERMINE THE RESPECTIVE ACREAGES OF BASIC AND OTHER CROPS
2. USE THESE DATA TO COMPUTE THE PROPORTION OF OTHER CROP ACREAGE TO TOTAL CROP ACREAGE FOR

EACH FARM.

3. USE CROP BUDGETS TO DETERMINE THE TOP 25 PERCENT OF FARMS IN THE EXPECTED NET INCOME

4. AVERAGE THE PROPORTIONS OF OTHER CROP ACRES TO TOTAL CROP ACRES FOR THE TOP 25 PERCENT OF FARMS.

PER ACRE

B. IF STANDARD STATISTICAL TESTS SHOW THAT THE PROPORTION OF OTHER CROP ACRES TO TOTAL CROP ACRES FOR THE SAMPLE IS STATISTICALLY NOT DIFFERENT FROM THE PROPORTION IN THE TOTAL SAMPLE, THEN THE CROPS CAN BE TREATED AS BASIC CROPS. IF THE PROPORTIONS ARE STATISTICALLY DIFFERENT BENEFITS FROM THESE CROPS ARE CONSIDERED EFFICIENCY BENEFITS AND ARE EVALUATED USING A PROCEDURE DESCRIBED BELOW. EVALUATE THE STATISTIC TEST AT THE 95 PERCENT LEVEL OF CONFIDENCE

METHOD: P&G 2.3.5 STEP 4

219IR DETERMINE OTHER CROP ACREAGE TREATED AS BASIC CROPS

DETERMINE THE ACREAGE LIMIT ON CROPS TREATED AS BASIC CROPS IN THE PROJECT EVALUATION

1. MULTIPLY THE ACREAGE OF COMPARABLE LAND IN THE PROJECT AREA BY THE SAMPLE PROPORTION OF THE TOP 25 PERCENT OF FARMS DEVELOPED IN WORK ITEM 218IR.
2. ALL REMAINING ACRES OF NON BASIC CROPS WILL BE CONSIDERED EFFICIENCY BENEFITS AND ARE EVALUATED USING THE PROCEDURES DESCRIBED BELOW IN WORK ITEM 222.

METHOD: P&G 2.3.5 STEP 5

220 VALUE OF AG PRODUCTION

- A. COMPARE THE DIFFERENCE IN NET RETURN FOR CROP BUDGETS DEVELOPED IN WORK ITEM 212IR
1. THE CROP BUDGETS SHOULD REFLECT THE DIFFERENCE IN CROP YIELDS AND PRODUCTION EXPENSES ASSOCIATED WITH THE DIFFERENT ALTERNATIVES
- B. THE BENEFITS ARE BASED ON THE REDUCED DAMAGE TO CROPS FROM DROUGHT AND REDUCED COSTS ASSOCIATED WITH USING WATER AND LAND RESOURCES FOR THE PRODUCTION OF CROPS. BENEFITS ARE
1. CHANGES IN COSTS OF EQUIPMENT OWNERSHIP
 2. CHANGES IN COSTS OF EQUIPMENT OPERATION
 3. CHANGES IN PRODUCTION MATERIALS
 4. CHANGES IN LABOR AND MANAGEMENT
 5. CHANGES IN SYSTEM OPERATION, MAINTENANCE, AND REPLACEMENT

221IR INTENSIFICATION BENEFITS

- A. CALCULATE THE CHANGE IN NET INCOME BETWEEN WITHOUT PROJECT AND EACH ALTERNATIVE
- B. EXPRESS THE DIFFERENCE IN NET INCOME IN AVERAGE ANNUAL EQUIVALENT TERMS

222IR DETERMINE EFFICIENCY BENEFITS

THESE BENEFITS ARE FROM LANDS PRODUCING NON BASIC CROPS OR CROPS NOT TREATED AS BASIC CROPS

A. DETERMINE THE DIFFERENCE IN COST OF PRODUCING CROPS IN THE PROJECT AREA AS COMPARED TO THE COST OF PRODUCING THEM IN OTHER AREAS IN THE WRC ASSESSMENT SUBAREA. USE WORK ITEM 212IR FOR BOTH OUTSIDE THE PROJECT AREA AND INSIDE THE PROJECT

B. DETERMINE THE NET INCOME THAT WOULD ACCRUE FROM PRODUCTION OF AN APPROPRIATE MIX OF BASIC CROPS ON THE OTHER LANDS IN THE WRC ASSESSMENT SUBAREA. USE WORK ITEM 212IR
C. THE EFFICIENCY BENEFITS ARE THE SUM OF A AND B

223IR BENEFITS FOR A
CHANGE IN CROPS

THESE BENEFITS ARE BASED ON FOLLOWING THE PROCEDURE OF USING A LAND VALUE ANALYSIS USING WORK ITEMS 224-226

METHOD: P&G 2.3.5 STEP 9

2241R APPRAISE PRO-
JECT LAND

- A. HAVE A QUALIFIED REAL ESTATE APPRAISER DETERMINE THE CURRENT MARKET VALUE OF THE PROJECT LAND
 1. LAND SHOULD BE CATEGORIZED FOR DIFFERENT QUALITY
 2. ADJUST THE VALUE OF THE LAND FOR IMPROVEMENTS, CROPS GROWN, TRANSPORTION, AND OTHER CONSIDERATIONS

225IR APPRAISE SIM-
ILAR LAND

- A. HAVE A QUALIFIED REAL ESTATE APPRAISER DETERMINE THE CURRENT MARKET VALUE OF COMPARABLE NON-PROJECT LANDS THAT WOULD HAVE WATER CONDITIONS SIMILAR TO WHAT WOULD RESULT WITH PROJECT ACTION
 1. LAND SHOULD BE CATEGORIZED FOR DIFFERENT QUALITY
 2. ADJUST THE VALUE OF THE LAND FOR IMPROVEMENTS, CROPS GROWN, TRANSPORTATION, AND OTHER CONSIDERATIONS
 3. MAKE ADJUSTMENTS FOR THE PRESENT VALUE OF WATER COSTS INCURRED BY THE OPERATOR IN NON-PROJECT LANDS

226IR DETERMINE
INTENSIFICATION BEN-
EF

- A. SUBTRACT THE CURRENT MARKET VALUE OF THE PROJECT LANDS FROM THE CURRENT MARKET VALUE OF SIMILAR NON-PROJECT LANDS
- B. THE INTENSIFICATION BENEFIT IS THE DIFFERENCE OBTAINED IN A. ANNUALIZED OVER THE LIFE OF THE PROJECT AT THE PROJECT DISCOUNT RATE.

227IR BENEFIT EVALU-
ATION FOR IRRIGATION
SYSTEMS SUBJECT TO
SUDDEN FAILURE

IF THE IRRIGATION COMPONENT IS PRIMARILY FOR REPAIR OF A SYSTEM AS A RESULT OF A SUDDEN FAILURE FROM A STORM, DEVELOP THE AVERAGE ANNUAL BENEFITS USING THE WORK ITEMS 228-239.

228IR LAND USE

THE FOLLOWING PROCEDURES ASSUME THAT THERE WILL NOT BE A CHANGE IN LAND USE. IF THERE IS A CHANGE IN LAND USE OR IF THERE ARE CROPS GROWN OTHER THAN THE TEN BASIC CROPS, A COMBINATION OF WORK ITEMS 216IR-222IR AND THE WORK ITEMS THAT FOLLOW WILL BE REQUIRED. CONSULT THE TSC ECONOMIST FOR GUIDANCE.

229IR DETERMINE FRE- HY
QUENCY OF FAILURE

HY

- A. DETERMINE FREQUENCY OF LOSS OF SYSTEM AS A RESULT OF THE STORM
- B. DETERMINE NUMBER OF DAYS TO CLEAN OUT AND RESTORE SERVICE
 1. USE IRRIGATION DISTRICT RECORDS
 2. OBTAIN INFORMATION FROM OTHER SOURCES WITH SIMILAR SYSTEMS
- C. DETERMINE MONTHLY STORM DISTRIBUTION AS A PERCENT OF ANNUAL

20 DETERMINE AG- AG
RONOMIC SITUATION

- A. DETERMINE LAND USE OF AFFECTED AREA
- B. ESTIMATE YIELD OF AREA SERVED BY SYSTEM
- C. ESTIMATE GROSS INCOME FROM CROPS SERVED BY THE SYSTEM
- D. DETERMINE COMPOSITE ACRE GROSS RETURN FOR AREA SERVED BY THE SYSTEM

231IR NET MONTHLY IRRIGATION REQUIRE- IE
MENTS

DETERMINE NET MONTHLY IRRIGATION REQUIREMENTS
(CROP CONSUMPTIVE USE MINUS EFFECTIVE RAINFALL
MINUS CARRYOVER)

- 23 COMPOSITE IE A. MULTIPLY NET MONTHLY IRRIGATION REQUIREMENTS WATER USE PER MONTH BY THE PERCENT CROP TO DETERMINE THE TOTAL MONTHLY COMPOSITE ACRE WATER REQUIREMENTS
METHOD: EHWR: PART 621-C
- 233IR DETERMINE VALUE OF INCH OF WATER A. DIVIDE COMPOSITE ACRE GROSS RETURN CALCULATED IN WORK ITEM 230IR BY THE NET MONTHLY IRRIGATION WATER USE CALCULATED IN WORK ITEM 232IR
METHOD: EHWR: PART 621-C
- 234IR DETERMINE VALUE OF WATER PER MONTH A. MULTIPLY VALUE OF INCH OF IRRIGATION WATER CALCULATED IN WORK ITEM 233IR TIMES THE TOTAL MONTHLY COMPOSITE WATER REQUIREMENTS CALCULATED IN WORK ITEM 232IR.
METHOD: EHWR: PART 621-C
- 235IR DETERMINE VALUE OF WATER PER DAY A. DIVIDE THE VALUES CALCULATED IN WORK ITEM 234IR BY 30 DAYS TO GET THE VALUE ADDED PER DAY FOR EACH MONTH.
- 236IR DETERMINE DAMAGE VALUE PER FAILURE A. MULTIPLY THE VALUE ADDED PER DAY OF WATER LOSS FROM WORK ITEM 235IR FOR THE APPROPRIATE MONTH TIMES THE AVERAGE NUMBER OF DAYS TO RESTORE SERVICE FROM WORK ITEM 229IR.
- 237IR DETERMINE WEIGHTED DAMAGE A. MULTIPLY THE DAMAGE VALUE CALCULATED IN WORK ITEM 236IR TIMES THE MONTHLY STORM DISTRIBUTION INFORMATION COLLECTED IN WORK ITEM 229IR.
METHOD: EHWR PART 621-C
- 238IR DETERMINE AVERAGE ANNUAL DAMAGES A. MULTIPLY THE WEIGHTED DAMAGE PER COMPOSITE ACRE CALCULATED IN WORK ITEM 237IR TIMES THE PROBABILITY OF A SYSTEM FAILURE THAT WAS COLLECTED IN WORK ITEM 229IR TIMES THE NUMBER OF ACRES AFFECTED.
- 239IR OTHER DAMAGES A. IF OTHER DAMAGE OCCURS TO THE SYSTEM AS A RESULT OF THE FAILURE ADD THESE INCREASED COSTS TO THE DAMAGE TOTALS
B. IF INCREASED COSTS ARE INCURRED BY THE IRRIGATION DISTRICT TO KEEP THE REST OF THE SYSTEM OPERATING AS A RESULT OF THE FAILURE ADD THESE INCREASED COSTS TO THE DAMAGE TOTALS
C. IF THERE IS A CHANGE IN THE SYSTEM OPERATION, MAINTENANCE AND REPLACEMENT COSTS AS A RESULT OF PROJECT ACTION, THESE COSTS CAN BE INCLUDED IN THE BENEFIT CALCULATIONS.
- 240IR BENEFIT EVALUATION FOR IRRIGATION SYSTEMS SUBJECT TO SUDDEN FAILURE IF THE IRRIGATION COMPONENT IS PRIMARILY FOR REPAIR AND REHABILITATION OF A SYSTEM AS A RESULT OF STRUCTURE FAILURES, DEVELOP THE AVERAGE ANNUAL BENEFITS USING WORK ITEMS 241-254.

LAND USE

THE FOLLOWING PROCEDURES ASSUME THAT THERE WILL NOT BE A CHANGE IN LAND USE. IF THERE IS A CHANGE IN LAND USE OR IF THERE ARE CROPS GROWN OTHER THAN THE TEN BASIC CROPS, A COMBINATION OF WORK ITEMS 216IR-222IR AND THE WORK ITEMS THAT FOLLOW WILL BE REQUIRED. CONSULT THE TSC ECONOMIST FOR GUIDANCE.

24 DETERMINE AREA AFFECTED	PE	DETERMINE THE AREA AFFECTED BY THE STRUCTURE FAILURE. THE AREA COULD INCLUDE AREA ABOVE AND/OR BELOW THE STRUCTURE.
243IR DETERMINE FREQUENCY OF STRUCTURE FAILURE	PE	DETERMINE THE FREQUENCY OF STRUCTURE FAILURE. ASSUME A UNIFORM SEASON LONG FAILURE RATE UNLESS IRRIGATION DISTRICT RECORDS SHOW OTHERWISE. MAKE THE DISTRIBUTION BY MONTHS AS A PERCENT OF ANNUAL. A. DETERMINE WHAT STOP-GAP MEASURES WERE APPLIED AND HOW EFFECTIVE THEY WERE. B. DETERMINE THE LENGTH OF TIME THAT THE AFFECTED AREA WAS WITHOUT WATER.
244IR DETERMINE AGRONOMIC SITUATION	AG	A. DETERMINE LAND USE OF AFFECTED AREA B. ESTIMATE YIELD OF AREA SERVED BY SYSTEM C. ESTIMATE GROSS INCOME FROM CROPS SERVED BY THE SYSTEM D. DETERMINE COMPOSITE ACRE GROSS RETURN FOR AREA SERVED BY THE SYSTEM
245IR NET MONTHLY IRRIGATION REQUIREMENTS		DETERMINE NET MONTHLY IRRIGATION REQUIREMENTS (CROP CONSUMPTIVE USE MINUS EFFECTIVE RAINFALL MINUS CARRYOVER)
246IR COMPOSITE WATER USE	IE	A. MULTIPLY NET MONTHLY IRRIGATION REQUIREMENTS BY THE PERCENT CROP TO DETERMINE THE TOTAL MONTHLY COMPOSITE ACRE WATER REQUIREMENTS METHOD: EHWR: PART 621-C
247IR DETERMINE VALUE OF INCH OF WATER		A. DIVIDE COMPOSITE ACRE GROSS RETURN CALCULATED IN WORK ITEM 244IR BY THE NET MONTHLY IRRIGATION USE CALCULATED IN WORK ITEM 246IR METHOD: EHWR: PART 621-C
248IR DETERMINE VALUE OF WATER PER MONTH		A. MULTIPLY VALUE OF INCH OF IRRIGATION WATER CALCULATED IN WORK ITEM 247IR TIMES THE TOTAL MONTHLY COMPOSITE WATER REQUIREMENTS CALCULATED IN WORK ITEM 246IR. METHOD: EHWR: PART 621-C
249IR DETERMINE VALUE OF WATER PER DAY		A. DIVIDE THE VALUES CALCULATED IN WORK ITEM 248IR BY 30 DAYS TO GET THE VALUE ADDED PER DAY FOR EACH MONTH.
250IR DETERMINE DAMAGE VALUE PER FAILURE		A. MULTIPLY THE VALUE ADDED PER DAY OF WATER LOSS FROM WORK ITEM 249IR FOR THE APPROPRIATE MONTH TIMES THE AVERAGE NUMBER OF DAYS TO RESTORE SERVICE THAT WAS DETERMINED
251IR DETERMINE WATER RELATED DAMAGE		A. MULTIPLY THE DAMAGE VALUE CALCULATED IN WORK ITEM 250IR TIMES THE MONTHLY FAILURE DISTRIBUTION INFORMATION COLLECTED IN WORK ITEM 243IR.

METHOD: EHWR PART 621-C

2521R DETERMINE
DAMAGES FROM
STRUCTURE FAILURE

A. MULTIPLY THE WEIGHTED DAMAGE PER COMPOSITE
ACRE CALCULATED IN WORK ITEM 2511R TIMES THE
NUMBER OF ACRES AFFECTED BY THE FAILURE AS DETER-
MINED IN WORK ITEM 2431R.

25 OTHER
DAMAGES

- A. IF OTHER DAMAGE OCCURS TO THE SYSTEM AS A RESULT OF THE FAILURE ADD THESE INCREASED COSTS TO THE DAMAGE TOTALS
- B. IF INCREASED COSTS ARE INCURRED BY THE IRRIGATION DISTRICT TO KEEP THE REST OF THE SYSTEM OPERATING AS A RESULT OF THE FAILURE ADD THESE INCREASED COSTS TO THE DAMAGE TOTALS
- C. IF THERE IS A CHANGE IN OPERATION, MAINTENANCE AND REPLACEMENT COSTS OF THE SYSTEM AS AS RESULT OF THE PROJECT THESE COSTS SHOULD BE INCLUDED IN THE BENEFIT CALCULATIONS.

254IR DETERMINE REMAINING LIFE OF STRUCTURE PE

DETERMINE THE PROBABLE REMAINING LIFE OF THE STRUCTURE IN YEARS. IF THE STRUCTURE WILL FAIL BEFORE PROJECT IMPLEMENTATION, ASSUME THEY HAVE BEEN REPAIRED IN WITHOUT PROJECT CONDITION

255IR DETERMINE PROBABLE DAMAGE IN ANY ONE YEAR

DIVIDE THE TOTAL DAMAGES CALCULATED IN WORK ITEM 252IR AND 253IR BY THE YEARS OF REMAINING LIFE DETERMINED IN WORK ITEM 254IR.

256IR CALCULATE AVERAGE ANNUAL DAMAGES

MULTIPLY THE VALUE OF DAMAGES DETERMINED IN WORK ITEM 255IR TIMES THE APPROPRIATE INTEREST AND ANNUITY FACTORS TO DETERMINE AVERAGE ANNUAL BENEFITS.

257IR FOR VARIOUS ALTERNATIVES OBTAIN COSTS FOR STRUCTURAL AND NONSTRUCTURAL MEASURES. PE

- ESTIMATES ARE MADE BY PLANNING STAFF BASED ON RECENT INSTALLATION EXPERIENCE.
- A. CONSTRUCTION COST - NWSM 501.30H, EHWR 630.01
 - B. ENGINEERING SERVICES - NWSM 501.30E
 - C. LAND RIGHTS - NWSM 501.30G, EHWR 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, EHWR 630.01B
 - H. ASSOCIATED COST - NWSM 501.30M, EHWR 630.02
 - I. EXTERNAL DISECONOMIES - NWSM 501.300, EHWR 630.01C
 - J. NONPROJECT COST - NWSM 501.30P

258IR FOR VARIOUS ALTERNATIVES ESTIMATE THE FOLLOWING LAND TREATMENT COST: TI
A. LAND
B. LAND

DETERMINE NEED FOR ACCELERATED LAND TREATMENT TO MEET REQUIREMENTS OF LAW OR TO ACHIEVE BENEFITS FROM PROJECT. ESTIMATE UNIT COSTS AND ACRES TO BE TREATED.
A. ESTIMATES MADE BY DC, AC, AND STATE STAFF.
B. ESTIMATES MADE BY DC, AC, AND STATE STAFF.

TREATMENT TECHNICAL
ASSISTANCE.

259IR DEVELOP NED
ALTERNATIVE

DO INCREMENTAL ANALYSIS TO ADD STRUCTURAL ITEMS
AND LAND TREATMENT PRACTICES. DESIGNATE NED
ALTERNATIVE AND DOCUMENT IN TABULAR FORM.

METHOD: CONSULT NTC ECONOMIST FOR
ASSISTANCE

260IR DEVELOP NED
PORTIONS OF OTHER AL-
TERNATIVES AND DETER-
MINE CONTRIBUTION OF
EACH ALTERNATIVE TO
NED COMPONENT NEEDS.

ASSIST IN SELECTION OF MEASURES FOR EACH ALTERNA-
TIVE PLAN. DETERMINE CONTRIBUTION MADE TO COMPON-
ENT NEEDS. DOCUMENT IN TABULAR FORM WITH APPRO-
PRIATE NARRATIVE DESCRIPTION AND FILE.

261IR ESTIMATE EMPLOYMENT BENEFITS RESULTING FROM PROJECT INSTALLATION AND PROJECT OPERATION AND MAINTENANCE.

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

262IR DEVELOP DATA FOR SWB ACCOUNT.

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.

263IR COST ALLOCATION. PE

USE COST ALLOCATION WORKSHEET. NWSM 501.31, EHWR 631

264IR COST SHARING PE

METHOD: NWSM 506.60

265IR DEVELOP NED DISPLAYS

A. ASSIST STUDY LEADER 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.)

266IR PREPARE ECONOMIC PORTIONS OF THE PLAN, EIS, AND DOCUMENTATION.

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

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