

Table A.4. 1 Estimated Discharge at the Uppermost Point (1/4)

Location : Jalaur River, Alibunan (JRI)

DPWH rivergauge

Drainage Area : 120.0 sq. km.

| | | | | | | | | | | | | | Unit : m ³ /sec | |
|------------------|-------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------------------|--|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual | |
| <i>Water Use</i> | 0.00 | 0.00 | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1950 | 5.73 | 2.49 | 7.44 | 0.98 | 2.52 | 7.63 | 7.46 | 4.28 | 36.56 | 9.73 | 8.05 | 1.78 | 7.89 | |
| 1951 | 0.50 | 1.62 | 0.47 | 0.68 | 8.63 | 4.09 | 12.91 | 7.36 | 14.99 | 11.05 | 12.77 | 28.51 | 8.63 | |
| 1952 | 8.96 | 3.38 | 1.29 | 0.37 | 2.22 | 7.52 | 12.17 | 10.86 | 12.49 | 23.88 | 11.42 | 21.47 | 9.67 | |
| 1953 | 3.14 | 1.04 | 2.16 | 0.77 | 1.23 | 6.16 | 3.98 | 8.07 | 9.30 | 5.55 | 5.02 | 9.24 | 4.64 | |
| 1954 | 1.53 | 2.23 | 7.42 | 1.35 | 3.06 | 9.40 | 19.59 | 11.00 | 4.89 | 6.20 | 9.00 | 28.03 | 8.64 | |
| 1955 | 9.14 | 7.40 | 2.70 | 1.81 | 4.95 | 7.26 | 5.86 | 9.13 | 8.75 | 13.83 | 25.58 | 5.21 | 8.47 | |
| 1956 | 5.15 | 4.99 | 9.87 | 9.93 | 4.81 | 3.72 | 5.48 | 15.08 | 11.87 | 14.68 | 12.14 | 13.32 | 9.25 | |
| 1957 | 15.94 | 5.73 | 2.79 | 4.20 | 2.47 | 3.17 | 7.76 | 11.80 | 8.70 | 6.28 | 3.04 | 2.27 | 6.18 | |
| 1958 | 2.83 | 2.61 | 1.43 | 1.34 | 1.86 | 5.74 | 3.43 | 2.92 | 2.30 | 10.82 | 10.34 | 4.27 | 4.16 | |
| 1959 | 3.47 | 2.58 | 4.82 | 1.72 | 3.53 | 6.31 | 13.96 | 6.87 | 9.40 | 19.26 | 19.41 | 10.99 | 8.53 | |
| 1960 | 4.55 | 5.02 | 2.89 | 11.07 | 4.80 | 12.14 | 12.44 | 8.80 | 10.25 | 16.63 | 13.47 | 7.36 | 9.12 | |
| 1961 | 4.05 | 3.93 | 2.45 | 2.07 | 4.98 | 9.42 | 11.91 | 12.81 | 8.02 | 11.35 | 6.67 | 4.97 | 6.89 | |
| 1962 | 5.01 | 5.74 | 3.86 | 1.43 | 0.52 | 6.64 | 19.11 | 23.15 | 20.69 | 8.80 | 13.32 | 7.52 | 9.65 | |
| 1963 | 6.23 | 5.43 | 2.48 | 2.20 | 2.09 | 4.35 | 3.86 | 12.71 | 9.23 | 9.59 | 3.81 | 7.31 | 5.77 | |
| 1964 | 2.94 | 3.09 | 1.68 | 1.28 | 4.75 | 6.26 | 12.44 | 8.75 | 8.25 | 9.83 | 32.93 | 22.51 | 9.56 | |
| 1965 | 13.26 | 8.06 | 7.83 | 6.38 | 3.51 | 9.84 | 15.53 | 11.51 | 6.70 | 12.98 | 4.81 | 13.12 | 9.46 | |
| 1966 | 3.58 | 2.05 | 1.59 | 1.81 | 12.52 | 10.53 | 16.53 | 7.98 | 6.68 | 16.87 | 10.28 | 8.05 | 8.21 | |
| 1967 | 22.43 | 5.25 | 5.62 | 11.86 | 13.27 | 10.18 | 2.40 | 1.93 | 4.94 | 15.44 | 13.14 | 3.26 | 9.14 | |
| 1968 | 4.45 | 4.00 | 1.61 | 1.21 | 1.67 | 3.90 | 8.28 | 7.81 | 3.67 | 3.90 | 10.00 | 4.69 | 4.60 | |
| 1969 | 3.83 | 2.51 | 2.03 | 2.00 | 2.97 | 5.00 | 7.65 | 3.90 | 6.09 | 5.00 | 5.00 | 10.78 | 4.73 | |
| 1970 | 4.22 | 2.89 | 3.83 | 4.19 | 4.06 | 4.69 | 9.68 | 2.58 | 3.59 | 21.09 | 25.77 | 12.50 | 8.26 | |
| 1971 | 13.43 | 12.81 | 0.52 | 0.61 | 5.31 | 7.65 | 10.00 | 7.18 | 5.23 | 17.18 | 12.89 | 8.12 | 8.41 | |
| MAX | 22.43 | 12.81 | 9.87 | 11.86 | 13.27 | 12.14 | 19.59 | 23.15 | 36.56 | 23.88 | 32.93 | 28.51 | 9.67 | |
| MIN | 0.50 | 1.04 | 0.47 | 0.37 | 0.52 | 3.17 | 2.40 | 1.93 | 2.30 | 3.90 | 3.04 | 1.78 | 4.16 | |
| MEAN | 6.56 | 4.31 | 3.49 | 3.15 | 4.35 | 6.89 | 10.11 | 8.93 | 9.66 | 12.27 | 12.22 | 10.69 | 7.72 | |

Table A.4. 1 Estimated Discharge at the Uppermost Point (2/4)

Location : Suague River, Quipot (SG1)
 Proposed dam site, Quipot
 Drainage Area : 39.0 sq. km.

| | Unit : m ³ /sec | | | | | | | | | | | | |
|------------------|----------------------------|------|------|------|------|------|------|------|------|------|------|------|--------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| <i>Water Use</i> | 0.00 | 0.00 | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1950 | 2.72 | 2.42 | 2.87 | 1.48 | 1.84 | 2.12 | 1.81 | 0.95 | 2.66 | 4.27 | 2.18 | 1.12 | 2.20 |
| 1951 | 0.56 | 0.54 | 0.25 | 0.20 | 2.05 | 1.83 | 2.70 | 3.77 | 4.37 | 3.25 | 1.69 | 3.43 | 2.05 |
| 1952 | 0.90 | 0.76 | 0.61 | 0.38 | 0.52 | 0.51 | 4.80 | 5.29 | 4.03 | 4.67 | 1.36 | 2.42 | 2.19 |
| 1953 | 0.95 | 0.70 | 0.59 | 0.26 | 0.19 | 1.62 | 1.76 | 2.81 | 2.50 | 2.81 | 1.97 | 1.73 | 1.49 |
| 1954 | 0.74 | 0.51 | 0.95 | 0.19 | 0.32 | 0.65 | 1.50 | 1.48 | 1.66 | 1.66 | 2.09 | 1.90 | 1.14 |
| 1955 | 1.86 | 0.11 | 0.06 | 0.04 | 0.21 | 0.65 | 1.01 | 0.78 | 1.10 | 2.42 | 3.73 | 1.19 | 1.10 |
| 1956 | 2.29 | 0.22 | 0.16 | 0.80 | 0.84 | 0.59 | 1.19 | 1.77 | 2.10 | 4.30 | 2.55 | 3.18 | 1.67 |
| 1957 | 2.62 | 0.62 | 0.19 | 0.58 | 0.22 | 0.26 | 2.00 | 2.41 | 1.99 | 2.10 | 1.18 | 0.85 | 1.25 |
| 1958 | 0.94 | 0.84 | 0.51 | 0.33 | 0.49 | 0.72 | 1.63 | 1.77 | 1.28 | 4.05 | 1.95 | 0.81 | 1.28 |
| 1959 | 1.25 | 0.42 | 0.68 | 0.31 | 0.49 | 0.60 | 3.03 | 1.25 | 1.86 | 2.70 | 3.73 | 2.08 | 1.53 |
| 1960 | 1.49 | 2.24 | 0.85 | 0.61 | 1.35 | 2.37 | 1.68 | 2.57 | 1.97 | 3.71 | 3.71 | 1.38 | 1.99 |
| 1961 | 1.14 | 1.30 | 0.40 | 0.49 | 1.58 | 3.17 | 3.52 | 3.85 | 1.81 | 2.87 | 2.01 | 1.49 | 1.97 |
| 1962 | 1.21 | 1.43 | 1.08 | 0.81 | 0.86 | 1.81 | 3.59 | 3.52 | 4.26 | 2.80 | 2.70 | 2.35 | 2.20 |
| 1963 | 1.68 | 1.40 | 1.21 | 0.61 | 1.49 | 1.60 | 2.02 | 3.18 | 2.06 | 2.05 | 1.24 | 2.97 | 1.79 |
| 1964 | 1.31 | 2.26 | 0.84 | 0.29 | 1.84 | 1.95 | 3.30 | 2.33 | 1.60 | 2.43 | 4.92 | 9.32 | 2.70 |
| 1965 | 5.70 | 3.34 | 1.40 | 0.75 | 0.84 | 1.43 | 2.59 | 2.08 | 1.95 | 4.34 | 1.24 | 1.43 | 2.26 |
| 1966 | 1.38 | 0.98 | 0.66 | 1.91 | 8.77 | 2.11 | 2.61 | 1.63 | 1.81 | 2.43 | 4.56 | 2.08 | 2.58 |
| 1967 | 4.05 | 2.51 | 1.57 | 1.09 | 1.06 | 1.11 | 1.92 | 1.98 | 1.69 | 2.33 | 1.82 | 0.36 | 1.79 |
| 1968 | 1.08 | 0.68 | 0.49 | 0.49 | 0.99 | 1.10 | 1.92 | 1.81 | 0.81 | 0.89 | 2.35 | 1.05 | 1.14 |
| 1969 | 0.40 | 0.18 | 0.12 | 0.10 | 0.18 | 0.33 | 1.93 | 1.38 | 2.15 | 2.44 | 2.25 | 2.56 | 1.17 |
| 1970 | 0.95 | 0.64 | 0.34 | 0.33 | 0.89 | 1.08 | 2.27 | 0.81 | 1.83 | 5.13 | 6.35 | 2.97 | 1.97 |
| 1971 | 1.51 | 1.56 | 0.85 | 0.12 | 1.22 | 1.76 | 2.37 | 1.68 | 1.19 | 4.22 | 3.05 | 1.89 | 1.79 |
| MAX | 5.70 | 3.34 | 2.87 | 1.91 | 8.77 | 3.17 | 4.80 | 5.29 | 4.37 | 5.13 | 6.35 | 9.32 | 2.70 |
| MIN | 0.40 | 0.11 | 0.06 | 0.04 | 0.18 | 0.26 | 1.01 | 0.78 | 0.81 | 0.89 | 1.18 | 0.36 | 1.10 |
| MEAN | 1.67 | 1.17 | 0.76 | 0.55 | 1.28 | 1.34 | 2.33 | 2.23 | 2.12 | 3.09 | 2.67 | 2.21 | 1.78 |

Table A.4. 1 Estimated Discharge at the Uppermost Point (3/4)

Location : Tigum River, Daja (TG0)
 Proposed Dam Site
 Drainage Area : 58.0 sq. km.

Unit : m³/sec

| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
|------------------|------|------|------|------|------|------|-------|------|-------|------|------|------|--------|
| <i>Water Use</i> | 0.00 | 0.00 | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1950 | 4.35 | 3.60 | 4.29 | 2.14 | 2.68 | 3.10 | 2.61 | 1.35 | 3.94 | 6.42 | 3.18 | 1.60 | 3.27 |
| 1951 | 0.79 | 0.74 | 0.34 | 0.26 | 3.00 | 2.68 | 4.00 | 5.68 | 6.61 | 4.82 | 2.43 | 5.12 | 3.04 |
| 1952 | 1.29 | 1.07 | 0.84 | 0.51 | 0.70 | 0.72 | 7.33 | 8.04 | 6.04 | 6.97 | 2.04 | 3.58 | 3.26 |
| 1953 | 1.32 | 0.98 | 0.82 | 0.35 | 0.25 | 2.36 | 2.58 | 4.18 | 3.76 | 4.21 | 2.89 | 2.50 | 2.19 |
| 1954 | 1.06 | 0.69 | 1.32 | 0.26 | 0.45 | 0.92 | 2.15 | 2.12 | 2.43 | 2.40 | 2.57 | 2.75 | 1.59 |
| 1955 | 2.72 | 0.14 | 0.08 | 0.06 | 0.28 | 0.92 | 1.43 | 1.07 | 1.58 | 3.61 | 5.61 | 1.71 | 1.60 |
| 1956 | 3.39 | 0.29 | 0.20 | 1.13 | 1.18 | 0.84 | 1.68 | 2.64 | 3.07 | 6.42 | 3.79 | 4.71 | 2.45 |
| 1957 | 3.93 | 0.88 | 0.25 | 0.80 | 0.30 | 0.84 | 2.89 | 3.58 | 2.93 | 2.96 | 1.67 | 0.81 | 1.82 |
| 1958 | 1.32 | 1.17 | 0.70 | 0.47 | 0.67 | 1.01 | 2.36 | 2.61 | 1.82 | 6.07 | 2.86 | 4.71 | 2.15 |
| 1959 | 1.82 | 0.77 | 0.96 | 4.11 | 0.67 | 1.46 | 4.49 | 1.85 | 2.93 | 2.96 | 1.67 | 0.81 | 2.04 |
| 1960 | 1.32 | 0.36 | 0.26 | 0.82 | 0.64 | 1.29 | 0.68 | 1.24 | 1.01 | 3.08 | 2.78 | 0.93 | 1.20 |
| 1961 | 0.61 | 0.43 | 0.37 | 0.34 | 0.98 | 1.93 | 4.93 | 5.82 | 2.93 | 3.75 | 3.39 | 2.29 | 2.31 |
| 1962 | 1.96 | 2.57 | 2.12 | 1.32 | 1.32 | 2.96 | 12.86 | 4.11 | 10.72 | 4.01 | 4.90 | 3.97 | 4.40 |
| 1963 | 2.61 | 2.10 | 1.82 | 0.58 | 0.45 | 1.08 | 0.98 | 0.30 | 3.39 | 2.54 | 0.80 | 2.96 | 1.63 |
| 1964 | 0.86 | 1.08 | 0.48 | 0.31 | 0.96 | 1.40 | 4.21 | 3.11 | 1.86 | 1.57 | 9.82 | 1.68 | 2.28 |
| 1965 | 1.06 | 0.95 | 1.24 | 0.98 | 1.14 | 2.22 | 4.46 | 3.08 | 2.72 | 8.51 | 1.82 | 2.26 | 2.54 |
| 1966 | 2.07 | 1.36 | 0.70 | 0.87 | 5.18 | 3.47 | 6.61 | 2.04 | 2.86 | 5.40 | 9.11 | 6.42 | 3.84 |
| 1967 | 3.14 | 1.43 | 1.54 | 1.35 | 1.32 | 1.40 | 2.43 | 2.50 | 2.11 | 3.00 | 2.31 | 0.44 | 1.91 |
| 1968 | 0.42 | 0.88 | 0.59 | 0.59 | 1.35 | 1.72 | 1.43 | 1.29 | 0.64 | 1.06 | 0.96 | 0.14 | 0.92 |
| 1969 | 0.03 | 0.02 | 0.05 | 0.05 | 0.17 | 0.35 | 0.30 | 0.37 | 1.78 | 2.15 | 0.74 | 2.26 | 0.69 |
| 1970 | 1.07 | 0.72 | 0.36 | 0.35 | 0.14 | 1.46 | 1.21 | 1.07 | 2.97 | 3.75 | 3.79 | 3.08 | 1.67 |
| 1971 | 2.36 | 2.32 | 1.29 | 0.16 | 1.74 | 2.57 | 3.58 | 2.40 | 1.75 | 6.42 | 4.56 | 2.72 | 2.66 |
| MAX | 4.35 | 3.60 | 4.29 | 4.11 | 5.18 | 3.47 | 12.86 | 8.04 | 10.72 | 8.51 | 9.82 | 6.42 | 4.40 |
| MIN | 0.03 | 0.02 | 0.05 | 0.05 | 0.14 | 0.35 | 0.30 | 0.30 | 0.64 | 1.06 | 0.74 | 0.14 | 0.69 |
| MEAN | 1.80 | 1.12 | 0.94 | 0.81 | 1.16 | 1.67 | 3.42 | 2.75 | 3.17 | 4.18 | 3.35 | 2.61 | 2.25 |

Table A.4. 1 Estimated Discharge at the Uppermost Point (4/4)

Location : Aganan River, Gines (AG-1)
 Gines
 Drainage Area : 28.0 sq. km.

| | | | | | | | | | | | | | Unit : m ³ /sec |
|------------------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| <i>Water Use</i> | 0.00 | 0.00 | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1951 | 0.07 | 0.01 | 0.01 | 0.01 | 1.06 | 0.23 | 0.35 | 0.31 | 0.92 | 0.81 | 0.39 | 2.74 | 0.58 |
| 1952 | 0.02 | 0.01 | 0.01 | 0.01 | 0.04 | 0.75 | 1.16 | 1.24 | 3.00 | 4.32 | 0.27 | 1.01 | 0.99 |
| 1953 | 0.02 | 0.03 | 0.02 | 0.04 | 0.02 | 0.35 | 0.10 | 0.54 | 1.38 | 0.09 | 0.10 | 0.01 | 0.23 |
| 1954 | 0.01 | 0.04 | 0.49 | 0.03 | 0.12 | 0.27 | 0.46 | 0.87 | 0.22 | 0.17 | 1.38 | 0.17 | 0.35 |
| 1955 | 4.42 | 0.10 | 0.05 | 0.03 | 0.10 | 0.54 | 0.40 | 0.22 | 1.16 | 1.56 | 1.43 | 0.11 | 0.84 |
| 1956 | 0.02 | 0.01 | 0.01 | 3.14 | 0.26 | 0.30 | 0.45 | 1.56 | 2.10 | 5.92 | 0.03 | 0.24 | 1.17 |
| 1957 | 0.82 | 0.01 | 0.01 | 0.06 | 0.02 | 0.01 | 3.09 | 4.61 | 0.05 | 0.64 | 0.01 | 0.01 | 0.78 |
| 1958 | 0.01 | 0.00 | 0.01 | 0.01 | 0.02 | 0.13 | 2.79 | 2.32 | 0.32 | 3.39 | 0.87 | 0.16 | 0.84 |
| 1959 | 0.01 | 0.01 | 0.01 | 0.26 | 0.50 | 0.34 | 1.70 | 0.66 | 0.19 | 0.46 | 0.23 | 0.17 | 0.38 |
| 1960 | 0.06 | 0.04 | 0.25 | 0.23 | 0.39 | 0.81 | 0.55 | 1.66 | 0.63 | 0.57 | 0.31 | 0.11 | 0.47 |
| 1961 | 0.05 | 0.03 | 0.34 | 0.01 | 0.65 | 0.63 | 0.92 | 0.66 | 0.39 | 1.06 | 0.25 | 0.09 | 0.42 |
| 1962 | 0.06 | 0.06 | 0.01 | 0.01 | 0.01 | 0.12 | 0.91 | 1.51 | 2.23 | 0.06 | 0.28 | 0.01 | 0.44 |
| 1963 | 0.01 | 0.00 | 0.01 | 0.06 | 0.02 | 0.05 | 0.11 | 0.35 | 0.31 | 0.05 | 0.01 | 0.12 | 0.09 |
| 1964 | 0.01 | 0.01 | 0.01 | 0.01 | 0.35 | 0.37 | 0.21 | 0.29 | 0.23 | 0.35 | 1.86 | 0.09 | 0.32 |
| 1965 | 0.02 | 0.01 | 0.01 | 0.01 | 0.07 | 0.48 | 1.01 | 0.05 | 0.43 | 0.45 | 0.08 | 0.10 | 0.23 |
| 1966 | 0.01 | 0.00 | 0.01 | 0.01 | 0.39 | 0.74 | 0.46 | 0.04 | 0.10 | 0.14 | 0.10 | 0.34 | 0.20 |
| 1967 | 0.12 | 0.04 | 0.02 | 0.01 | 0.01 | 0.80 | 0.86 | 1.62 | 0.43 | 0.76 | 0.10 | 0.02 | 0.40 |
| 1968 | 0.01 | 0.26 | 0.05 | 0.01 | 0.01 | 0.01 | 0.09 | 0.67 | 0.45 | 0.35 | 0.59 | 0.20 | 0.23 |
| 1969 | 0.05 | 0.01 | 0.01 | 0.01 | 0.01 | 0.21 | 1.66 | 1.04 | 0.36 | 1.05 | 0.43 | 0.32 | 0.43 |
| 1970 | 0.19 | 0.03 | 0.01 | 0.01 | 0.01 | 1.58 | 1.27 | 0.49 | 0.63 | 0.60 | 2.87 | 1.30 | 0.75 |
| 1971 | 0.85 | 0.83 | 1.19 | 0.12 | 1.31 | 2.52 | 6.49 | 0.09 | 0.85 | 5.16 | 2.75 | 1.56 | 1.98 |
| MAX | 4.42 | 0.83 | 1.19 | 3.14 | 1.31 | 2.52 | 6.49 | 4.61 | 3.00 | 5.92 | 2.87 | 2.74 | 1.98 |
| MIN | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 | 0.01 | 0.09 | 0.04 | 0.05 | 0.05 | 0.01 | 0.01 | 0.09 |
| MEAN | 0.33 | 0.07 | 0.12 | 0.20 | 0.26 | 0.53 | 1.19 | 0.99 | 0.78 | 1.33 | 0.68 | 0.42 | 0.58 |

Table A.4. 2 Estimated Design Discharge along the Jalaur River (1/3)

| | | | |
|----------------------------------|--|-------------------------------------|--------|
| Location | : Jalaur River, Dingle (JR4) | | |
| | Existing diversion weir for Jalaur RIS | Adjustment Factor (C ₁) | 1.12 |
| Drainage Area | : 1065.0 sq. km. | Return Flow (r): | 0.25 |
| CA ₃ /CA ₄ | : 0.501 | Upstream irrigation area (ha) | 1415.7 |

Unit : m³/sec

| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
|------------------|--------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| <i>Water Use</i> | 1.68 | 0.07 | | | 0.93 | 1.08 | 0.35 | 0.24 | 0.67 | 1.26 | 0.71 | 1.93 | |
| 1950 | 34.90 | 15.87 | 47.62 | 6.29 | 15.13 | 47.68 | 47.40 | 27.18 | 233.40 | 60.97 | 50.77 | 9.37 | 49.71 |
| 1951 | 1.39 | 10.33 | 2.99 | 4.38 | 54.28 | 25.06 | 82.27 | 46.87 | 95.27 | 69.39 | 81.01 | 180.52 | 54.48 |
| 1952 | 55.57 | 21.56 | 8.29 | 2.40 | 13.25 | 47.02 | 77.56 | 69.28 | 79.27 | 151.57 | 72.37 | 135.40 | 61.13 |
| 1953 | 18.30 | 6.60 | 13.83 | 4.92 | 6.91 | 38.28 | 25.12 | 51.41 | 58.86 | 34.21 | 31.38 | 57.15 | 28.91 |
| 1954 | 8.04 | 14.20 | 47.51 | 8.62 | 18.61 | 59.06 | 125.03 | 70.17 | 30.62 | 38.39 | 56.88 | 177.42 | 54.54 |
| 1955 | 56.72 | 47.29 | 17.27 | 11.61 | 30.67 | 45.36 | 37.13 | 58.20 | 55.30 | 87.19 | 163.00 | 31.31 | 53.42 |
| 1956 | 31.19 | 31.90 | 63.16 | 63.58 | 29.79 | 22.65 | 34.73 | 96.28 | 75.32 | 92.65 | 76.96 | 83.27 | 58.46 |
| 1957 | 100.26 | 36.60 | 17.84 | 26.92 | 14.85 | 19.14 | 49.31 | 75.30 | 55.00 | 38.86 | 18.74 | 12.53 | 38.78 |
| 1958 | 16.33 | 16.64 | 9.16 | 8.56 | 10.94 | 35.59 | 21.62 | 18.42 | 14.04 | 67.92 | 65.46 | 25.30 | 25.83 |
| 1959 | 20.44 | 16.46 | 30.83 | 11.04 | 21.58 | 39.25 | 89.00 | 43.76 | 59.47 | 121.98 | 123.52 | 68.36 | 53.81 |
| 1960 | 27.36 | 32.09 | 18.52 | 70.89 | 29.72 | 76.59 | 79.28 | 56.07 | 64.90 | 105.17 | 85.51 | 45.09 | 57.60 |
| 1961 | 24.18 | 25.12 | 15.66 | 13.24 | 30.91 | 59.18 | 75.91 | 81.79 | 50.64 | 71.35 | 41.95 | 29.77 | 43.31 |
| 1962 | 30.27 | 36.68 | 24.72 | 9.13 | 2.31 | 41.35 | 121.96 | 147.99 | 131.74 | 55.03 | 84.55 | 46.11 | 60.99 |
| 1963 | 38.12 | 34.68 | 15.85 | 14.07 | 12.42 | 26.70 | 24.37 | 81.12 | 58.40 | 60.06 | 23.65 | 44.76 | 36.18 |
| 1964 | 17.05 | 19.73 | 10.78 | 8.17 | 29.39 | 38.92 | 79.28 | 55.79 | 52.13 | 61.60 | 210.05 | 142.11 | 60.42 |
| 1965 | 83.11 | 51.54 | 50.12 | 40.84 | 21.50 | 61.89 | 99.08 | 73.45 | 42.22 | 81.76 | 30.05 | 81.95 | 59.79 |
| 1966 | 21.16 | 13.04 | 10.19 | 11.60 | 79.14 | 66.27 | 105.43 | 50.87 | 42.10 | 106.67 | 65.08 | 49.49 | 51.75 |
| 1967 | 141.84 | 33.53 | 35.97 | 75.92 | 83.95 | 64.05 | 15.00 | 12.10 | 30.90 | 97.51 | 83.39 | 18.85 | 57.75 |
| 1968 | 26.72 | 25.53 | 10.30 | 7.75 | 9.71 | 23.86 | 52.63 | 49.75 | 22.80 | 23.67 | 63.25 | 27.97 | 28.66 |
| 1969 | 22.72 | 16.03 | 13.00 | 12.80 | 18.01 | 30.86 | 48.63 | 24.75 | 38.30 | 30.67 | 31.25 | 66.97 | 29.50 |
| 1970 | 25.22 | 18.43 | 24.50 | 26.80 | 25.01 | 28.86 | 61.63 | 16.25 | 22.30 | 133.67 | 164.25 | 77.97 | 52.07 |
| 1971 | 84.22 | 81.93 | 3.30 | 3.90 | 33.01 | 47.86 | 63.63 | 45.75 | 32.80 | 108.67 | 81.75 | 49.97 | 53.06 |
| MAX | 141.84 | 81.93 | 63.16 | 75.92 | 83.95 | 76.59 | 125.03 | 147.99 | 233.40 | 151.57 | 210.05 | 180.52 | 61.13 |
| MIN | 1.39 | 6.60 | 2.99 | 2.40 | 2.31 | 19.14 | 15.00 | 12.10 | 14.04 | 23.67 | 18.74 | 9.37 | 25.83 |
| MEAN | 40.23 | 27.53 | 22.34 | 20.16 | 26.87 | 42.98 | 64.36 | 56.93 | 61.17 | 77.22 | 77.49 | 66.43 | 48.64 |
| 80% | 12.7 | 14.4 | 8.6 | 5.7 | 10.5 | 28.8 | 34.0 | 29.2 | 30.0 | 45.3 | 38.0 | 25.9 | 37.06 |

Table A.4. 2 Estimated Design Discharge along the Jalaur River (2/3)

| | | | |
|----------------------------------|-----------------------------|-------------------------------------|-------|
| Location | : Jalaur River, Passi (JR3) | Adjustment Factor (C ₁) | 1.12 |
| | Passi, Highway bridge | Return Flow (r): | 0.25 |
| Drainage Area | : 534.0 sq. km. | Upstream irrigation area (ha) | 159.3 |
| CA ₂ /CA ₃ | : 0.41 | | |

| | | | | | | | | | | | | | Unit : m ³ /sec |
|------------------|-------------|-------------|-------|-------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------------------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| <i>Water Use</i> | <i>0.19</i> | <i>0.01</i> | | | <i>0.11</i> | <i>0.12</i> | <i>0.04</i> | <i>0.03</i> | <i>0.07</i> | <i>0.14</i> | <i>0.08</i> | <i>0.22</i> | |
| 1950 | 20.22 | 8.90 | 26.62 | 3.52 | 8.85 | 27.11 | 26.65 | 15.29 | 130.76 | 34.61 | 28.68 | 6.04 | 28.11 |
| 1951 | 1.48 | 5.80 | 1.67 | 2.45 | 30.74 | 14.46 | 46.14 | 26.30 | 53.54 | 39.32 | 45.59 | 101.73 | 30.77 |
| 1952 | 31.77 | 12.08 | 4.63 | 1.34 | 7.80 | 26.74 | 43.51 | 38.83 | 44.59 | 85.27 | 40.76 | 76.50 | 34.49 |
| 1953 | 10.94 | 3.72 | 7.73 | 2.75 | 4.26 | 21.85 | 14.19 | 28.84 | 33.18 | 19.65 | 17.84 | 32.76 | 16.48 |
| 1954 | 5.20 | 7.97 | 26.56 | 4.82 | 10.80 | 33.47 | 70.05 | 39.33 | 17.40 | 21.99 | 32.10 | 100.00 | 30.81 |
| 1955 | 32.42 | 26.47 | 9.66 | 6.49 | 17.54 | 25.81 | 20.90 | 32.64 | 31.19 | 49.27 | 91.43 | 18.31 | 30.18 |
| 1956 | 18.14 | 17.86 | 35.31 | 35.55 | 17.05 | 13.12 | 19.56 | 53.93 | 42.39 | 52.33 | 43.32 | 47.36 | 32.99 |
| 1957 | 56.76 | 20.49 | 9.97 | 15.05 | 8.70 | 11.15 | 27.71 | 42.20 | 31.03 | 22.25 | 10.78 | 7.81 | 21.99 |
| 1958 | 9.84 | 9.33 | 5.12 | 4.79 | 6.51 | 20.35 | 12.23 | 10.40 | 8.13 | 38.50 | 36.89 | 14.95 | 14.75 |
| 1959 | 12.13 | 9.23 | 17.24 | 6.17 | 12.46 | 22.40 | 49.90 | 24.56 | 33.53 | 68.72 | 69.35 | 39.02 | 30.39 |
| 1960 | 16.00 | 17.97 | 10.35 | 39.63 | 17.01 | 43.27 | 44.47 | 31.45 | 36.56 | 59.33 | 48.10 | 26.01 | 32.51 |
| 1961 | 14.22 | 14.07 | 8.76 | 7.40 | 17.67 | 33.54 | 42.59 | 45.82 | 28.59 | 40.42 | 23.75 | 17.45 | 24.52 |
| 1962 | 17.63 | 20.53 | 13.82 | 5.10 | 1.68 | 23.57 | 68.33 | 82.84 | 73.93 | 31.29 | 47.57 | 26.58 | 34.41 |
| 1963 | 22.02 | 19.42 | 8.86 | 7.87 | 7.34 | 15.38 | 13.77 | 45.45 | 32.93 | 34.11 | 13.52 | 25.83 | 20.54 |
| 1964 | 10.24 | 11.06 | 6.03 | 4.57 | 16.82 | 22.21 | 44.47 | 31.29 | 29.42 | 34.97 | 117.73 | 80.25 | 34.09 |
| 1965 | 47.17 | 28.84 | 28.02 | 22.83 | 12.41 | 35.05 | 55.54 | 41.16 | 23.88 | 46.24 | 17.10 | 46.62 | 33.74 |
| 1966 | 12.54 | 7.32 | 5.70 | 6.49 | 44.64 | 37.50 | 59.09 | 28.54 | 23.81 | 60.16 | 36.68 | 28.47 | 29.24 |
| 1967 | 80.01 | 18.77 | 20.11 | 42.44 | 47.33 | 36.26 | 8.53 | 6.86 | 17.55 | 55.04 | 46.92 | 11.34 | 32.60 |
| 1968 | 15.64 | 14.30 | 5.76 | 4.33 | 5.82 | 13.79 | 29.57 | 27.91 | 13.02 | 13.76 | 35.66 | 16.44 | 16.33 |
| 1969 | 13.41 | 8.99 | 7.27 | 7.16 | 10.46 | 17.71 | 27.33 | 13.94 | 21.69 | 17.67 | 17.77 | 38.25 | 16.80 |
| 1970 | 14.81 | 10.33 | 13.70 | 14.98 | 14.38 | 16.59 | 34.60 | 9.18 | 12.74 | 75.26 | 92.13 | 44.40 | 29.42 |
| 1971 | 47.79 | 45.83 | 1.84 | 2.18 | 18.85 | 27.21 | 35.72 | 25.68 | 18.61 | 61.28 | 46.00 | 28.74 | 29.98 |
| MAX | 80.01 | 45.83 | 35.31 | 42.44 | 47.33 | 43.27 | 70.05 | 82.84 | 130.76 | 85.27 | 117.73 | 101.73 | 34.49 |
| MIN | 1.48 | 3.72 | 1.67 | 1.34 | 1.68 | 11.15 | 8.53 | 6.86 | 8.13 | 13.76 | 10.78 | 6.04 | 14.75 |
| MEAN | 23.20 | 15.42 | 12.49 | 11.27 | 15.41 | 24.48 | 36.13 | 31.93 | 34.48 | 43.70 | 43.62 | 37.95 | 27.51 |

Table A.4. 2 Estimated Design Discharge along the Jalaur River (3/3)

| | | | |
|----------------------------------|---|-------------------------------------|------|
| Location | : Jalaur River, Highway bridge, Catinog (JR2) | Adjustment Factor (C ₁) | 1.12 |
| Drainage Area | : 219.0 sq. km. | Return Flow (r): | 0.25 |
| CA ₁ /CA ₂ | : 0.548 | Upstream irrigation area (ha) | 75.0 |

| | Unit : m ³ /sec | | | | | | | | | | | | |
|------------------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| <i>Water Use</i> | 0.00 | 0.00 | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1950 | 9.31 | 4.07 | 12.17 | 1.61 | 4.08 | 12.44 | 12.20 | 7.00 | 59.82 | 15.88 | 13.14 | 2.84 | 12.88 |
| 1951 | 0.74 | 2.66 | 0.76 | 1.12 | 14.09 | 6.66 | 21.11 | 12.04 | 24.51 | 18.03 | 20.87 | 46.59 | 14.10 |
| 1952 | 14.59 | 5.53 | 2.12 | 0.61 | 3.60 | 12.27 | 19.91 | 17.77 | 20.42 | 39.04 | 18.66 | 35.06 | 15.80 |
| 1953 | 5.07 | 1.70 | 3.54 | 1.26 | 1.98 | 10.03 | 6.50 | 13.20 | 15.20 | 9.04 | 8.19 | 15.05 | 7.56 |
| 1954 | 2.44 | 3.65 | 12.15 | 2.20 | 4.97 | 15.35 | 32.04 | 17.99 | 7.98 | 10.10 | 14.70 | 45.80 | 14.12 |
| 1955 | 14.89 | 12.10 | 4.42 | 2.97 | 8.06 | 11.84 | 9.57 | 14.93 | 14.29 | 22.58 | 41.83 | 8.45 | 13.83 |
| 1956 | 8.36 | 8.17 | 16.15 | 16.25 | 7.83 | 6.04 | 8.96 | 24.67 | 19.41 | 23.98 | 19.84 | 21.73 | 15.12 |
| 1957 | 26.02 | 9.37 | 4.56 | 6.88 | 4.01 | 5.14 | 12.69 | 19.30 | 14.21 | 10.22 | 4.95 | 3.65 | 10.08 |
| 1958 | 4.56 | 4.27 | 2.34 | 2.19 | 3.01 | 9.35 | 5.61 | 4.76 | 3.74 | 17.65 | 16.90 | 6.91 | 6.77 |
| 1959 | 5.61 | 4.22 | 7.88 | 2.82 | 5.73 | 10.28 | 22.83 | 11.24 | 15.36 | 31.47 | 31.74 | 17.92 | 13.93 |
| 1960 | 7.38 | 8.22 | 4.73 | 18.12 | 7.81 | 19.83 | 20.35 | 14.39 | 16.74 | 27.18 | 22.02 | 11.97 | 14.90 |
| 1961 | 6.57 | 6.44 | 4.00 | 3.38 | 8.12 | 15.38 | 19.49 | 20.96 | 13.10 | 18.53 | 10.89 | 8.05 | 11.24 |
| 1962 | 8.13 | 9.39 | 6.32 | 2.33 | 0.81 | 10.82 | 31.26 | 37.89 | 33.83 | 14.36 | 21.78 | 12.23 | 15.76 |
| 1963 | 10.13 | 8.88 | 4.05 | 3.60 | 3.39 | 7.07 | 6.31 | 20.79 | 15.08 | 15.64 | 6.21 | 11.89 | 9.42 |
| 1964 | 4.75 | 5.06 | 2.76 | 2.09 | 7.73 | 10.20 | 20.35 | 14.32 | 13.48 | 16.04 | 53.86 | 36.77 | 15.62 |
| 1965 | 21.64 | 13.19 | 12.81 | 10.44 | 5.71 | 16.07 | 25.41 | 18.83 | 10.95 | 21.19 | 7.85 | 21.39 | 15.46 |
| 1966 | 5.80 | 3.35 | 2.61 | 2.97 | 20.45 | 17.19 | 27.03 | 13.06 | 10.92 | 27.56 | 16.80 | 13.09 | 13.40 |
| 1967 | 36.65 | 8.59 | 9.20 | 19.41 | 21.68 | 16.62 | 3.92 | 3.15 | 8.05 | 25.22 | 21.48 | 5.26 | 14.93 |
| 1968 | 7.22 | 6.54 | 2.63 | 1.98 | 2.70 | 6.35 | 13.54 | 12.77 | 5.98 | 6.34 | 16.33 | 7.59 | 7.50 |
| 1969 | 6.20 | 4.11 | 3.32 | 3.27 | 4.82 | 8.14 | 12.51 | 6.38 | 9.94 | 8.13 | 8.15 | 17.56 | 7.71 |
| 1970 | 6.84 | 4.73 | 6.26 | 6.85 | 6.61 | 7.63 | 15.84 | 4.21 | 5.85 | 34.46 | 42.15 | 20.38 | 13.48 |
| 1971 | 21.92 | 20.96 | 0.84 | 1.00 | 8.65 | 12.48 | 16.35 | 11.75 | 8.54 | 28.07 | 21.06 | 13.22 | 13.74 |
| MAX | 36.65 | 20.96 | 16.15 | 19.41 | 21.68 | 19.83 | 32.04 | 37.89 | 59.82 | 39.04 | 53.86 | 46.59 | 15.80 |
| MIN | 0.74 | 1.70 | 0.76 | 0.61 | 0.81 | 5.14 | 3.92 | 3.15 | 3.74 | 6.34 | 4.95 | 2.84 | 6.77 |
| MEAN | 10.67 | 7.05 | 5.71 | 5.15 | 7.08 | 11.24 | 16.54 | 14.61 | 15.79 | 20.03 | 19.97 | 17.43 | 12.61 |

Table A.4. 3 Estimated Design Discharge along the Suague River (1/3)

| | | | |
|----------------------------------|------------------------------|-------------------------------------|------|
| Location | : Suague River, Calmay (SG2) | | |
| | Calmay | Adjustment Factor (C ₁) | 1.12 |
| Drainage Area | : 53.0 sq.km | Return Flow (r): | 0.25 |
| CA ₁ /CA ₂ | : 0.736 | Upstream irrigation area (ha) | 92.6 |

| | Unit : m ³ /sec | | | | | | | | | | | | |
|------------------|----------------------------|------|------|------|-------|------|------|------|------|------|------|-------|--------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| <i>Water Use</i> | 0.11 | 0.00 | | | 0.06 | 0.07 | 0.02 | 0.02 | 0.04 | 0.08 | 0.05 | 0.13 | |
| 1950 | 3.23 | 2.95 | 3.50 | 1.80 | 2.19 | 2.53 | 2.19 | 1.15 | 3.21 | 5.14 | 2.62 | 1.27 | 2.65 |
| 1951 | 0.60 | 0.65 | 0.30 | 0.25 | 2.46 | 2.18 | 3.27 | 4.59 | 5.30 | 3.89 | 2.03 | 4.09 | 2.47 |
| 1952 | 1.02 | 0.92 | 0.75 | 0.46 | 0.59 | 0.57 | 5.83 | 6.43 | 4.88 | 5.63 | 1.62 | 2.85 | 2.63 |
| 1953 | 1.08 | 0.85 | 0.72 | 0.31 | 0.18 | 1.92 | 2.13 | 3.41 | 3.01 | 3.36 | 2.37 | 2.02 | 1.78 |
| 1954 | 0.81 | 0.61 | 1.16 | 0.24 | 0.35 | 0.74 | 1.82 | 1.80 | 1.99 | 1.96 | 2.51 | 2.22 | 1.35 |
| 1955 | 2.18 | 0.14 | 0.08 | 0.05 | 0.21 | 0.74 | 1.21 | 0.94 | 1.31 | 2.88 | 4.51 | 1.36 | 1.30 |
| 1956 | 2.71 | 0.26 | 0.19 | 0.98 | 0.98 | 0.67 | 1.44 | 2.15 | 2.53 | 5.18 | 3.07 | 3.79 | 1.99 |
| 1957 | 3.11 | 0.75 | 0.23 | 0.71 | 0.22 | 0.26 | 2.42 | 2.92 | 2.40 | 2.50 | 1.40 | 0.94 | 1.49 |
| 1958 | 1.07 | 1.02 | 0.62 | 0.40 | 0.55 | 0.82 | 1.97 | 2.15 | 1.52 | 4.88 | 2.34 | 0.89 | 1.52 |
| 1959 | 1.45 | 0.51 | 0.83 | 0.38 | 0.55 | 0.68 | 3.67 | 1.52 | 2.24 | 3.22 | 4.51 | 2.45 | 1.83 |
| 1960 | 1.74 | 2.72 | 1.04 | 0.74 | 1.60 | 2.83 | 2.03 | 3.12 | 2.37 | 4.46 | 4.48 | 1.59 | 2.39 |
| 1961 | 1.31 | 1.58 | 0.49 | 0.60 | 1.88 | 3.81 | 4.27 | 4.68 | 2.17 | 3.44 | 2.42 | 1.73 | 2.36 |
| 1962 | 1.40 | 1.75 | 1.31 | 0.99 | 1.00 | 2.15 | 4.36 | 4.27 | 5.16 | 3.35 | 3.26 | 2.77 | 2.65 |
| 1963 | 1.96 | 1.70 | 1.48 | 0.74 | 1.77 | 1.89 | 2.45 | 3.87 | 2.47 | 2.44 | 1.48 | 3.52 | 2.15 |
| 1964 | 1.51 | 2.75 | 1.02 | 0.35 | 2.19 | 2.32 | 4.00 | 2.83 | 1.91 | 2.90 | 5.96 | 11.27 | 3.25 |
| 1965 | 6.87 | 4.07 | 1.71 | 0.91 | 0.98 | 1.68 | 3.14 | 2.53 | 2.34 | 5.23 | 1.48 | 1.65 | 2.72 |
| 1966 | 1.60 | 1.19 | 0.81 | 2.32 | 10.65 | 2.52 | 3.17 | 1.97 | 2.17 | 2.90 | 5.53 | 2.45 | 3.11 |
| 1967 | 4.86 | 3.06 | 1.91 | 1.33 | 1.24 | 1.31 | 2.32 | 2.40 | 2.03 | 2.78 | 2.19 | 0.35 | 2.15 |
| 1968 | 1.23 | 0.82 | 0.59 | 0.60 | 1.15 | 1.29 | 2.32 | 2.20 | 0.96 | 1.03 | 2.83 | 1.18 | 1.35 |
| 1969 | 0.41 | 0.22 | 0.15 | 0.12 | 0.17 | 0.35 | 2.33 | 1.67 | 2.59 | 2.91 | 2.71 | 3.03 | 1.39 |
| 1970 | 1.08 | 0.78 | 0.42 | 0.40 | 1.04 | 1.27 | 2.75 | 0.97 | 2.20 | 6.19 | 7.71 | 3.52 | 2.36 |
| 1971 | 1.76 | 1.90 | 1.04 | 0.14 | 1.45 | 2.09 | 2.88 | 2.04 | 1.42 | 5.08 | 3.69 | 2.21 | 2.14 |
| MAX | 6.87 | 4.07 | 3.50 | 2.32 | 10.65 | 3.81 | 5.83 | 6.43 | 5.30 | 6.19 | 7.71 | 11.27 | 3.25 |
| MIN | 0.41 | 0.14 | 0.08 | 0.05 | 0.17 | 0.26 | 1.21 | 0.94 | 0.96 | 1.03 | 1.40 | 0.35 | 1.30 |
| MEAN | 1.95 | 1.42 | 0.92 | 0.67 | 1.52 | 1.57 | 2.82 | 2.71 | 2.55 | 3.70 | 3.21 | 2.60 | 2.14 |

Table A.4. 3 Estimated Design Discharge along the Suague River (2/3)

| | | | |
|----------------------------------|-------------------------------|-------------------------------------|-------|
| Location | : Suague River, Janiuay (SG3) | | |
| | Janiuay Highway Bridge | Adjustment Factor (C ₁) | 1.12 |
| Drainage Area | : 87.0 sq. km. | Return Flow (r): | 0.25 |
| CA ₂ /CA ₃ | : 0.609 | Upstream irrigation area (ha) | 534.6 |

Unit : m³/sec

| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
|------------------|-------------|-------------|------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------|
| <i>Water Use</i> | <i>0.64</i> | <i>0.03</i> | | | <i>0.35</i> | <i>0.41</i> | <i>0.13</i> | <i>0.09</i> | <i>0.25</i> | <i>0.48</i> | <i>0.27</i> | <i>0.73</i> | |
| 1950 | 4.28 | 4.32 | 5.15 | 2.65 | 2.96 | 3.42 | 3.13 | 1.63 | 4.53 | 7.22 | 3.65 | 1.33 | 3.69 |
| 1951 | 0.41 | 0.94 | 0.45 | 0.37 | 3.35 | 2.91 | 4.71 | 6.69 | 7.61 | 5.38 | 2.79 | 5.47 | 3.42 |
| 1952 | 1.02 | 1.33 | 1.10 | 0.67 | 0.60 | 0.54 | 8.49 | 9.40 | 6.99 | 7.92 | 2.19 | 3.65 | 3.66 |
| 1953 | 1.11 | 1.23 | 1.06 | 0.46 | 0.00 | 2.52 | 3.04 | 4.96 | 4.24 | 4.59 | 3.29 | 2.42 | 2.41 |
| 1954 | 0.72 | 0.88 | 1.71 | 0.35 | 0.24 | 0.79 | 2.57 | 2.58 | 2.74 | 2.53 | 3.50 | 2.72 | 1.78 |
| 1955 | 2.73 | 0.18 | 0.11 | 0.08 | 0.04 | 0.79 | 1.68 | 1.31 | 1.74 | 3.89 | 6.44 | 1.46 | 1.70 |
| 1956 | 3.51 | 0.37 | 0.28 | 1.44 | 1.17 | 0.67 | 2.01 | 3.10 | 3.53 | 7.27 | 4.32 | 5.03 | 2.73 |
| 1957 | 4.11 | 1.09 | 0.33 | 1.04 | 0.06 | 0.08 | 3.47 | 4.23 | 3.34 | 3.33 | 1.86 | 0.84 | 1.98 |
| 1958 | 1.09 | 1.48 | 0.91 | 0.60 | 0.54 | 0.91 | 2.80 | 3.10 | 2.05 | 6.83 | 3.25 | 0.77 | 2.03 |
| 1959 | 1.65 | 0.74 | 1.23 | 0.56 | 0.54 | 0.69 | 5.31 | 2.17 | 3.11 | 4.39 | 6.44 | 3.06 | 2.49 |
| 1960 | 2.08 | 3.99 | 1.53 | 1.10 | 2.09 | 3.87 | 2.89 | 4.53 | 3.30 | 6.21 | 6.40 | 1.79 | 3.31 |
| 1961 | 1.45 | 2.30 | 0.73 | 0.88 | 2.50 | 5.31 | 6.18 | 6.82 | 3.01 | 4.71 | 3.36 | 1.99 | 3.27 |
| 1962 | 1.58 | 2.55 | 1.93 | 1.46 | 1.21 | 2.87 | 6.31 | 6.22 | 7.42 | 4.58 | 4.59 | 3.54 | 3.69 |
| 1963 | 2.42 | 2.49 | 2.18 | 1.10 | 2.35 | 2.48 | 3.50 | 5.63 | 3.45 | 3.24 | 1.98 | 4.64 | 2.95 |
| 1964 | 1.75 | 4.03 | 1.51 | 0.52 | 2.96 | 3.12 | 5.79 | 4.10 | 2.63 | 3.91 | 8.57 | 16.04 | 4.58 |
| 1965 | 9.63 | 5.97 | 2.51 | 1.35 | 1.17 | 2.17 | 4.53 | 3.65 | 3.26 | 7.35 | 1.98 | 1.88 | 3.79 |
| 1966 | 1.88 | 1.73 | 1.19 | 3.42 | 15.41 | 3.41 | 4.56 | 2.84 | 3.01 | 3.91 | 7.94 | 3.06 | 4.36 |
| 1967 | 6.68 | 4.49 | 2.81 | 1.96 | 1.57 | 1.62 | 3.32 | 3.47 | 2.80 | 3.74 | 3.02 | 0.00 | 2.95 |
| 1968 | 1.34 | 1.19 | 0.87 | 0.88 | 1.44 | 1.60 | 3.32 | 3.17 | 1.22 | 1.15 | 3.96 | 1.19 | 1.78 |
| 1969 | 0.13 | 0.30 | 0.22 | 0.17 | 0.00 | 0.21 | 3.33 | 2.39 | 3.63 | 3.92 | 3.79 | 3.91 | 1.83 |
| 1970 | 1.11 | 1.13 | 0.61 | 0.60 | 1.27 | 1.56 | 3.95 | 1.37 | 3.05 | 8.76 | 11.15 | 4.64 | 3.27 |
| 1971 | 2.12 | 2.78 | 1.53 | 0.21 | 1.86 | 2.77 | 4.13 | 2.93 | 1.90 | 7.12 | 5.23 | 2.70 | 2.94 |
| MAX | 9.63 | 5.97 | 5.15 | 3.42 | 15.41 | 5.31 | 8.49 | 9.40 | 7.61 | 8.76 | 11.15 | 16.04 | 4.58 |
| MIN | 0.13 | 0.18 | 0.11 | 0.08 | 0.00 | 0.08 | 1.68 | 1.31 | 1.22 | 1.15 | 1.86 | 0.00 | 1.70 |
| MEAN | 2.40 | 2.07 | 1.36 | 0.99 | 1.97 | 2.01 | 4.05 | 3.92 | 3.57 | 5.09 | 4.53 | 3.28 | 2.94 |

Table A.4. 3 Estimated Design Discharge along the Suague River (3/3)

| | | | |
|----------------------------------|--|-------------------------------------|-------|
| Location | : Suague River, Mina (SG4) | | |
| | Existing diversion weir for Suague RIS | Adjustment Factor (C ₁) | 1.12 |
| Drainage Area | : 181.0 sq. km. | Return Flow (r): | 0.25 |
| CA ₃ /CA ₄ | : 0.481 | Upstream irrigation area (ha) | 408.1 |

| YEAR | Unit : m ³ /sec | | | | | | | | | | | | Annual |
|-----------------|----------------------------|-------|------|------|-------|------|-------|-------|-------|-------|-------|-------|--------|
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | |
| <i>Water Us</i> | 0.49 | 0.02 | | | 0.27 | 0.31 | 0.10 | 0.07 | 0.19 | 0.36 | 0.20 | 0.56 | |
| 1950 | 7.61 | 8.05 | 9.62 | 4.95 | 5.32 | 6.16 | 5.76 | 2.98 | 8.31 | 13.19 | 6.66 | 2.06 | 6.72 |
| 1951 | 0.39 | 1.74 | 0.83 | 0.68 | 6.05 | 5.19 | 8.71 | 12.42 | 14.05 | 9.76 | 5.05 | 9.80 | 6.22 |
| 1952 | 1.54 | 2.47 | 2.05 | 1.26 | 0.91 | 0.78 | 15.76 | 17.49 | 12.90 | 14.51 | 3.93 | 6.40 | 6.67 |
| 1953 | 1.71 | 2.28 | 1.98 | 0.86 | 0.00 | 4.47 | 5.59 | 9.20 | 7.77 | 8.30 | 5.98 | 4.10 | 4.35 |
| 1954 | 0.98 | 1.63 | 3.19 | 0.65 | 0.25 | 1.24 | 4.72 | 4.75 | 4.98 | 4.45 | 6.37 | 4.66 | 3.16 |
| 1955 | 4.73 | 0.32 | 0.21 | 0.14 | 0.00 | 1.24 | 3.06 | 2.39 | 3.11 | 6.98 | 11.86 | 2.30 | 3.03 |
| 1956 | 6.19 | 0.67 | 0.52 | 2.69 | 1.99 | 1.03 | 3.68 | 5.72 | 6.45 | 13.30 | 7.92 | 8.96 | 4.93 |
| 1957 | 7.30 | 2.01 | 0.62 | 1.94 | 0.00 | 0.00 | 6.39 | 7.84 | 6.09 | 5.94 | 3.32 | 1.15 | 3.55 |
| 1958 | 1.68 | 2.74 | 1.70 | 1.11 | 0.81 | 1.46 | 5.14 | 5.72 | 3.68 | 12.47 | 5.91 | 1.01 | 3.62 |
| 1959 | 2.72 | 1.36 | 2.29 | 1.04 | 0.81 | 1.06 | 9.83 | 3.99 | 5.66 | 7.92 | 11.86 | 5.28 | 4.48 |
| 1960 | 3.52 | 7.43 | 2.85 | 2.04 | 3.69 | 6.98 | 5.31 | 8.40 | 6.02 | 11.32 | 11.79 | 2.92 | 6.02 |
| 1961 | 2.34 | 4.28 | 1.35 | 1.65 | 4.46 | 9.67 | 11.46 | 12.67 | 5.48 | 8.51 | 6.12 | 3.31 | 5.94 |
| 1962 | 2.58 | 4.74 | 3.61 | 2.73 | 2.06 | 5.12 | 11.70 | 11.56 | 13.69 | 8.27 | 8.42 | 6.19 | 6.72 |
| 1963 | 4.14 | 4.63 | 4.06 | 2.04 | 4.18 | 4.40 | 6.46 | 10.45 | 6.30 | 5.77 | 3.54 | 8.24 | 5.35 |
| 1964 | 2.89 | 7.51 | 2.81 | 0.97 | 5.32 | 5.58 | 10.73 | 7.60 | 4.76 | 7.02 | 15.84 | 29.52 | 8.38 |
| 1965 | 17.61 | 11.12 | 4.69 | 2.51 | 1.99 | 3.82 | 8.37 | 6.77 | 5.94 | 13.44 | 3.54 | 3.10 | 6.91 |
| 1966 | 3.14 | 3.20 | 2.22 | 6.39 | 28.55 | 6.12 | 8.44 | 5.24 | 5.48 | 7.02 | 14.66 | 5.28 | 7.98 |
| 1967 | 12.09 | 8.36 | 5.24 | 3.66 | 2.72 | 2.78 | 6.11 | 6.42 | 5.08 | 6.70 | 5.48 | 0.00 | 5.39 |
| 1968 | 2.13 | 2.21 | 1.63 | 1.65 | 2.48 | 2.75 | 6.11 | 5.86 | 2.14 | 1.88 | 7.23 | 1.81 | 3.16 |
| 1969 | 0.00 | 0.55 | 0.42 | 0.32 | 0.00 | 0.17 | 6.15 | 4.41 | 6.63 | 7.05 | 6.91 | 6.88 | 3.29 |
| 1970 | 1.71 | 2.09 | 1.15 | 1.11 | 2.16 | 2.68 | 7.29 | 2.50 | 5.55 | 16.08 | 20.65 | 8.24 | 5.93 |
| 1971 | 3.59 | 5.16 | 2.85 | 0.39 | 3.27 | 4.94 | 7.64 | 5.41 | 3.40 | 13.02 | 9.60 | 4.63 | 5.33 |
| MAX | 17.61 | 11.12 | 9.62 | 6.39 | 28.55 | 9.67 | 15.76 | 17.49 | 14.05 | 16.08 | 20.65 | 29.52 | 8.38 |
| MIN | 0.00 | 0.32 | 0.21 | 0.14 | 0.00 | 0.00 | 3.06 | 2.39 | 2.14 | 1.88 | 3.32 | 0.00 | 3.03 |
| MEAN | 4.12 | 3.84 | 2.54 | 1.85 | 3.50 | 3.53 | 7.47 | 7.26 | 6.52 | 9.22 | 8.30 | 5.72 | 5.32 |
| 80% | 0.43 | 1.26 | 0.85 | 0.62 | 0.13 | 0.57 | 5.01 | 4.11 | 4.01 | 5.59 | 4.78 | 0.59 | 3.90 |

Table A.4. 4 Estimated Design Discharge along the Tigum River (1/3)

Location : Tigum River, Daja (TG1)
 MIWD dam site Adjustment Factor (C_1) 1.12
 Drainage Area : 65.0 sq. km. Return Flow (r): 0.25
 CA_2/CA_1 : 0.892 Upstream irrigation area (ha) 0.0

| | | | | | | | | | | | | | Unit : m ³ /sec | |
|----------------------------|------|------|------|------|------|------|-------|------|-------|------|------|------|----------------------------|--|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual | |
| <i>Water U₂</i> | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | |
| 1950 | 4.36 | 3.60 | 4.30 | 2.14 | 2.68 | 3.10 | 2.61 | 1.35 | 3.94 | 6.43 | 3.18 | 1.60 | 3.27 | |
| 1951 | 0.79 | 0.74 | 0.34 | 0.26 | 3.00 | 2.69 | 4.00 | 5.68 | 6.61 | 4.82 | 2.43 | 5.12 | 3.04 | |
| 1952 | 1.29 | 1.07 | 0.84 | 0.51 | 0.70 | 0.72 | 7.33 | 8.05 | 6.05 | 6.97 | 2.04 | 3.58 | 3.26 | |
| 1953 | 1.32 | 0.98 | 0.82 | 0.35 | 0.25 | 2.36 | 2.58 | 4.19 | 3.76 | 4.22 | 2.89 | 2.51 | 2.19 | |
| 1954 | 1.06 | 0.69 | 1.32 | 0.26 | 0.45 | 0.92 | 2.15 | 2.12 | 2.43 | 2.40 | 2.57 | 2.75 | 1.59 | |
| 1955 | 2.72 | 0.14 | 0.08 | 0.06 | 0.28 | 0.92 | 1.43 | 1.07 | 1.58 | 3.61 | 5.61 | 1.71 | 1.60 | |
| 1956 | 3.39 | 0.29 | 0.20 | 1.13 | 1.18 | 0.84 | 1.68 | 2.65 | 3.07 | 6.43 | 3.80 | 4.72 | 2.45 | |
| 1957 | 3.94 | 0.88 | 0.25 | 0.80 | 0.30 | 0.84 | 2.89 | 3.58 | 2.93 | 2.96 | 1.67 | 0.81 | 1.82 | |
| 1958 | 1.32 | 1.17 | 0.70 | 0.47 | 0.67 | 1.01 | 2.37 | 2.61 | 1.82 | 6.07 | 2.86 | 4.72 | 2.15 | |
| 1959 | 1.82 | 0.78 | 0.96 | 4.12 | 0.67 | 1.46 | 4.50 | 1.85 | 2.93 | 2.96 | 1.67 | 0.81 | 2.04 | |
| 1960 | 1.32 | 0.36 | 0.26 | 0.82 | 0.64 | 1.29 | 0.68 | 1.25 | 1.01 | 3.08 | 2.78 | 0.93 | 1.20 | |
| 1961 | 0.61 | 0.43 | 0.37 | 0.34 | 0.98 | 1.93 | 4.93 | 5.82 | 2.93 | 3.75 | 3.39 | 2.29 | 2.31 | |
| 1962 | 1.96 | 2.57 | 2.12 | 1.32 | 1.32 | 2.96 | 12.87 | 4.11 | 10.73 | 4.02 | 4.90 | 3.97 | 4.40 | |
| 1963 | 2.61 | 2.10 | 1.82 | 0.58 | 0.45 | 1.08 | 0.98 | 0.30 | 3.39 | 2.54 | 0.80 | 2.96 | 1.63 | |
| 1964 | 0.86 | 1.09 | 0.48 | 0.31 | 0.96 | 1.40 | 4.22 | 3.11 | 1.87 | 1.57 | 9.83 | 1.68 | 2.28 | |
| 1965 | 1.06 | 0.95 | 1.25 | 0.98 | 1.14 | 2.22 | 4.47 | 3.08 | 2.72 | 8.51 | 1.82 | 2.26 | 2.54 | |
| 1966 | 2.07 | 1.36 | 0.70 | 0.87 | 5.18 | 3.47 | 6.61 | 2.04 | 2.86 | 5.40 | 9.12 | 6.43 | 3.84 | |
| 1967 | 3.14 | 1.43 | 1.54 | 1.35 | 1.32 | 1.40 | 2.43 | 2.51 | 2.11 | 3.00 | 2.32 | 0.44 | 1.92 | |
| 1968 | 0.42 | 0.88 | 0.59 | 0.60 | 1.35 | 1.72 | 1.43 | 1.29 | 0.64 | 1.06 | 0.96 | 0.14 | 0.92 | |
| 1969 | 0.03 | 0.02 | 0.05 | 0.05 | 0.17 | 0.35 | 0.30 | 0.37 | 1.79 | 2.15 | 0.74 | 2.26 | 0.69 | |
| 1970 | 1.07 | 0.72 | 0.36 | 0.35 | 0.14 | 1.46 | 1.21 | 1.07 | 2.98 | 3.75 | 3.80 | 3.08 | 1.67 | |
| 1971 | 2.37 | 2.33 | 1.29 | 0.16 | 1.74 | 2.57 | 3.58 | 2.40 | 1.75 | 6.43 | 4.57 | 2.72 | 2.66 | |
| MAX | 4.36 | 3.60 | 4.30 | 4.12 | 5.18 | 3.47 | 12.87 | 8.05 | 10.73 | 8.51 | 9.83 | 6.43 | 4.40 | |
| MIN | 0.03 | 0.02 | 0.05 | 0.05 | 0.14 | 0.35 | 0.30 | 0.30 | 0.64 | 1.06 | 0.74 | 0.14 | 0.69 | |
| MEAN | 1.80 | 1.12 | 0.94 | 0.81 | 1.16 | 1.67 | 3.42 | 2.75 | 3.18 | 4.19 | 3.35 | 2.61 | 2.25 | |

Table A.4. 4 Estimated Design Discharge along the Tigum River (2/3)

Location : Tigum River, Cabatuan (TG2)

Adjustment Factor (C_1) 1.12

Drainage Area : 128.0 sq. km.

Return Flow (r): 0.25

CA_2/CA_3 : 0.508

Upstream irrigation area (ha) 79.9

Unit : m³/sec

| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
|------------------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|--------|
| <i>Water Use</i> | 0.39 | 0.29 | 0.29 | 0.29 | 0.40 | 0.40 | 0.36 | 0.35 | 0.38 | 0.41 | 0.32 | 0.38 | |
| 1950 | 7.40 | 6.14 | 7.37 | 3.56 | 4.43 | 5.18 | 4.35 | 2.13 | 6.68 | 11.04 | 5.39 | 2.54 | 5.52 |
| 1951 | 1.11 | 1.09 | 0.39 | 0.24 | 5.00 | 4.44 | 6.79 | 9.77 | 11.39 | 8.21 | 4.05 | 8.76 | 5.10 |
| 1952 | 1.99 | 1.67 | 1.27 | 0.69 | 0.94 | 0.98 | 12.67 | 13.94 | 10.40 | 12.00 | 3.37 | 6.03 | 5.50 |
| 1953 | 2.05 | 1.52 | 1.24 | 0.41 | 0.14 | 3.87 | 4.29 | 7.13 | 6.36 | 7.14 | 4.88 | 4.14 | 3.60 |
| 1954 | 1.58 | 1.00 | 2.12 | 0.24 | 0.50 | 1.32 | 3.52 | 3.47 | 4.01 | 3.92 | 4.31 | 4.58 | 2.55 |
| 1955 | 4.52 | 0.02 | 0.00 | 0.00 | 0.19 | 1.32 | 2.26 | 1.63 | 2.50 | 6.07 | 9.68 | 2.74 | 2.58 |
| 1956 | 5.70 | 0.30 | 0.14 | 1.77 | 1.79 | 1.18 | 2.70 | 4.41 | 5.14 | 11.04 | 6.47 | 8.04 | 4.06 |
| 1957 | 6.66 | 1.33 | 0.22 | 1.20 | 0.22 | 1.18 | 4.84 | 6.06 | 4.89 | 4.91 | 2.72 | 1.14 | 2.95 |
| 1958 | 2.05 | 1.85 | 1.02 | 0.61 | 0.88 | 1.49 | 3.91 | 4.35 | 2.93 | 10.41 | 4.82 | 8.04 | 3.53 |
| 1959 | 2.92 | 1.15 | 1.49 | 7.05 | 0.88 | 2.28 | 7.67 | 3.00 | 4.89 | 4.91 | 2.72 | 1.14 | 3.34 |
| 1960 | 2.05 | 0.42 | 0.25 | 1.23 | 0.83 | 1.97 | 0.94 | 1.93 | 1.51 | 5.13 | 4.68 | 1.36 | 1.86 |
| 1961 | 0.78 | 0.54 | 0.44 | 0.38 | 1.43 | 3.11 | 8.44 | 10.01 | 4.89 | 6.31 | 5.76 | 3.75 | 3.82 |
| 1962 | 3.17 | 4.32 | 3.52 | 2.11 | 2.04 | 4.93 | 22.46 | 6.99 | 18.66 | 6.78 | 8.43 | 6.72 | 7.51 |
| 1963 | 4.33 | 3.49 | 3.00 | 0.80 | 0.50 | 1.60 | 1.46 | 0.26 | 5.71 | 4.17 | 1.18 | 4.94 | 2.62 |
| 1964 | 1.22 | 1.70 | 0.63 | 0.32 | 1.40 | 2.17 | 7.18 | 5.23 | 3.01 | 2.47 | 17.12 | 2.68 | 3.76 |
| 1965 | 1.58 | 1.45 | 1.98 | 1.52 | 1.71 | 3.62 | 7.62 | 5.18 | 4.52 | 14.73 | 2.97 | 3.70 | 4.21 |
| 1966 | 3.36 | 2.19 | 1.02 | 1.32 | 8.85 | 5.83 | 11.41 | 3.33 | 4.77 | 9.23 | 15.87 | 11.06 | 6.52 |
| 1967 | 5.26 | 2.31 | 2.50 | 2.17 | 2.04 | 2.17 | 4.02 | 4.16 | 3.44 | 5.00 | 3.85 | 0.48 | 3.12 |
| 1968 | 0.45 | 1.33 | 0.83 | 0.83 | 2.09 | 2.74 | 2.26 | 2.02 | 0.85 | 1.56 | 1.47 | 0.00 | 1.37 |
| 1969 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.32 | 0.25 | 0.39 | 2.87 | 3.48 | 1.07 | 3.70 | 1.01 |
| 1970 | 1.61 | 1.06 | 0.41 | 0.41 | 0.00 | 2.28 | 1.87 | 1.63 | 4.97 | 6.31 | 6.47 | 5.16 | 2.68 |
| 1971 | 3.89 | 3.89 | 2.06 | 0.07 | 2.78 | 4.24 | 6.05 | 3.97 | 2.81 | 11.04 | 7.83 | 4.52 | 4.43 |
| MAX | 7.40 | 6.14 | 7.37 | 7.05 | 8.85 | 5.83 | 22.46 | 13.94 | 18.66 | 14.73 | 17.12 | 11.06 | 7.51 |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.32 | 0.25 | 0.26 | 0.85 | 1.56 | 1.07 | 0.00 | 1.01 |
| MEAN | 2.89 | 1.76 | 1.45 | 1.22 | 1.76 | 2.65 | 5.77 | 4.59 | 5.33 | 7.09 | 5.68 | 4.33 | 3.71 |

Table A.4. 4 Estimated Design Discharge along the Tigum River (3/3)

| | | | |
|----------------------------------|---------------------------------------|-------------------------------------|-------|
| Location | : Tigum River, STA Barbara (TG3) | | |
| | Existing diversion weir for Tigum RIS | Adjustment Factor (C ₁) | 1.12 |
| Drainage Area | : 193.0 sq. km. | Return Flow (r): | 0.25 |
| CA ₂ /CA ₃ | : 0.663 | Upstream irrigation area (ha) | 178.9 |

| | | | | | | | | | | | | | Unit : m ³ /sec |
|-----------------|------|------|------|------|-------|------|-------|-------|-------|-------|-------|-------|----------------------------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| <i>Water Us</i> | 0.22 | 0.00 | | | 0.11 | 0.11 | 0.03 | 0.01 | 0.06 | 0.14 | 0.06 | 0.21 | |
| 1950 | 9.85 | 8.30 | 9.96 | 4.81 | 5.90 | 6.92 | 5.86 | 2.87 | 8.98 | 14.83 | 7.24 | 3.28 | 7.40 |
| 1951 | 1.34 | 1.47 | 0.52 | 0.32 | 6.68 | 5.92 | 9.17 | 13.20 | 15.36 | 11.00 | 5.43 | 11.68 | 6.84 |
| 1952 | 2.53 | 2.25 | 1.71 | 0.93 | 1.18 | 1.24 | 17.12 | 18.85 | 14.01 | 16.13 | 4.51 | 8.01 | 7.37 |
| 1953 | 2.60 | 2.05 | 1.68 | 0.55 | 0.10 | 5.15 | 5.78 | 9.63 | 8.56 | 9.55 | 6.55 | 5.44 | 4.80 |
| 1954 | 1.97 | 1.35 | 2.87 | 0.32 | 0.59 | 1.70 | 4.74 | 4.69 | 5.37 | 5.20 | 5.78 | 6.04 | 3.38 |
| 1955 | 5.95 | 0.03 | 0.00 | 0.00 | 0.18 | 1.70 | 3.03 | 2.20 | 3.34 | 8.10 | 13.04 | 3.54 | 3.43 |
| 1956 | 7.54 | 0.40 | 0.19 | 2.39 | 2.33 | 1.50 | 3.63 | 5.95 | 6.91 | 14.83 | 8.70 | 10.72 | 5.43 |
| 1957 | 8.84 | 1.80 | 0.30 | 1.63 | 0.22 | 1.50 | 6.53 | 8.18 | 6.56 | 6.54 | 3.63 | 1.39 | 3.93 |
| 1958 | 2.60 | 2.50 | 1.38 | 0.82 | 1.11 | 1.93 | 5.26 | 5.88 | 3.91 | 13.97 | 6.47 | 10.72 | 4.71 |
| 1959 | 3.79 | 1.55 | 2.01 | 9.54 | 1.11 | 3.00 | 10.36 | 4.06 | 6.56 | 6.54 | 3.63 | 1.39 | 4.46 |
| 1960 | 2.60 | 0.57 | 0.34 | 1.66 | 1.03 | 2.58 | 1.25 | 2.61 | 1.99 | 6.84 | 6.28 | 1.69 | 2.45 |
| 1961 | 0.89 | 0.73 | 0.60 | 0.51 | 1.85 | 4.12 | 11.40 | 13.53 | 6.56 | 8.43 | 7.74 | 4.92 | 5.11 |
| 1962 | 4.12 | 5.83 | 4.76 | 2.86 | 2.67 | 6.57 | 30.35 | 9.44 | 25.19 | 9.07 | 11.35 | 8.93 | 10.10 |
| 1963 | 5.69 | 4.72 | 4.05 | 1.09 | 0.59 | 2.08 | 1.96 | 0.34 | 7.68 | 5.54 | 1.56 | 6.52 | 3.48 |
| 1964 | 1.49 | 2.29 | 0.86 | 0.44 | 1.81 | 2.85 | 9.69 | 7.07 | 4.03 | 3.23 | 23.10 | 3.47 | 5.03 |
| 1965 | 1.97 | 1.96 | 2.68 | 2.05 | 2.22 | 4.81 | 10.28 | 6.99 | 6.06 | 19.81 | 3.97 | 4.85 | 5.64 |
| 1966 | 4.38 | 2.95 | 1.38 | 1.78 | 11.89 | 7.80 | 15.41 | 4.50 | 6.41 | 12.37 | 21.41 | 14.81 | 8.76 |
| 1967 | 6.95 | 3.12 | 3.39 | 2.93 | 2.67 | 2.85 | 5.41 | 5.62 | 4.60 | 6.65 | 5.17 | 0.50 | 4.15 |
| 1968 | 0.44 | 1.80 | 1.12 | 1.13 | 2.74 | 3.62 | 3.03 | 2.72 | 1.11 | 2.00 | 1.94 | 0.00 | 1.80 |
| 1969 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.35 | 0.32 | 0.52 | 3.84 | 4.61 | 1.40 | 4.85 | 1.32 |
| 1970 | 2.01 | 1.43 | 0.56 | 0.55 | 0.00 | 3.00 | 2.51 | 2.20 | 6.68 | 8.43 | 8.70 | 6.82 | 3.57 |
| 1971 | 5.09 | 5.26 | 2.79 | 0.09 | 3.67 | 5.65 | 8.16 | 5.36 | 3.76 | 14.83 | 10.54 | 5.96 | 5.93 |
| MAX | 9.85 | 8.30 | 9.96 | 9.54 | 11.89 | 7.80 | 30.35 | 18.85 | 25.19 | 19.81 | 23.10 | 14.81 | 10.10 |
| MIN | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.35 | 0.32 | 0.34 | 1.11 | 2.00 | 1.40 | 0.00 | 1.32 |
| MEAN | 3.76 | 2.38 | 1.96 | 1.65 | 2.30 | 3.49 | 7.79 | 6.20 | 7.16 | 9.48 | 7.64 | 5.71 | 4.96 |
| 80% | 0.44 | 0.23 | 0.10 | 0.08 | 0.10 | 1.54 | 2.37 | 1.98 | 3.32 | 5.18 | 3.26 | 0.60 | 2.98 |

Table A.4. 5 Estimated Design Discharge along the Aganan River (1/2)

Location : Aganan River, Alimodian (AGI)
 Alimodian Adjustment Factor (C₁) 1.12
 Drainage Area : 87.0 sq. km. Return Flow (r): 0.25
 CA₂/CA₁ : 0.322 Irrigation area (ha, A_i) 100.0

Unit : m³/sec

| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
|------------------|-------|------|------|------|------|------|-------|-------|------|-------|------|------|--------|
| <i>Water Use</i> | 0.12 | 0.00 | | | 0.06 | 0.06 | 0.01 | 0.01 | 0.03 | 0.08 | 0.03 | 0.12 | |
| 1951 | 0.12 | 0.04 | 0.03 | 0.04 | 2.91 | 0.60 | 0.96 | 0.87 | 2.53 | 2.21 | 1.05 | 7.54 | 1.57 |
| 1952 | 0.00 | 0.04 | 0.03 | 0.04 | 0.06 | 2.04 | 3.23 | 3.44 | 8.32 | 11.99 | 0.73 | 2.73 | 2.72 |
| 1953 | 0.00 | 0.08 | 0.07 | 0.11 | 0.02 | 0.92 | 0.27 | 1.49 | 3.83 | 0.19 | 0.26 | 0.00 | 0.60 |
| 1954 | 0.00 | 0.11 | 1.36 | 0.07 | 0.30 | 0.71 | 1.28 | 2.43 | 0.59 | 0.43 | 3.83 | 0.40 | 0.96 |
| 1955 | 12.24 | 0.27 | 0.14 | 0.07 | 0.23 | 1.46 | 1.10 | 0.62 | 3.21 | 4.29 | 3.97 | 0.23 | 2.32 |
| 1956 | 0.00 | 0.04 | 0.03 | 8.74 | 0.68 | 0.78 | 1.24 | 4.35 | 5.84 | 16.45 | 0.05 | 0.57 | 3.23 |
| 1957 | 2.21 | 0.04 | 0.03 | 0.18 | 0.02 | 0.00 | 8.59 | 12.85 | 0.12 | 1.72 | 0.01 | 0.00 | 2.15 |
| 1958 | 0.00 | 0.00 | 0.03 | 0.04 | 0.02 | 0.31 | 7.76 | 6.47 | 0.87 | 9.38 | 2.39 | 0.37 | 2.30 |
| 1959 | 0.00 | 0.04 | 0.03 | 0.72 | 1.35 | 0.89 | 4.73 | 1.84 | 0.52 | 1.23 | 0.62 | 0.40 | 1.03 |
| 1960 | 0.08 | 0.11 | 0.70 | 0.65 | 1.03 | 2.22 | 1.52 | 4.63 | 1.74 | 1.54 | 0.84 | 0.23 | 1.27 |
| 1961 | 0.05 | 0.08 | 0.94 | 0.04 | 1.76 | 1.72 | 2.57 | 1.84 | 1.05 | 2.90 | 0.66 | 0.16 | 1.15 |
| 1962 | 0.08 | 0.15 | 0.03 | 0.04 | 0.00 | 0.28 | 2.53 | 4.21 | 6.20 | 0.12 | 0.77 | 0.00 | 1.20 |
| 1963 | 0.00 | 0.00 | 0.03 | 0.18 | 0.02 | 0.10 | 0.30 | 0.97 | 0.84 | 0.08 | 0.01 | 0.26 | 0.23 |
| 1964 | 0.00 | 0.04 | 0.03 | 0.04 | 0.93 | 1.00 | 0.58 | 0.80 | 0.62 | 0.92 | 5.16 | 0.16 | 0.86 |
| 1965 | 0.00 | 0.04 | 0.03 | 0.04 | 0.16 | 1.28 | 2.81 | 0.13 | 1.16 | 1.20 | 0.19 | 0.19 | 0.60 |
| 1966 | 0.00 | 0.00 | 0.03 | 0.04 | 1.03 | 2.00 | 1.28 | 0.10 | 0.26 | 0.32 | 0.26 | 0.85 | 0.52 |
| 1967 | 0.26 | 0.11 | 0.07 | 0.04 | 0.00 | 2.18 | 2.39 | 4.52 | 1.16 | 2.07 | 0.26 | 0.00 | 1.09 |
| 1968 | 0.00 | 0.73 | 0.14 | 0.04 | 0.00 | 0.00 | 0.23 | 1.88 | 1.23 | 0.92 | 1.63 | 0.47 | 0.61 |
| 1969 | 0.05 | 0.04 | 0.03 | 0.04 | 0.00 | 0.53 | 4.62 | 2.89 | 0.98 | 2.87 | 1.16 | 0.82 | 1.17 |
| 1970 | 0.43 | 0.08 | 0.03 | 0.04 | 0.00 | 4.34 | 3.54 | 1.35 | 1.74 | 1.61 | 7.96 | 3.53 | 2.06 |
| 1971 | 2.28 | 2.31 | 3.31 | 0.32 | 3.61 | 6.97 | 18.06 | 0.24 | 2.35 | 14.32 | 7.64 | 4.27 | 5.47 |
| MAX | 12.24 | 2.31 | 3.31 | 8.74 | 3.61 | 6.97 | 18.06 | 12.85 | 8.32 | 16.45 | 7.96 | 7.54 | 5.47 |
| MIN | 0.00 | 0.00 | 0.03 | 0.04 | 0.00 | 0.00 | 0.23 | 0.10 | 0.12 | 0.08 | 0.01 | 0.00 | 0.23 |
| MEAN | 0.85 | 0.21 | 0.34 | 0.55 | 0.67 | 1.44 | 3.31 | 2.76 | 2.15 | 3.65 | 1.88 | 1.10 | 1.58 |

Table A.4. 5 Estimated Design Discharge along the Aganan River (2/2)

| | | | |
|---------------|--|-------------------------------|-------|
| Location | : Aganan River, San Miguel (AG2) | Adjustment Factor (C_1) | 1.12 |
| | Existing diversion weir for Aganan RIS | Return Flow (r): | 0.25 |
| Drainage Area | : 104.0 sq. km. | Upstream irrigation area (ha) | 108.5 |
| CA_1/CA_2 | : 0.837 | | |

| | | | | | | | | | | | | | Unit : m ³ /sec |
|-------------|-------|------|------|------|------|------|-------|-------|------|-------|------|------|----------------------------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| 1951 | 0.13 | 0.04 | 0.04 | 0.04 | 3.12 | 0.64 | 1.03 | 0.93 | 2.71 | 2.36 | 1.13 | 8.08 | 1.69 |
| 1952 | 0.00 | 0.04 | 0.04 | 0.04 | 0.06 | 2.19 | 3.46 | 3.69 | 8.92 | 12.86 | 0.78 | 2.93 | 2.92 |
| 1953 | 0.00 | 0.08 | 0.07 | 0.12 | 0.02 | 0.99 | 0.29 | 1.60 | 4.10 | 0.20 | 0.28 | 0.00 | 0.65 |
| 1954 | 0.00 | 0.12 | 1.46 | 0.08 | 0.32 | 0.76 | 1.37 | 2.61 | 0.63 | 0.46 | 4.10 | 0.43 | 1.03 |
| 1955 | 13.12 | 0.29 | 0.15 | 0.08 | 0.25 | 1.57 | 1.18 | 0.67 | 3.45 | 4.60 | 4.26 | 0.24 | 2.49 |
| 1956 | 0.00 | 0.04 | 0.04 | 9.38 | 0.73 | 0.84 | 1.33 | 4.66 | 6.26 | 17.63 | 0.05 | 0.62 | 3.46 |
| 1957 | 2.37 | 0.04 | 0.04 | 0.19 | 0.02 | 0.00 | 9.21 | 13.77 | 0.13 | 1.84 | 0.01 | 0.00 | 2.30 |
| 1958 | 0.00 | 0.00 | 0.04 | 0.04 | 0.02 | 0.33 | 8.31 | 6.94 | 0.94 | 10.06 | 2.56 | 0.39 | 2.47 |
| 1959 | 0.00 | 0.04 | 0.04 | 0.77 | 1.44 | 0.95 | 5.07 | 1.97 | 0.55 | 1.32 | 0.67 | 0.43 | 1.10 |
| 1960 | 0.09 | 0.12 | 0.75 | 0.69 | 1.11 | 2.38 | 1.63 | 4.96 | 1.86 | 1.65 | 0.90 | 0.24 | 1.37 |
| 1961 | 0.05 | 0.08 | 1.01 | 0.04 | 1.89 | 1.84 | 2.75 | 1.97 | 1.13 | 3.11 | 0.71 | 0.17 | 1.23 |
| 1962 | 0.09 | 0.16 | 0.04 | 0.04 | 0.00 | 0.30 | 2.71 | 4.51 | 6.65 | 0.12 | 0.82 | 0.00 | 1.29 |
| 1963 | 0.00 | 0.00 | 0.04 | 0.19 | 0.02 | 0.10 | 0.32 | 1.04 | 0.90 | 0.09 | 0.01 | 0.28 | 0.25 |
| 1964 | 0.00 | 0.04 | 0.04 | 0.04 | 0.99 | 1.07 | 0.62 | 0.85 | 0.67 | 0.98 | 5.53 | 0.17 | 0.92 |
| 1965 | 0.00 | 0.04 | 0.04 | 0.04 | 0.17 | 1.38 | 3.01 | 0.14 | 1.25 | 1.28 | 0.20 | 0.21 | 0.65 |
| 1966 | 0.00 | 0.00 | 0.04 | 0.04 | 1.11 | 2.15 | 1.37 | 0.11 | 0.28 | 0.35 | 0.28 | 0.91 | 0.55 |
| 1967 | 0.27 | 0.12 | 0.07 | 0.04 | 0.00 | 2.34 | 2.56 | 4.85 | 1.25 | 2.21 | 0.28 | 0.00 | 1.17 |
| 1968 | 0.00 | 0.78 | 0.15 | 0.04 | 0.00 | 0.00 | 0.25 | 2.01 | 1.32 | 0.98 | 1.75 | 0.50 | 0.65 |
| 1969 | 0.05 | 0.04 | 0.04 | 0.04 | 0.00 | 0.57 | 4.95 | 3.09 | 1.05 | 3.07 | 1.25 | 0.88 | 1.25 |
| 1970 | 0.46 | 0.08 | 0.04 | 0.04 | 0.00 | 4.66 | 3.80 | 1.45 | 1.86 | 1.73 | 8.54 | 3.79 | 2.20 |
| 1971 | 2.44 | 2.48 | 3.55 | 0.35 | 3.87 | 7.47 | 19.37 | 0.26 | 2.52 | 15.36 | 8.19 | 4.57 | 5.87 |
| MAX | 13.12 | 2.48 | 3.55 | 9.38 | 3.87 | 7.47 | 19.37 | 13.77 | 8.92 | 17.63 | 8.54 | 8.08 | 5.87 |
| MIN | 0.00 | 0.00 | 0.04 | 0.04 | 0.00 | 0.00 | 0.25 | 0.11 | 0.13 | 0.09 | 0.01 | 0.00 | 0.25 |
| MEAN | 0.91 | 0.22 | 0.37 | 0.59 | 0.72 | 1.55 | 3.55 | 2.96 | 2.31 | 3.92 | 2.01 | 1.18 | 1.69 |
| 80% | 0.00 | 0.01 | 0.03 | 0.03 | 0.01 | 0.08 | 0.76 | 0.59 | 0.60 | 0.46 | 0.14 | 0.02 | 0.72 |

Table A.4. 6 Available Water at the Headworks (1/4)

Location : Jalaur RIS (JR4)

Drainage Area : 1065.0 sq. km.

| | | | | | | | | | | | | | Unit : m ³ /sec |
|------|--------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|----------------------------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| 1950 | 34.90 | 15.87 | 47.62 | 10.00 | 15.13 | 47.68 | 47.40 | 27.18 | 233.40 | 60.97 | 50.77 | 10.00 | 50.08 |
| 1951 | 10.00 | 10.33 | 10.00 | 10.00 | 54.28 | 25.06 | 82.27 | 46.87 | 95.27 | 69.39 | 81.01 | 180.52 | 56.25 |
| 1952 | 55.57 | 21.56 | 10.00 | 10.00 | 13.25 | 47.02 | 77.56 | 69.28 | 79.27 | 151.57 | 72.37 | 135.40 | 61.90 |
| 1953 | 18.30 | 10.00 | 13.83 | 10.00 | 10.00 | 38.28 | 25.12 | 51.41 | 58.86 | 34.21 | 31.38 | 57.15 | 29.88 |
| 1954 | 10.00 | 14.20 | 47.51 | 10.00 | 18.61 | 59.06 | 125.03 | 70.17 | 30.62 | 38.39 | 56.88 | 177.42 | 54.82 |
| 1955 | 56.72 | 47.29 | 17.27 | 11.61 | 30.67 | 45.36 | 37.13 | 58.20 | 55.30 | 87.19 | 163.00 | 31.31 | 53.42 |
| 1956 | 31.19 | 31.90 | 63.16 | 63.58 | 29.79 | 22.65 | 34.73 | 96.28 | 75.32 | 92.65 | 76.96 | 83.27 | 58.46 |
| 1957 | 100.26 | 36.60 | 17.84 | 26.92 | 14.85 | 19.14 | 49.31 | 75.30 | 55.00 | 38.86 | 18.74 | 12.53 | 38.78 |
| 1958 | 16.33 | 16.64 | 10.00 | 10.00 | 10.94 | 35.59 | 21.62 | 18.42 | 14.04 | 67.92 | 65.46 | 25.30 | 26.02 |
| 1959 | 20.44 | 16.46 | 30.83 | 11.04 | 21.58 | 39.25 | 89.00 | 43.76 | 59.47 | 121.98 | 123.52 | 68.36 | 53.81 |
| 1960 | 27.36 | 32.09 | 18.52 | 70.89 | 29.72 | 76.59 | 79.28 | 56.07 | 64.90 | 105.17 | 85.51 | 45.09 | 57.60 |
| 1961 | 24.18 | 25.12 | 15.66 | 13.24 | 30.91 | 59.18 | 75.91 | 81.79 | 50.64 | 71.35 | 41.95 | 29.77 | 43.31 |
| 1962 | 30.27 | 36.68 | 24.72 | 10.00 | 10.00 | 41.35 | 121.96 | 147.99 | 131.74 | 55.03 | 84.55 | 46.11 | 61.70 |
| 1963 | 38.12 | 34.68 | 15.85 | 14.07 | 12.42 | 26.70 | 24.37 | 81.12 | 58.40 | 60.06 | 23.65 | 44.76 | 36.18 |
| 1964 | 17.05 | 19.73 | 10.78 | 10.00 | 29.39 | 38.92 | 79.28 | 55.79 | 52.13 | 61.60 | 210.05 | 142.11 | 60.57 |
| 1965 | 83.11 | 51.54 | 50.12 | 40.84 | 21.50 | 61.89 | 99.08 | 73.45 | 42.22 | 81.76 | 30.05 | 81.95 | 59.79 |
| 1966 | 21.16 | 13.04 | 10.19 | 11.60 | 79.14 | 66.27 | 105.43 | 50.87 | 42.10 | 106.67 | 65.08 | 49.49 | 51.75 |
| 1967 | 141.84 | 33.53 | 35.97 | 75.92 | 83.95 | 64.05 | 15.00 | 12.10 | 30.90 | 97.51 | 83.39 | 18.85 | 57.75 |
| 1968 | 26.72 | 25.53 | 10.30 | 10.00 | 10.00 | 23.86 | 52.63 | 49.75 | 22.80 | 23.67 | 63.25 | 27.97 | 28.87 |
| 1969 | 22.72 | 16.03 | 13.00 | 12.80 | 18.01 | 30.86 | 48.63 | 24.75 | 38.30 | 30.67 | 31.25 | 66.97 | 29.50 |
| 1970 | 25.22 | 18.43 | 24.50 | 26.80 | 25.01 | 28.86 | 61.63 | 16.25 | 22.30 | 133.67 | 164.25 | 77.97 | 52.07 |
| 1971 | 84.22 | 81.93 | 10.00 | 10.00 | 33.01 | 47.86 | 63.63 | 45.75 | 32.80 | 108.67 | 81.75 | 49.97 | 54.13 |
| MAX | 141.84 | 81.93 | 63.16 | 75.92 | 83.95 | 76.59 | 125.03 | 147.99 | 233.40 | 151.57 | 210.05 | 180.52 | 61.90 |
| MIN | 10.00 | 10.00 | 10.00 | 10.00 | 10.00 | 19.14 | 15.00 | 12.10 | 14.04 | 23.67 | 18.74 | 10.00 | 26.02 |
| MEAN | 40.71 | 27.69 | 23.08 | 21.79 | 27.37 | 42.98 | 64.36 | 56.93 | 61.17 | 77.22 | 77.49 | 66.46 | 48.94 |
| 80% | 18.30 | 15.87 | 10.19 | 10.00 | 12.42 | 26.70 | 34.73 | 27.18 | 30.90 | 38.86 | 31.38 | 27.97 | 36.18 |

Table A.4. 6 Available Water at the Headworks (2/4)

Location : Suague RIS (SG4)

Drainage Area : 181.0 sq. km.

| YEAR | Unit : m3/sec | | | | | | | | | | | | Annual |
|-------------|---------------|-------|------|------|-------|------|-------|-------|-------|-------|-------|-------|--------|
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | |
| 1950 | 7.61 | 8.05 | 9.62 | 4.95 | 5.32 | 6.16 | 5.76 | 2.98 | 8.31 | 13.19 | 6.66 | 2.06 | 6.72 |
| 1951 | 0.60 | 1.74 | 0.83 | 0.68 | 6.05 | 5.19 | 8.71 | 12.42 | 14.05 | 9.76 | 5.05 | 9.80 | 6.24 |
| 1952 | 1.54 | 2.47 | 2.05 | 1.26 | 0.91 | 0.78 | 15.76 | 17.49 | 12.90 | 14.51 | 3.93 | 6.40 | 6.67 |
| 1953 | 1.71 | 2.28 | 1.98 | 0.86 | 0.60 | 4.47 | 5.59 | 9.20 | 7.77 | 8.30 | 5.98 | 4.10 | 4.40 |
| 1954 | 0.98 | 1.63 | 3.19 | 0.65 | 0.60 | 1.24 | 4.72 | 4.75 | 4.98 | 4.45 | 6.37 | 4.66 | 3.19 |
| 1955 | 4.73 | 0.60 | 0.60 | 0.60 | 0.60 | 1.24 | 3.06 | 2.39 | 3.11 | 6.98 | 11.86 | 2.30 | 3.17 |
| 1956 | 6.19 | 0.67 | 0.60 | 2.69 | 1.99 | 1.03 | 3.68 | 5.72 | 6.45 | 13.30 | 7.92 | 8.96 | 4.93 |
| 1957 | 7.30 | 2.01 | 0.62 | 1.94 | 0.60 | 0.60 | 6.39 | 7.84 | 6.09 | 5.94 | 3.32 | 1.15 | 3.65 |
| 1958 | 1.68 | 2.74 | 1.70 | 1.11 | 0.81 | 1.46 | 5.14 | 5.72 | 3.68 | 12.47 | 5.91 | 1.01 | 3.62 |
| 1959 | 2.72 | 1.36 | 2.29 | 1.04 | 0.81 | 1.06 | 9.83 | 3.99 | 5.66 | 7.92 | 11.86 | 5.28 | 4.48 |
| 1960 | 3.52 | 7.43 | 2.85 | 2.04 | 3.69 | 6.98 | 5.31 | 8.40 | 6.02 | 11.32 | 11.79 | 2.92 | 6.02 |
| 1961 | 2.34 | 4.28 | 1.35 | 1.65 | 4.46 | 9.67 | 11.46 | 12.67 | 5.48 | 8.51 | 6.12 | 3.31 | 5.94 |
| 1962 | 2.58 | 4.74 | 3.61 | 2.73 | 2.06 | 5.12 | 11.70 | 11.56 | 13.69 | 8.27 | 8.42 | 6.19 | 6.72 |
| 1963 | 4.14 | 4.63 | 4.06 | 2.04 | 4.18 | 4.40 | 6.46 | 10.45 | 6.30 | 5.77 | 3.54 | 8.24 | 5.35 |
| 1964 | 2.89 | 7.51 | 2.81 | 0.97 | 5.32 | 5.58 | 10.73 | 7.60 | 4.76 | 7.02 | 15.84 | 29.52 | 8.38 |
| 1965 | 17.61 | 11.12 | 4.69 | 2.51 | 1.99 | 3.82 | 8.37 | 6.77 | 5.94 | 13.44 | 3.54 | 3.10 | 6.91 |
| 1966 | 3.14 | 3.20 | 2.22 | 6.39 | 28.55 | 6.12 | 8.44 | 5.24 | 5.48 | 7.02 | 14.66 | 5.28 | 7.98 |
| 1967 | 12.09 | 8.36 | 5.24 | 3.66 | 2.72 | 2.78 | 6.11 | 6.42 | 5.08 | 6.70 | 5.48 | 0.60 | 5.44 |
| 1968 | 2.13 | 2.21 | 1.63 | 1.65 | 2.48 | 2.75 | 6.11 | 5.86 | 2.14 | 1.88 | 7.23 | 1.81 | 3.16 |
| 1969 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 6.15 | 4.41 | 6.63 | 7.05 | 6.91 | 6.88 | 3.47 |
| 1970 | 1.71 | 2.09 | 1.15 | 1.11 | 2.16 | 2.68 | 7.29 | 2.50 | 5.55 | 16.08 | 20.65 | 8.24 | 5.93 |
| 1971 | 3.59 | 5.16 | 2.85 | 0.60 | 3.27 | 4.94 | 7.64 | 5.41 | 3.40 | 13.02 | 9.60 | 4.63 | 5.34 |
| MAX | 17.61 | 11.12 | 9.62 | 6.39 | 28.55 | 9.67 | 15.76 | 17.49 | 14.05 | 16.08 | 20.65 | 29.52 | 8.38 |
| MIN | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 3.06 | 2.39 | 2.14 | 1.88 | 3.32 | 0.60 | 3.16 |
| MEAN | 4.15 | 3.86 | 2.57 | 1.90 | 3.63 | 3.58 | 7.47 | 7.26 | 6.52 | 9.22 | 8.30 | 5.75 | 5.35 |
| 80% | 1.68 | 1.63 | 0.83 | 0.68 | 0.60 | 1.06 | 5.31 | 4.41 | 4.76 | 6.70 | 5.05 | 2.06 | 3.62 |

Table A.4. 6 Available Water at the Headworks (3/4)

Location : Sta. Barbara RIS (FG4)

Drainage Area : 193.0 sq. km.

| YEAR | Unit : m3/sec | | | | | | | | | | | | Annual |
|------|---------------|------|------|------|-------|------|-------|-------|-------|-------|-------|-------|--------|
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | |
| 1950 | 9.85 | 8.30 | 9.96 | 4.81 | 5.90 | 6.92 | 5.86 | 2.87 | 8.98 | 14.83 | 7.24 | 3.28 | 7.40 |
| 1951 | 1.34 | 1.47 | 1.00 | 1.00 | 6.68 | 5.92 | 9.17 | 13.20 | 15.36 | 11.00 | 5.43 | 11.68 | 6.94 |
| 1952 | 2.53 | 2.25 | 1.71 | 1.00 | 1.18 | 1.24 | 17.12 | 18.85 | 14.01 | 16.13 | 4.51 | 8.01 | 7.38 |
| 1953 | 2.60 | 2.05 | 1.68 | 1.00 | 1.00 | 5.15 | 5.78 | 9.63 | 8.56 | 9.55 | 6.55 | 5.44 | 4.92 |
| 1954 | 1.97 | 1.35 | 2.87 | 1.00 | 1.00 | 1.70 | 4.74 | 4.69 | 5.37 | 5.20 | 5.78 | 6.04 | 3.47 |
| 1955 | 5.95 | 1.00 | 1.00 | 1.00 | 1.00 | 1.70 | 3.03 | 2.20 | 3.34 | 8.10 | 13.04 | 3.54 | 3.74 |
| 1956 | 7.54 | 1.00 | 1.00 | 2.39 | 2.33 | 1.50 | 3.63 | 5.95 | 6.91 | 14.83 | 8.70 | 10.72 | 5.54 |
| 1957 | 8.84 | 1.80 | 1.00 | 1.63 | 1.00 | 1.50 | 6.53 | 8.18 | 6.56 | 6.54 | 3.63 | 1.39 | 4.05 |
| 1958 | 2.60 | 2.50 | 1.38 | 1.00 | 1.11 | 1.93 | 5.26 | 5.88 | 3.91 | 13.97 | 6.47 | 10.72 | 4.73 |
| 1959 | 3.79 | 1.55 | 2.01 | 9.54 | 1.11 | 3.00 | 10.36 | 4.06 | 6.56 | 6.54 | 3.63 | 1.39 | 4.46 |
| 1960 | 2.60 | 1.00 | 1.00 | 1.66 | 1.03 | 2.58 | 1.25 | 2.61 | 1.99 | 6.84 | 6.28 | 1.69 | 2.54 |
| 1961 | 1.00 | 1.00 | 1.00 | 1.00 | 1.85 | 4.12 | 11.40 | 13.53 | 6.56 | 8.43 | 7.74 | 4.92 | 5.21 |
| 1962 | 4.12 | 5.83 | 4.76 | 2.86 | 2.67 | 6.57 | 30.35 | 9.44 | 25.19 | 9.07 | 11.35 | 8.93 | 10.10 |
| 1963 | 5.69 | 4.72 | 4.05 | 1.09 | 1.00 | 2.08 | 1.96 | 1.00 | 7.68 | 5.54 | 1.56 | 6.52 | 3.57 |
| 1964 | 1.49 | 2.29 | 1.00 | 1.00 | 1.81 | 2.85 | 9.69 | 7.07 | 4.03 | 3.23 | 23.10 | 3.47 | 5.09 |
| 1965 | 1.97 | 1.96 | 2.68 | 2.05 | 2.22 | 4.81 | 10.28 | 6.99 | 6.06 | 19.81 | 3.97 | 4.85 | 5.64 |
| 1966 | 4.38 | 2.95 | 1.38 | 1.78 | 11.89 | 7.80 | 15.41 | 4.50 | 6.41 | 12.37 | 21.41 | 14.81 | 8.76 |
| 1967 | 6.95 | 3.12 | 3.39 | 2.93 | 2.67 | 2.85 | 5.41 | 5.62 | 4.60 | 6.65 | 5.17 | 1.00 | 4.20 |
| 1968 | 1.00 | 1.80 | 1.12 | 1.13 | 2.74 | 3.62 | 3.03 | 2.72 | 1.11 | 2.00 | 1.94 | 1.00 | 1.93 |
| 1969 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 3.84 | 4.61 | 1.40 | 4.85 | 1.89 |
| 1970 | 2.01 | 1.43 | 1.00 | 1.00 | 1.00 | 3.00 | 2.51 | 2.20 | 6.68 | 8.43 | 8.70 | 6.82 | 3.73 |
| 1971 | 5.09 | 5.26 | 2.79 | 1.00 | 3.67 | 5.65 | 8.16 | 5.36 | 3.76 | 14.83 | 10.54 | 5.96 | 6.01 |
| MAX | 9.85 | 8.30 | 9.96 | 9.54 | 11.89 | 7.80 | 30.35 | 18.85 | 25.19 | 19.81 | 23.10 | 14.81 | 10.10 |
| MIN | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.11 | 2.00 | 1.40 | 1.00 | 1.89 |
| MEAN | 3.83 | 2.53 | 2.22 | 1.95 | 2.54 | 3.52 | 7.82 | 6.25 | 7.16 | 9.48 | 7.64 | 5.77 | 5.06 |
| 80% | 1.49 | 1.00 | 1.00 | 1.00 | 1.00 | 1.70 | 3.03 | 2.61 | 3.84 | 5.54 | 3.63 | 1.69 | 3.57 |

Table A.4. 6 Available Water at the Headworks (4/4)

Location : Aganan RIS (AG2)

Drainage Area : 104.0 sq. km.

| | | | | | | | | | | | | | Unit :m3/sec |
|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|--------------|
| YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Annual |
| 1951 | 0.90 | 0.50 | 0.50 | 0.50 | 3.12 | 0.90 | 1.03 | 0.93 | 2.71 | 2.36 | 1.13 | 8.08 | 1.89 |
| 1952 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 2.19 | 3.46 | 3.69 | 8.92 | 12.86 | 0.90 | 2.93 | 3.19 |
| 1953 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 0.99 | 0.90 | 1.60 | 4.10 | 0.90 | 0.90 | 0.90 | 1.13 |
| 1954 | 0.90 | 0.50 | 1.46 | 0.50 | 0.90 | 0.90 | 1.37 | 2.61 | 0.90 | 0.90 | 4.10 | 0.90 | 1.33 |
| 1955 | 13.12 | 0.50 | 0.50 | 0.50 | 0.90 | 1.57 | 1.18 | 0.90 | 3.45 | 4.60 | 4.26 | 0.90 | 2.70 |
| 1956 | 0.90 | 0.50 | 0.50 | 9.38 | 0.90 | 0.90 | 1.33 | 4.66 | 6.26 | 17.63 | 0.90 | 0.90 | 3.73 |
| 1957 | 2.37 | 0.50 | 0.50 | 0.50 | 0.90 | 0.90 | 9.21 | 13.77 | 0.90 | 1.84 | 0.90 | 0.90 | 2.77 |
| 1958 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 0.90 | 8.31 | 6.94 | 0.94 | 10.06 | 2.56 | 0.90 | 2.83 |
| 1959 | 0.90 | 0.50 | 0.50 | 0.77 | 1.44 | 0.95 | 5.07 | 1.97 | 0.90 | 1.32 | 0.90 | 0.90 | 1.34 |
| 1960 | 0.90 | 0.50 | 0.75 | 0.69 | 1.11 | 2.38 | 1.63 | 4.96 | 1.86 | 1.65 | 0.90 | 0.90 | 1.52 |
| 1961 | 0.90 | 0.50 | 1.01 | 0.50 | 1.89 | 1.84 | 2.75 | 1.97 | 1.13 | 3.11 | 0.90 | 0.90 | 1.45 |
| 1962 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 0.90 | 2.71 | 4.51 | 6.65 | 0.90 | 0.90 | 0.90 | 1.73 |
| 1963 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 0.90 | 0.90 | 1.04 | 0.90 | 0.90 | 0.90 | 0.90 | 0.81 |
| 1964 | 0.90 | 0.50 | 0.50 | 0.50 | 0.99 | 1.07 | 0.90 | 0.90 | 0.90 | 0.98 | 5.53 | 0.90 | 1.21 |
| 1965 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 1.38 | 3.01 | 0.90 | 1.25 | 1.28 | 0.90 | 0.90 | 1.08 |
| 1966 | 0.90 | 0.50 | 0.50 | 0.50 | 1.11 | 2.15 | 1.37 | 0.90 | 0.90 | 0.90 | 0.90 | 0.91 | 0.96 |
| 1967 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 2.34 | 2.56 | 4.85 | 1.25 | 2.21 | 0.90 | 0.90 | 1.53 |
| 1968 | 0.90 | 0.78 | 0.50 | 0.50 | 0.90 | 0.90 | 0.90 | 2.01 | 1.32 | 0.98 | 1.75 | 0.90 | 1.03 |
| 1969 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 0.90 | 4.95 | 3.09 | 1.05 | 3.07 | 1.25 | 0.90 | 1.54 |
| 1970 | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 4.66 | 3.80 | 1.45 | 1.86 | 1.73 | 8.54 | 3.79 | 2.43 |
| 1971 | 2.44 | 2.48 | 3.55 | 0.50 | 3.87 | 7.47 | 19.37 | 0.90 | 2.52 | 15.36 | 8.19 | 4.57 | 5.93 |
| 1972 | 84.22 | 81.93 | 10.00 | 10.00 | 33.01 | 47.86 | 63.63 | 45.75 | 32.80 | 108.67 | 81.75 | 49.97 | 54.13 |
| MAX | 84.22 | 81.93 | 10.00 | 10.00 | 33.01 | 47.86 | 63.63 | 45.75 | 32.80 | 108.67 | 81.75 | 49.97 | 54.13 |
| MIN | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.81 |
| MEAN | 5.38 | 4.30 | 1.15 | 1.36 | 2.69 | 3.86 | 6.38 | 5.01 | 3.79 | 8.83 | 5.90 | 3.85 | 4.38 |
| 80% | 0.90 | 0.50 | 0.50 | 0.50 | 0.90 | 0.90 | 1.03 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 1.13 |

Table A.4. 7 Irrigation Water Requirement in Paddy Field for Upper Reach

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Sept. | Oct. | Nov. | Dec. | |
|---|-----------|-------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|-----------|--|
| CROPPING PATTERN - A | | | | | | | | | | | | | | |
| Jalaur bairin | | | | | | | | | | | | | | |
| Suague bairin | | | | | | | | | | | | | | |
| | 2nd Paddy | | | | | | 1st Paddy | | | | | | 2nd Paddy | |
| Monthly Rainfall | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 190.1 | 224.4 | 188.2 | 74.4 | |
| Potential Evapo-transpiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 117.0 | 130.2 | 120.0 | 139.5 | |
| CROPPING PATTERN - A | | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.15 | | | | | | | | 1.00 | 1.10 | 1.10 | 1.12 | 1.15 | |
| Crop Evapotranspiration (ETcrop) | 178.3 | 0.0 | | | | | | | 117.0 | 143.2 | 134.4 | 160.4 | 733 | |
| Percolation | 62.0 | 56.0 | | | | | | | 60.0 | 62.0 | 62.0 | 62.0 | 362 | |
| Effective Rainfall * | 1.6 | 5.9 | | | | | | | 142.6 | 150.3 | 141.2 | 67.7 | 509 | |
| Area Factor | 0.60 | 0.10 | | | | | | | 0.30 | 0.80 | 1.00 | 1.00 | 1.50 | |
| pudding Water | | | | | | | | | 75.0 | 75.0 | 4.0 | 5.0 | 9.0 | |
| Nursery Water | | | | | | | | | | | 107 | 58 | 164 | |
| Net Irrigation Requirement | 143 | 5 | | | | | | | 33 | 33 | 107 | 58 | 164 | |
| 1st Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | 1.00 | 1.10 | 1.12 | 1.15 | 1.15 | | | | | |
| Crop Evapo-transpiration (ETcrop) | | | | | 179.8 | 151.8 | 135.4 | 153.3 | 134.6 | 0.0 | | | 755 | |
| Percolation | | | | | 46.5 | 45 | 46.5 | 46.5 | 45 | | | | 275 | |
| Effective Rainfall * | | | | | 43.9 | 168.8 | 151.8 | 179.7 | 142.6 | | | | 829 | |
| Area Factor | | | | | 0.30 | 0.80 | 1.00 | 1.00 | 0.60 | 0.10 | | | 150 | |
| pudding Water | | | | | 75.0 | 75.0 | | | | | | | 19 | |
| Nursery Water | | | | | 8 | 7 | | | | | | | 240 | |
| Net Irrigation Requirement | | | | | 0 | 88 | 30 | 20 | 22 | 0 | | | | |
| Irrigation Efficiency | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | |
| Conveyance Efficiency 64 % ** | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | |
| Application Efficiency 70 % of paddy field ** | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | |
| Gross Irrigation Requirement (mm) | 320 | 11 | 0 | 0 | 178 | 196 | 67 | 45 | 50 | 73 | 239 | 130 | 365 | |
| (lit/sec/ha) | 1.19 | 0.05 | 0.00 | 0.00 | 0.66 | 0.76 | 0.25 | 0.17 | 0.19 | 0.28 | 0.89 | 0.50 | 1.36 | |

NOTE * Ref. Relating curve of Effective Rainfall estimation

** Ref. FAO Irrigation and Drainage Paper No.24 - Table 37, Page 80

Table A.4.8 Irrigation Water Requirement in Paddy Field for Upper Reach

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept | Sept | Oct. | Nov. | Dec | |
|---|-----------|-------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|-----------|--|
| CROPPING PATTERN - A | | | | | | | | | | | | | | |
| Aganan baksin | | | | | | | | | | | | | | |
| Tigum baksin | | | | | | | | | | | | | | |
| | 2nd Paddy | | | | | | 1st Paddy | | | | | | 2nd Paddy | |
| Monthly Rainfall | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 190.1 | 224.4 | 188.2 | 74.4 | |
| Potential Evapo-transpiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 117.0 | 130.2 | 120.0 | 139.5 | |
| CROPPING PATTERN - A | | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.15 | | | | | | | | 1.00 | 1.12 | 1.18 | 1.17 | | |
| Crop Evapo-transpiration (ET _{crop}) | 178.3 | 0.0 | | | | | | | 117.0 | 145.8 | 141.0 | 163.2 | 745 | |
| Percolation | 34.1 | 30.8 | | | | | | | 33.0 | 34.1 | 33.0 | 34.1 | 199 | |
| Effective Rainfall * | 1.6 | 5.9 | | | | | | | 142.6 | 150.3 | 141.2 | 67.7 | 509 | |
| Area Factor | 0.70 | 0.10 | | | | | | | 0.30 | 0.90 | 1.00 | 1.00 | 145 | |
| Padding Water | | | | | | | | | 75.0 | 70.0 | 4.0 | 5.0 | 18 | |
| Nursery Water | | | | | | | | | 25 | 93 | 38 | 139 | 444 | |
| Net Irrigation Requirement | 148 | 2 | | | | | | | | | | | | |
| 1st Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | 1.00 | 1.10 | 1.12 | 1.15 | 1.15 | | | | | |
| Crop Evapo-transpiration (ET _{crop}) | | | | | 179.8 | 151.8 | 135.0 | 153.3 | 134.6 | 0.0 | | | 754 | |
| Percolation | | | | | 34.1 | 33 | 34.1 | 33 | | | | | 168 | |
| Effective Rainfall * | | | | | 43.9 | 168.8 | 151.8 | 179.7 | 142.6 | | | | 829 | |
| Area Factor | | | | | 0.30 | 0.80 | 1.00 | 1.00 | 0.60 | 0.10 | | | 145 | |
| Padding Water | | | | | 75.0 | 70.0 | | | | | | | 19 | |
| Nursery Water | | | | 4 | 8 | 7 | | | | | | | | |
| Net Irrigation Requirement | | | | 0 | 76 | 74 | 17 | 8 | 15 | 0 | | | 190 | |
| NOTE | | | | | | | | | | | | | | |
| * Ref. Relating curve of Effective Rainfall estimation | | | | | | | | | | | | | | |
| ** Ref. FAO Irrigation and Drainage Paper No.24 - Table37, Page80 | | | | | | | | | | | | | | |
| Irrigation Efficiency | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | |
| Conveyance Efficiency 64 % ** | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | 0.64 | |
| Application Efficiency 70 % of paddy field ** | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | |
| Gross Irrigation Requirement (lit/sec/ha) | 329 | 6 | 0 | 0 | 169 | 166 | 39 | 17 | 33 | 55 | 208 | 84 | 309 | |
| | 1.23 | 0.02 | 0.00 | 0.00 | 0.63 | 0.64 | 0.14 | 0.06 | 0.13 | 0.21 | 0.78 | 0.33 | 1.16 | |

Table A.4. 9 Estimated Irrigation Water Requirement in Paddy Field (Present Condition)

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept | Sept | Oct. | Nov. | Dec |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| CROPPING PATTERN - A | | | | | | | | | | | | | |
| Jalaur pro. RIS | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | | |
| Monthly Rainfall | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 190.1 | 224.4 | 188.2 | 74.4 |
| Potential Evapo-transpiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 117.0 | 130.2 | 120.0 | 139.5 |
| 5,910 | | | | | | | | | | | | | |
| 1st Paddy | | | | | | | | | | | | | |
| 4,620 | | | | | | | | | | | | | |
| CROPPING PATTERN - A | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.15 | | | | | | | | | | 1.08 | 1.14 | 1.18 |
| Crop Evapo-transpiration (ET _{crop}) | 178.3 | | | | | | | | | | 140.0 | 136.5 | 163.9 |
| Percolation | 62.0 | 56.0 | | | | | | | 60.0 | 62.0 | 60.0 | 62.0 | 56.2 |
| Effective Rainfall | 1.6 | 5.9 | | | | | | | 133.1 | 157.1 | 131.7 | 74.4 | 50.4 |
| Area Factor | 0.8 | 0.08 | | | | | | | | | 0.3 | 0.9 | 1.00 |
| Pudding Water | | | | | | | | | 18.8 | 112.5 | 18.8 | | 150 |
| Nursery Water | | | | | | | | | | | 4.0 | 5.0 | 9.0 |
| Net Irrigation Requirement | 199 | 4 | | | | | | | 0 | 54 | 84 | 161 | 501 |
| 1st Paddy | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | 1.15 | 1.18 | 1.18 | 1.18 | 1.15 | | | |
| Crop Evapo-transpiration (ET _{crop}) | | | | | | 158.7 | 142.1 | 157.7 | 137.5 | 134.6 | | | 731 |
| Percolation | | | | | 46.5 | 45 | 46.5 | 45 | 45 | 45 | | | 275 |
| Effective Rainfall | | | | | 48.8 | 185.7 | 158.6 | 224.6 | 142.6 | 142.6 | | | 903 |
| Area Factor | | | | | | 0.3 | 0.8 | 0.9 | 0.5 | 0.1 | | | 150 |
| Pudding Water | | | | | 18.8 | 75.0 | 56.3 | | | | | | 19 |
| Nursery Water | | | | 4 | 8 | 7 | | | | | | | 112 |
| Net Irrigation Requirement | | | | 0 | 0 | 25 | 65 | 0 | 20 | 2 | | | |
| Estimated Overall Irrigation Efficiency | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Gross Irrigation Requirement (mm) | 994 | 21 | 0 | 0 | 0 | 125 | 323 | 0 | 100 | 12 | 269 | 418 | 3064.0 |
| (l _u /sec/ha) | 3.71 | 0.09 | 0.00 | 0.00 | 0.00 | 0.48 | 1.21 | 0.00 | 0.38 | 0.04 | 1.00 | 1.51 | 3.00 |
| Irrigation Service Area (ha) | 4,620 | 4,620 | | | | 5,910 | 5,910 | 5,910 | 5,910 | 4,620 | 4,620 | 4,620 | 4,620 |
| m ³ /sec | 17.15 | 0.40 | 0.00 | 0.00 | 0.00 | 2.85 | 7.13 | 0.00 | 2.27 | 0.26 | 4.63 | 7.45 | 13.84 |
| Seasonal Requirement (m ³ /sec) | 17.15 | 0.40 | 0.00 | 0.00 | 0.00 | 2.85 | 7.13 | 0.00 | 2.27 | 4.90 | 7.45 | 13.84 | |
| | J | F | M | A | M | J | J | A | S | O | N | D | |

Table A.4.10 Estimated Irrigation Water Requirement in Paddy Field (Present Condition)

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|-------|-------|-------|-------|-------|-------|-------|-----------|-------|-------|-------|-----------|
| CROPPING PATTERN - A | | | | | | | | | | | | |
| Jalaur Extension RJS | | | | | | | | | | | | |
| | | | | | | 2,260 | | 1st Paddy | | 2,170 | | 2nd Paddy |
| Monthly Rainfall | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 224.4 | 189.2 | 74.4 |
| Potential Evapo-transpiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 130.2 | 120.0 | 139.5 |
| CROPPING PATTERN - A | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | | | 1.00 | 1.12 | 1.18 | 1.17 | 1.15 |
| Crop Evapotranspiration (ET _{crop}) | | | | | | | | 133.3 | 130.7 | 153.0 | 140.0 | 160.4 |
| Percolation | | | | | | | | 62.0 | 60.0 | 62.0 | 60.0 | 62.0 |
| Effective Rainfall | | | | | | | | 202.1 | 133.1 | 157.1 | 131.7 | 74.4 |
| Area Factor | | | | | | | | 0.1 | 0.7 | 1.0 | 0.7 | 0.1 |
| Padding Water | | | | | | | | 75.0 | 75.0 | | | 150 |
| Nursery Water | | | | | | | | | | | | 0 |
| Net Irrigation Requirement | | | | | | | | 0 | 69 | 58 | 2 | 129 |
| 1st Paddy | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | | 1.12 | 1.17 | 1.15 | | | |
| Crop Evapotranspiration (ET _{crop}) | | | | 207.0 | 200.8 | 162.2 | 141.1 | 153.3 | | | | 864 |
| Percolation | | | | 45 | 46.5 | 45 | 46.5 | 46.5 | | | | 230 |
| Effective Rainfall | | | | 3.0 | 48.8 | 185.7 | 158.6 | 202.1 | | | | 598 |
| Area Factor | | | | 0.1 | 0.7 | 1.0 | 0.8 | 0.1 | | | | 150 |
| Padding Water | | | | 75 | 75 | 75 | 75 | 75 | | | | 19 |
| Nursery Water | | | | 4 | 8 | 7 | | | | | | 325 |
| Net Irrigation Requirement | | | | 97 | 199 | 28 | 0 | 0 | | | | |
| Estimated Overall Irrigation Efficiency | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Gross Irrigation Requirement (mm) | 0 | 0 | 0 | 485 | 995 | 142 | 0 | 0 | 345 | 290 | 8 | 2265.2 |
| (lit/sec/ha) | 0.00 | 0.00 | 0.00 | 1.87 | 3.72 | 0.55 | 0.00 | 0.00 | 1.29 | 1.08 | 0.03 | 0.00 |
| Irrigation Service Area (ha) | 0 | 0 | 0 | 2,260 | 2,260 | 2,260 | 2,260 | 2,50 | 2,170 | 2,170 | 2,170 | 2,170 |
| (m ³ /sec) | 0.00 | 0.00 | 0.00 | 4.23 | 8.40 | 1.24 | 0.00 | 0.00 | 2.80 | 2.35 | 0.07 | 0.00 |
| Seasonal Requirement (m ³ /sec) | J | F | M | A | M | J | J | A | S | O | N | D |
| | 0.00 | 0.00 | 0.00 | 4.23 | 8.40 | 1.24 | 0.00 | 0.00 | 2.80 | 2.35 | 0.07 | 0.00 |

Table A.4. 11 Estimated Irrigation Water Requirement in Paddy Field (Present Condition)

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept | Sept | Oct. | Nov. | Dec |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-----------|-------|-------|-------|-----------|
| CROPPING PATTERN - A | | | | | | | | | | | | | |
| Suague RIS | | | | | | | | | | | | | |
| | | | | | | 2,600 | | | 1st Paddy | | | 220 | 2nd Paddy |
| Monthly Rainfall | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 190.1 | 224.4 | 188.2 | 74.4 |
| Potential Evapo-transpiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 117.0 | 130.2 | 120.0 | 139.5 |
| CROPPING PATTERN - A | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.15 | | | | | | | | | | 1.08 | 1.14 | 1.18 |
| Crop Evapotranspiration (ET _{crop}) | 178.3 | | | | | | | | 60.0 | 60.0 | 140.0 | 136.5 | 163.9 |
| Percolation | 62.0 | 56.0 | | | | | | | 133.1 | 131.7 | 157.1 | 131.7 | 74.4 |
| Effective Rainfall | 1.6 | 5.9 | | | | | | | 0.3 | 0.3 | 0.9 | 1.00 | |
| Area Factor | 0.8 | 0.08 | | | | | | | 18.8 | 112.5 | 18.8 | | 150 |
| Pudding Water | | | | | | | | | 4.0 | 5.0 | 9.0 | | 18 |
| Nursery Water | | | | | | | | | 0 | 54 | 84 | | 501 |
| Net Irrigation Requirement | 199 | 4 | | | | | | | | | | | |
| 1st Paddy | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | 1.15 | 1.18 | 1.18 | 1.18 | 1.15 | | | |
| Crop Evapo-transpiration (ET _{crop}) | | | | | | 158.7 | 142.1 | 157.7 | 137.5 | 134.6 | | | 731 |
| Percolation | | | | | | 46.5 | 46.5 | 46.5 | 45 | 45 | | | 275 |
| Effective Rainfall | | | | | | 48.8 | 185.7 | 158.6 | 142.6 | 142.6 | | | 903 |
| Area Factor | | | | | | 0.3 | 0.8 | 0.9 | 0.5 | 0.1 | | | 150 |
| Pudding Water | | | | | | 18.8 | 75.0 | 56.3 | | | | | 19 |
| Nursery Water | | | | | | 4 | 8 | 7 | | | | | 112 |
| Net Irrigation Requirement | | | | | | 0 | 25 | 65 | 20 | 2 | | | |
| Estimated Overall Irrigation Efficiency | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Gross Irrigation Requirement (mm) | 796 | 17 | 0 | 0 | 100 | 259 | 259 | 0 | 80 | 9 | 215 | 334 | 642 |
| Gross Irrigation Requirement (lit/sec/ha) | 2.97 | 0.07 | 0.00 | 0.00 | 0.39 | 0.97 | 0.97 | 0.00 | 0.31 | 0.04 | 0.80 | 1.29 | 2.40 |
| Irrigation Service Area (ha) | 420 | 420 | | | | 2,600 | 2,600 | 2,600 | 2,600 | 2,600 | 420 | 420 | 420 |
| Irrigation Service Area (m ³ /sec) | 1.25 | 0.03 | 0.00 | 0.00 | 0.00 | 1.00 | 2.51 | 0.00 | 0.80 | 0.09 | 0.34 | 0.54 | 1.01 |
| Seasonal Requirement (m ³ /sec) | J | F | M | A | M | J | J | A | S | O | N | D | |
| | 1.25 | 0.03 | 0.00 | 0.00 | 0.00 | 1.00 | 2.51 | 0.00 | 0.80 | 0.43 | 0.54 | 1.01 | |

Table A.4. 12 Estimated Irrigation Water Requirement in Paddy Field (Present Condition)

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Sept. | Oct. | Nov. | Dec. | |
|--|-----------|-------|-------|-----------------|-------|-------|-------|-------|-------|---------------|-------|-------|-------|--|
| CROPPING PATTERN - A | | | | | | | | | | | | | | |
| Aganad RIS | | | | | | | | | | | | | | |
| | 2nd Paddy | | | 3,000 1st Paddy | | | | | | 550 2nd Paddy | | | | |
| Monthly Rainfall | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 190.1 | 224.4 | 188.2 | 74.4 | |
| Potential Evapo-transpiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 117.0 | 130.2 | 120.0 | 139.5 | |
| CROPPING PATTERN - A | | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | 1.00 | 1.10 | 1.18 | 1.13 | | |
| Crop Coefficient (Kc) | 1.10 | | | | | | | | 117.0 | 143.2 | 141.0 | 156.9 | 729 | |
| Crop Evapo-transpiration (ET _{crop}) | 34.1 | | | | | | | | 33.0 | 34.1 | 33.0 | 34.1 | 168 | |
| Percolation | 1.6 | | | | | | | | 133.1 | 157.1 | 131.7 | 74.4 | 498 | |
| Effective Rainfall | 0.1 | | | | | | | | 0.1 | 0.9 | 1.0 | 1.00 | 145 | |
| Area Factor | | | | | | | | | 108.8 | 36.3 | | | 18 | |
| Pudding Water | | | | | | | | | 16 | 53 | 47 | 126 | 267 | |
| Nursery Water | | | | | | | | | | | | | | |
| Net Irrigation Requirement | | | | | | | | | | | | | | |
| 1st Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | 1.00 | 1.10 | 1.12 | 1.15 | 1.15 | | | | | |
| Crop Evapo-transpiration (ET _{crop}) | | | | | 179.8 | 151.8 | 135.0 | 134.3 | 134.6 | | | | 754 | |
| Percolation | | | | | 34.1 | 33 | 34.1 | 33 | 33 | | | | 168 | |
| Effective Rainfall | | | | | 48.8 | 185.7 | 158.6 | 224.6 | 142.6 | | | | 760 | |
| Area Factor | | | | | 0.1 | 0.5 | 0.9 | 0.6 | 0.3 | | | | 145 | |
| Pudding Water | | | | | 54.4 | 72.5 | 18.1 | | | | | | 19 | |
| Nursery Water | | | | | 4 | 8 | 7 | | | | | | 87 | |
| Net Irrigation Requirement | | | | | 0 | 14 | 39 | 27 | 6 | | | | | |
| Estimated Overall Irrigation Efficiency | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | |
| Gross Irrigation Requirement (mm) | 85 | 0 | 0 | 0 | 47 | 131 | 89 | 0 | 21 | 52 | 176 | 158 | 419 | |
| Gross Irrigation Requirement (lit/sec/ha) | 0.32 | 0.00 | 0.00 | 0.00 | 0.18 | 0.51 | 0.33 | 0.00 | 0.08 | 0.20 | 0.66 | 0.61 | 1.56 | |
| Irrigation Service Area (ha) | 550 | | | | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 | 550 | 550 | 550 | 550 | |
| Irrigation Service Area (m ³ /sec) | 0.17 | | | | 0.53 | 1.52 | 1.00 | 0.00 | 0.24 | 0.11 | 0.36 | 0.33 | 0.86 | |
| Seasonal Requirement (m ³ /sec) | | J | F | M | A | M | J | J | A | S | O | N | D | |
| | | 0.17 | 0.00 | 0.00 | 0.00 | 0.53 | 1.52 | 1.00 | 0.00 | 0.35 | 0.36 | 0.33 | 0.86 | |

Table A.4.13 Estimated Irrigation Water Requirement in Paddy Field (Present Condition)

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept | Oct. | Nov. | Dec |
|---|-------|-------|-------|-------|-------|-------|-------|-----------|-------|-------|-------|-----------|
| CROPPING PATTERN - A | | | | | | | | | | | | |
| Sta. Barbara RIS | | | | | | | | | | | | |
| | | | | | | | 2,700 | | 880 | | | |
| | | | | | | | | 1st Paddy | | | | 2nd Paddy |
| Monthly Rainfall | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 190.1 | 224.4 | 188.2 |
| Potential Evapo-transpiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 117.0 | 130.2 | 120.0 |
| | | | | | | | | | | | | 1808.6 |
| CROPPING PATTERN - A | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.10 | | | | | | | | 1.00 | 1.10 | 1.18 | 1.13 |
| Crop Evapotranspiration (ET _{crop}) | 170.5 | | | | | | | | 117.0 | 143.2 | 141.0 | 156.9 |
| Percolation | 34.1 | | | | | | | | 33.0 | 34.1 | 33.0 | 34.1 |
| Effective Rainfall | 1.6 | | | | | | | | 133.1 | 157.1 | 131.7 | 74.4 |
| Area Factor | 0.1 | | | | | | | | 0.1 | 0.9 | 1.0 | 1.00 |
| Pudding Water | | | | | | | | | 108.8 | 36.3 | | 145 |
| Nursery Water | | | | | | | | | | 4.0 | 5.0 | 9.0 |
| Net Irrigation Requirement | 25 | | | | | | | | 16 | 53 | 47 | 126 |
| 1st Paddy | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | 1.00 | 1.10 | 1.12 | 1.15 | 1.15 | | | |
| Crop Evapotranspiration (ET _{crop}) | | | | | 179.8 | 151.8 | 135.0 | 153.3 | 134.6 | | | 744 |
| Percolation | | | | | 34.1 | 33 | 34.1 | 34.1 | 33 | | | 168 |
| Effective Rainfall | | | | | 48.8 | 185.7 | 158.6 | 224.6 | 142.6 | | | 760 |
| Area Factor | | | | | 0.1 | 0.5 | 0.9 | 0.6 | 0.3 | | | 145 |
| Pudding Water | | | | | 54.4 | 72.5 | 18.1 | | | | | 19 |
| Nursery Water | | | | 4 | 8 | | | | | | | 87 |
| Net Irrigation Requirement | | | | 0 | 14 | 39 | 27 | 0 | 6 | | | |
| Estimated Overall Irrigation Efficiency | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Gross Irrigation Requirement (mm) | 85 | 0 | 0 | 0 | 47 | 131 | 89 | 0 | 21 | 52 | 176 | 158 |
| Gross Irrigation Requirement (lit/sec/ha) | 0.32 | 0.00 | 0.00 | 0.00 | 0.18 | 0.51 | 0.33 | 0.00 | 0.08 | 0.20 | 0.66 | 0.61 |
| Irrigation Service Area (ha) | 880 | | | | 2,700 | 2,700 | 2,700 | 2,700 | 2,700 | 880 | 880 | 880 |
| Irrigation Service Area (m ³ /sec) | 0.28 | | | | 0.48 | 1.36 | 0.90 | 0.00 | 0.22 | 0.18 | 0.58 | 0.53 |
| Seasonal Requirement (m ³ /sec) | | J | F | M | A | M | J | J | A | S | O | N |
| | | 0.28 | 0.00 | 0.00 | 0.00 | 0.48 | 1.36 | 0.90 | 0.00 | 0.18 | 0.58 | 0.53 |
| | | | | | | | | | | | | 1.38 |

Table A.4.14 Irrigation Water Requirement

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Oct. | Nov. | Dec. |
|--|-----------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|-----------|-------|-------|
| CROPPING PATTERN - A Jalaur pro. RIS | | | | | | | | | | | | | |
| | 2nd Paddy | | | | | 1st Paddy | | | | | 2nd Paddy | | |
| | | | | | | 8,820 ha | | | | | 8,820 ha | | |
| Potential Evapo-transpiration | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 224.4 | 224.4 | 168.2 | 74.4 |
| | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 130.2 | 130.2 | 120.0 | 139.5 |
| CROPPING PATTERN - A 2nd Paddy | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.18 | 1.20 | | | | | | | | | 0.87 | 1.01 | 1.07 |
| Crop Evapo-transpiration (E _{crop}) | 182.9 | 184.8 | | | | | | | | 0.0 | 113.3 | 121.2 | 149.3 |
| Percolation | 62.0 | 56.0 | | | | | | | | 60.0 | 62.0 | 60.0 | 62.0 |
| Effective Rainfall * | 1.6 | 5.9 | | | | | | | | 150.3 | 150.3 | 143.2 | 67.2 |
| Area Factor | 1.00 | 0.60 | 0.10 | | | | | | | | 0.30 | 0.80 | 1.00 |
| Padding Water | | | | | | | | | | | 75.0 | 75.0 | |
| Net Irrigation Requirement | 243 | 141 | | | | | | | | 0 | 30 | 92 | 144 |
| 1st Paddy | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | 0.98 | 1.09 | 1.11 | 1.18 | 1.16 | | | |
| Crop Evapo-transpiration (E _{crop}) | | | | | 0.0 | 135.2 | 131.8 | 148.0 | 138.1 | 151.0 | | | |
| Percolation | | | | | 46.5 | 45 | 46.5 | 45.5 | 45 | 45 | | | |
| Effective Rainfall * | | | | | 43.9 | 168.8 | 151.8 | 129.7 | 142.6 | 150.3 | | | |
| Area Factor | | | | | 0.10 | 0.40 | 0.90 | 1.00 | 0.90 | 0.40 | 0.10 | | |
| Padding Water | | | | | 25.0 | 75.0 | 50.0 | | | | | | |
| Net Irrigation Requirement | | | | 0 | 3 | 35 | 69 | 15 | 36 | 18 | | | |
| Irrigation Efficiency | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Conveyance Efficiency 72% ** | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 |
| Application Efficiency 70% of paddy field ** | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| Gross Irrigation Requirement (mm) | 483 | 280 | 0 | 0 | 5 | 69 | 137 | 29 | 72 | 36 | 59 | 183 | 285 |
| (lit/sec/ha) | 1.80 | 1.16 | 0.00 | 0.00 | 0.02 | 0.26 | 0.51 | 0.11 | 0.28 | 0.14 | 0.22 | 0.70 | 1.06 |
| Irrigation Service Area (ha) | 8,820 | 8,820 | 8,820 | | 8,820 | 8,820 | 8,820 | 8,820 | 8,820 | 8,820 | 8,820 | 8,820 | 8,820 |
| Seasonal Requirement (m ³ /sec) | 15.90 | 10.20 | 0.00 | | 0.18 | 2.33 | 4.50 | 0.97 | 2.46 | 1.23 | 1.96 | 6.31 | 9.38 |
| | J | F | M | A | M | J | J | A | S | O | N | D | |
| | 15.90 | 10.20 | 0.00 | 0.00 | 0.18 | 2.33 | 4.50 | 0.97 | 2.46 | 3.19 | 6.21 | 9.38 | |

Table A.4.15 Irrigation Water Requirement

| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | | | | |
|---|-----------|-------|-------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|-------|-------|-------|---------|
| CROPPING PATTERN - A Jalour Extension RIS | 2nd Paddy | | | | | | | | | | | | | | | |
| | | | | | | | 2,620 | 1st Paddy | | | | | | | | |
| | ha | | | | | | | | | | | | | | | |
| Monthly Rainfall | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 443.2 | 120.1 | 234.4 | 443.2 | 190.1 | 224.4 | 188.2 | 34.4 | 2,423 |
| Potential Evapotranspiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 128.0 | 120.9 | 133.3 | 117.0 | 130.2 | 133.3 | 117.0 | 130.2 | 120.0 | 139.5 | 2,072.1 |
| CROPPING PATTERN - A | | | | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.15 | 0.00 | | | | | | | | | 1.00 | 1.08 | 1.10 | 1.10 | 1.15 | |
| Crop Evapotranspiration (ET _{crop}) | 178.3 | 0.0 | | | | | | | | | 133.3 | 126.4 | 143.2 | 132.0 | 150.4 | 874 |
| Precipitation | 62.0 | 56.0 | | | | | | | | | 62.0 | 60.0 | 62.0 | 60.0 | 62.0 | 424 |
| Effective Rainfall* | 1.6 | 5.9 | | | | | | | | | 179.7 | 142.6 | 159.3 | 141.2 | 67.7 | 600 |
| Area Factor | 0.17 | 0.30 | | | | | | | | | 0.17 | 0.30 | 0.33 | 0.33 | 0.33 | |
| Padding Water | | | | | | | | | | | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 150 |
| Net Irrigation Requirement | 41 | 0 | | | | | | | | | 11 | 47 | 47 | 47 | 77 | 365 |
| 1st Paddy | | | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | 1.00 | 1.00 | 1.10 | 1.10 | 1.15 | 1.15 | 0.00 | | | | | | |
| Crop Evapotranspiration (ET _{crop}) | | | | 207 | 194.2 | 151.8 | 133.0 | 153.3 | 134.6 | 0.0 | | | | | | 924 |
| Precipitation | | | | 45 | 48.5 | 45 | 45 | 46.5 | 45 | 46.5 | | | | | | 321 |
| Effective Rainfall* | | | | 3.0 | 43.9 | 168.8 | 151.8 | 179.7 | 142.6 | 152.3 | | | | | | 841 |
| Area Factor | | | | 0.17 | 0.30 | 0.33 | 0.33 | 0.50 | 0.17 | 0.00 | | | | | | 150 |
| Padding Water | | | | 50.0 | 50.0 | 50.0 | | | | | | | | | | 150 |
| Net Irrigation Requirement | | | | 51 | 123 | 65 | 25 | 20 | 6 | 0 | | | | | | 278 |
| Irrigation Efficiency | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | |
| Conveyance Efficiency 72 % ** | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | |
| Application Efficiency 20 % of paddy field ** | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | |
| Gross Irrigation Requirement | 80 | 0 | 0 | 101 | 245 | 128 | 45 | 29 | 12 | 0 | 22 | 93 | 173 | 84 | 153 | 1157.7 |
| Irrigation Service Area | 0.20 | 0.00 | 0.00 | 0.39 | 0.91 | 0.50 | 0.17 | 0.07 | 0.05 | 0.00 | 0.09 | 0.36 | 0.64 | 0.32 | 0.57 | |
| Service Area | 2,620 | | | 2,620 | 2,620 | 2,620 | 2,620 | 2,620 | 2,620 | | 2,620 | 2,620 | 2,620 | 2,620 | 2,620 | |
| Seasonal Requirement | 0.29 | 0.00 | 0.00 | 1.62 | 2.39 | 1.30 | 0.45 | 0.21 | 0.12 | 0.00 | 0.22 | 0.94 | 1.62 | 0.85 | 1.52 | |

J F M A M J J A S O N D
0.29 0.00 0.00 1.62 2.39 1.30 0.45 0.21 0.12 0.00 0.22 0.94 1.62 0.85 1.52

Table A.4.16 Irrigation Water Requirement

| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Oct | Nov | Dec |
|--|-----------|-------|-------|-------|-------|-----------------------|-------|-------|-------|-------|---------------------|-------|-------|-------|
| CROPPING PATTERN - A Sangua RIS | | | | | | | | | | | | | | |
| | 2nd Paddy | | | | | 1st Paddy 2,060 ha | | | | | 2nd Paddy 600 ha | | | |
| Potential Evapo-transpiration | 1.6 | 5.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 224.4 | 188.2 | 224.4 | 188.2 | 74.4 |
| | 155.0 | 154.0 | 218.9 | 207.0 | 179.8 | 138.0 | 120.9 | 233.3 | 117.0 | 130.2 | 120.0 | 130.2 | 120.0 | 139.5 |
| CROPPING PATTERN - A 2nd Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.10 | 1.15 | 1.15 | | | | | | | | | 1.00 | 1.08 | 1.10 |
| Crop Evapo-transpiration (ET _{crop}) | 170.5 | 177.1 | 246.0 | | | | | | | | | 130.2 | 129.6 | 133.5 |
| Precipitation | 62.0 | 56.0 | 62.0 | | | | | | | | | 62.0 | 60.0 | 62.0 |
| Effective Rainfall * | 1.5 | 5.9 | 0.0 | | | | | | | | | 150.3 | 141.2 | 67.7 |
| Area Factor | 0.83 | 0.50 | 0.17 | | | | | | | | | 0.17 | 0.50 | 0.83 |
| Padding Water | | | | | | | | | | | | 50.0 | 50.0 | 50.0 |
| Net Irrigation Requirement | 132 | 114 | 52 | | | | | | | | | 16 | 49 | 154 |
| 1st Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | 1.00 | 1.08 | 1.10 | 1.10 | 1.15 | 1.15 | | | |
| Crop Evapo-transpiration (ET _{crop}) | | | | | | 138.0 | 130.6 | 146.5 | 128.2 | 149.7 | 138.0 | | | |
| Precipitation | | | | | | 45 | 46.5 | 36.3 | 45 | 45 | 45 | | | |
| Effective Rainfall * | | | | | | 168.8 | 131.8 | 179.1 | 142.6 | 150.3 | 141.7 | | | |
| Area Factor | | | | | | 0.17 | 0.50 | 0.83 | 0.83 | 0.50 | 0.17 | | | |
| Padding Water | | | | | | 50.0 | 50.0 | 50 | | | | | | |
| Net Irrigation Requirement | | | | | | 11 | 38 | 53 | 26 | 22 | 7 | | | 156 |
| Irrigation Efficiency | 0.50 | 0.50 | 0.50 | | | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| Conveyance Efficiency 72% ** | 0.72 | 0.72 | 0.72 | | | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 |
| Application Efficiency 70% of paddy field ** | 0.70 | 0.70 | 0.70 | | | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 |
| Gross Irrigation Requirement (mm) | 380 | 225 | 104 | | | 22 | 75 | 104 | 51 | 44 | 14 | 31 | 98 | 326 |
| (in/sect/ha) | 142 | 89 | 41 | | | 0.08 | 0.28 | 0.40 | 0.20 | 0.17 | 0.05 | 0.12 | 0.38 | 1.27 |
| Irrigation Service Area (ha) | 600 | 600 | 600 | | | 2,960 | 2,960 | 2,960 | 2,960 | 2,960 | 2,960 | 600 | 600 | 600 |
| Seasonal Requirement (m/Sec) | 0.85 | 0.56 | 0.23 | | | 0.23 | 0.83 | 1.15 | 0.59 | 0.50 | 0.16 | 0.07 | 0.23 | 0.73 |
| | J | F | M | A | M | J | J | A | S | O | N | D | | |
| | 0.85 | 0.56 | 0.23 | 0.00 | 0.30 | 0.75 | 0.83 | 1.15 | 0.59 | 0.57 | 0.30 | 0.73 | | |

Table A.4.17 Irrigation Water Requirement

| | Jan | Feb | Mar | Apr | May | June | July | Aug | Sept | Oct | Nov | Dec | | |
|---|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| CROPPING PATTERN - A | | | | | | | | | | | | | | |
| Aganias RIS | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Monthly Rainfall | 16 | 5.9 | 0.9 | 3.0 | 48.8 | 337.6 | 226.6 | 449.2 | 190.1 | 214.4 | 188.2 | 224.4 | 188.2 | 24.4 |
| Potential Evapotranspiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 120.9 | 133.3 | 117.0 | 133.2 | 120.0 | 139.2 | 120.0 | 139.5 |
| CROPPING PATTERN - A | | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.10 | 1.15 | 1.15 | | | | | | | | 1.00 | 1.08 | 1.10 | |
| Crop Evapotranspiration (ET _{crop}) | 170.5 | 177.1 | 245.0 | | | | | | | | 130.2 | 129.6 | 153.5 | 100.7 |
| Percolation | 34.1 | 30.8 | 34.1 | | | | | | | | 34.1 | 33.0 | 34.1 | 200 |
| Effective Rainfall * | 1.6 | 5.9 | 0.0 | | | | | | | | 150.3 | 141.2 | 67.2 | 36.7 |
| Area Factor | 0.83 | 0.90 | 0.17 | | | | | | | | 0.17 | 0.50 | 0.83 | |
| Padding Water | | | | | | | | | | | 49 | 48 | 48 | 145 |
| Net Irrigation Requirement | 160 | 101 | 48 | | | | | | | | 0 | 35 | 139 | 80.2 |
| 1st Paddy | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | 1.00 | 1.08 | 1.10 | 1.10 | 1.15 | 1.15 | | | |
| Crop Evapotranspiration (ET _{crop}) | | | | | | 138.0 | 130.5 | 136.6 | 128.7 | 149.7 | 139.0 | | | 83.2 |
| Percolation | | | | | | 33.0 | 34.1 | 34.1 | 33.0 | 33.0 | 33.0 | | | 200.2 |
| Effective Rainfall * | | | | | | 168.6 | 151.8 | 179.2 | 142.6 | 150.3 | 141.2 | | | 93.4 |
| Area Factor | | | | | | 0.17 | 0.50 | 0.83 | 0.83 | 0.50 | 0.17 | | | |
| Padding Water | | | | | | 49 | 48 | 48 | | | | | | 145 |
| Net Irrigation Requirement | | | | | | 9 | 30 | 41 | 16 | 16 | 5 | | | 11.7 |
| Irrigation Efficiency | 0.50 | 0.50 | 0.50 | | | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | | | |
| Conveyance Efficiency 72 % ** | 0.72 | 0.72 | 0.72 | | | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | | | |
| Application Efficiency 70 % of paddy field ** | 0.70 | 0.70 | 0.70 | | | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | | | |
| Gross Irrigation Requirement 1 | (mm) | 334 | 24 | 94 | | 17 | 56 | 81 | 31 | 37 | 10 | | | 236 |
| | (litres/ha) | 1.25 | 0.83 | 0.35 | | 0.07 | 0.23 | 0.30 | 0.12 | 0.13 | 0.04 | | | 0.87 |
| Irrigation Service Area | (ha) | 579 | 300 | 509 | | 4,290 | 4,290 | 4,290 | 4,290 | 4,290 | 4,290 | | | 500 |
| Seasonal Requirement 1 | (m ³ /sec) | 0.62 | 0.41 | 0.18 | | 0.29 | 0.97 | 1.29 | 0.52 | 0.53 | 0.17 | | | 0.61 |
| Vegetable | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 0.84 | 0.78 | | | | | | | | | 0.50 | 0.64 | 0.83 | |
| Crop Evapotranspiration (ET _{crop}) | 130.2 | 120.1 | | | | | | | | | 65.1 | 76.8 | 115.8 | 50.8 |
| Effective Rainfall * | 0.0 | 0.0 | | | | | | | | | 60.0 | 74.0 | 33.0 | 18.7 |
| Area Factor | 0.70 | 0.10 | | | | | | | | | 0.30 | 0.90 | 1.00 | |
| Net Irrigation Requirement | | 91 | 12 | | | | | | | | 1.53 | 3 | 63 | 170 |
| Irrigation Efficiency | 0.50 | 0.50 | | | | | | | | | 0.50 | 0.50 | 0.50 | |
| Conveyance Efficiency 72 % ** | 0.72 | 0.72 | | | | | | | | | 0.72 | 0.72 | 0.72 | |
| Application Efficiency 70 % ** | 0.70 | 0.70 | | | | | | | | | 0.70 | 0.70 | 0.70 | |
| Gross Irrigation Requirement 2 | (mm) | 181 | 24 | | | | | | | | 3 | 5 | 125 | 337.3 |
| | (litres/ha) | 0.68 | 0.10 | | | | | | | | 0.01 | 0.02 | 0.47 | |
| Irrigation Service Area | (ha) | 290 | 290 | | | | | | | | 200 | 200 | 200 | |
| Seasonal Requirement 2 | (m ³ /sec) | 0.14 | 0.02 | | | | | | | | 0.00 | 0.00 | 0.09 | |
| CROPPING PATTERN - D | | | | | | | | | | | | | | |
| Perennial Fruits Crops | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 0.76 | 0.76 | 0.74 | 0.74 | 0.74 | 0.71 | 0.71 | 0.71 | 0.71 | | 0.74 | 0.74 | 0.74 | |
| Crop Evapotranspiration (ET _{crop}) | 117.8 | 112.0 | 158.3 | 133.2 | 133.2 | 98.0 | 83.8 | 94.6 | 83.8 | | 96.3 | 96.3 | 88.8 | 1,322 |
| Effective Rainfall * | 0.0 | 0.0 | 0.0 | 0.0 | 37.0 | 120.0 | 83.0 | 113.0 | 75.0 | | 100.0 | 25.0 | 88.0 | 675 |
| Area Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | |
| Net Irrigation Requirement | | 118 | 112 | 158 | 133 | 96 | 0 | 1 | 0 | | 0 | 21 | 1 | 675 |
| Irrigation Efficiency | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | | 0.61 | 0.61 | 0.61 | |
| Conveyance Efficiency 72 % ** | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | | 0.72 | 0.72 | 0.72 | |
| Application Efficiency 85 % ** | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | | 0.85 | 0.85 | 0.85 | |
| Gross Irrigation Requirement 3 | (mm) | 192 | 191 | 259 | 250 | 157 | 0 | 1 | 0 | | 13 | 0 | 35 | 1,100.4 |
| | (litres/ha) | 0.72 | 0.79 | 0.97 | 0.97 | 0.59 | 0.00 | 0.01 | 0.00 | | 0.05 | 0.00 | 0.13 | 0.00 |
| Irrigation Service Area | (ha) | 70 | 70 | 70 | 70 | 70 | 70 | 70 | 70 | | 70 | 70 | 70 | |
| Seasonal Requirement 3 | (m ³ /sec) | 0.05 | 0.06 | 0.07 | 0.07 | 0.04 | 0.00 | 0.00 | 0.00 | | 0.00 | 0.01 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Seasonal Requirement 1+2+3 (m ³ /sec) | 0.81 | 0.49 | 0.24 | 0.07 | 0.04 | 0.29 | 0.97 | 1.29 | 0.52 | 0.53 | 0.17 | 0.04 | 0.15 | 0.61 |
| | J | F | M | A | M | J | J | A | S | O | N | D | | |
| | 0.81 | 0.49 | 0.24 | 0.07 | 0.04 | 0.29 | 0.97 | 1.29 | 0.52 | 0.53 | 0.17 | 0.04 | 0.15 | 0.61 |

Table A.4.18 Irrigation Water Requirement

| | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Oct. | Nov. | Dec. | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--|---|---|---|---|---|---|---|---|---|---|---|---|--|------|------|------|------|------|------|------|------|------|------|------|------|
| CROPPING PATTERN - A Sta. Barbara RIS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monthly Rainfall | 1.6 | 3.9 | 0.0 | 3.0 | 48.8 | 337.6 | 226.8 | 419.2 | 100.1 | 224.4 | 188.7 | 224.4 | 188.2 | 74.4 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Potential Evapotranspiration | 155.0 | 154.0 | 213.9 | 207.0 | 179.8 | 138.0 | 126.9 | 113.3 | 117.0 | 130.2 | 120.0 | 130.2 | 130.0 | 132.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CROPPING PATTERN - A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2nd Paddy | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 1.10 | 1.15 | 1.15 | | | | | | | | 1.00 | 1.08 | 1.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crop Evapotranspiration (ET _{crop}) | 170.5 | 177.1 | 246.0 | | | | | | | | 130.2 | 129.6 | 153.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Percolation | 34.1 | 39.8 | 34.1 | | | | | | | | 34.1 | 33.0 | 34.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Effective Rainfall * | 1.6 | 3.9 | 0.0 | | | | | | | | 150.3 | 143.2 | 67.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Area Factor | 0.83 | 0.50 | 0.17 | | | | | | | | 0.17 | 0.50 | 0.83 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddy Water | | | | | | | | | | | 49 | 48 | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Net Irrigation Requirement | 168 | 191 | 48 | | | | | | | | 11 | 35 | 139 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1st Paddy | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | 1.00 | 1.08 | 1.10 | 1.10 | 1.15 | 1.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crop Evapotranspiration (ET _{crop}) | | | | | | 138.0 | 126.6 | 146.6 | 128.7 | 149.7 | 158.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Percolation | | | | | | 33.0 | 34.1 | 34.1 | 33.0 | 33.0 | 33.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Effective Rainfall * | | | | | | 168.8 | 151.8 | 179.7 | 152.6 | 150.3 | 143.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Area Factor | | | | | | 0.47 | 0.50 | 0.83 | 0.83 | 0.50 | 0.17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Paddy Water | | | | | | 49 | 48 | 48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Net Irrigation Requirement | | | | | | 9 | 30 | 41 | 16 | 16 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Irrigation Efficiency | 0.50 | 0.50 | 0.50 | | | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conveyance Efficiency 72 % ** | 0.72 | 0.72 | 0.72 | | | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Application Efficiency 30 % of paddy field ** | 0.70 | 0.70 | 0.70 | | | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | 0.70 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gross Irrigation Requirement 1 (mm) | 334 | 290 | 24 | | | 17 | 60 | 81 | 31 | 32 | 19 | 21 | 69 | 276 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (lit/sec/ha) | 1.25 | 0.83 | 0.35 | | | 0.07 | 0.23 | 0.30 | 0.12 | 0.12 | 0.04 | 0.08 | 0.27 | 1.03 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Irrigation Service Area (ha) | 1.00 | 1.00 | 1.00 | | | 2.960 | 2.960 | 2.960 | 2.960 | 2.960 | 2.960 | 1.000 | 1.000 | 1.000 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seasonal Requirement 1 (m ³ /sec) | 1.25 | 0.83 | 0.35 | | | 0.20 | 0.67 | 0.89 | 0.35 | 0.37 | 0.11 | 0.08 | 0.27 | 1.03 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vegetable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | | | | | | | | | | | | 0.50 | 0.50 | 0.83 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crop Evapotranspiration (ET _{crop}) | | | | | | | | | | | | 59.1 | 76.8 | 115.8 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Percolation | | | | | | | | | | | | 50.0 | 24.9 | 53.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Effective Rainfall * | | | | | | | | | | | | 0.30 | 0.90 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Area Factor | | | | | | | | | | | | 0.30 | 0.90 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Net Irrigation Requirement | | | | | | | | | | | | 1.53 | 3 | 63 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Irrigation Efficiency | | | | | | | | | | | | 0.50 | 0.50 | 0.50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conveyance Efficiency 72 % ** | | | | | | | | | | | | 0.72 | 0.72 | 0.72 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Application Efficiency 70 % ** | | | | | | | | | | | | 0.70 | 0.70 | 0.70 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gross Irrigation Requirement 2 (mm) | | | | | | | | | | | | 3 | 5 | 125 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (lit/sec/ha) | | | | | | | | | | | | 0.01 | 0.02 | 0.47 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Irrigation Service Area (ha) | | | | | | | | | | | | 300 | 300 | 300 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seasonal Requirement 2 (m ³ /sec) | | | | | | | | | | | | 0.90 | 0.90 | 0.14 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CROPPING PATTERN - D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perennial Fruits Crops | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crop Coefficient (Kc) | 0.76 | 0.76 | 0.74 | 0.74 | 0.74 | 0.71 | 0.71 | 0.71 | 0.71 | 0.71 | 0.74 | 0.74 | 0.74 | 0.74 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Crop Evapotranspiration (ET _{crop}) | 117.8 | 117.0 | 138.3 | 152.2 | 133.1 | 98.0 | 85.8 | 94.6 | 83.1 | | 96.3 | 96.3 | 88.8 | 132.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Effective Rainfall * | 0.0 | 0.0 | 0.0 | 0.0 | 37.0 | 190.0 | 85.0 | 115.0 | 25.0 | | 100.0 | 75.0 | 88.0 | 62.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Area Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | 1.00 | 1.00 | 1.00 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Net Irrigation Requirement | 118 | 117 | 158 | 153 | 96 | 0 | 3 | 0 | 8 | | 0 | 21 | 1 | 67.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Irrigation Efficiency | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | 0.61 | | 0.61 | 0.61 | 0.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conveyance Efficiency 72 % ** | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | | 0.72 | 0.72 | 0.72 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Application Efficiency 85 % ** | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | | 0.85 | 0.85 | 0.85 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gross Irrigation Requirement 3 (mm) | 122 | 191 | 259 | 250 | 157 | 0 | 3 | 0 | 13 | | 0 | 35 | 1 | 1100.3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (lit/sec/ha) | 0.72 | 0.79 | 0.77 | 0.77 | 0.59 | 0.00 | 0.01 | 0.00 | 0.05 | | 0.00 | 0.13 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Irrigation Service Area (ha) | 4 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | | 40 | 40 | 40 | 40 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seasonal Requirement 3 (m ³ /sec) | 0.93 | 0.93 | 0.94 | 0.94 | 0.94 | 0.00 | 0.00 | 0.00 | 0.00 | | 0.00 | 0.04 | 0.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gross Irrigation Requirement 1+2+3 (mm) | 7.8 | 415 | 353 | 250 | 157 | 17 | 62 | 81 | 45 | 32 | 19 | 24 | 109 | 260 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (lit/sec/ha) | 2.64 | 1.72 | 1.32 | 0.97 | 0.52 | 0.07 | 0.23 | 0.30 | 0.17 | 0.12 | 0.04 | 0.09 | 0.42 | 1.50 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Seasonal Requirement 1+2+3 (m ³ /sec) | 1.48 | 0.89 | 0.39 | 0.04 | 0.02 | 0.20 | 0.67 | 0.89 | 0.36 | 0.37 | 0.11 | 0.08 | 0.28 | 1.17 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th></th> <th>J</th> <th>F</th> <th>M</th> <th>A</th> <th>M</th> <th>J</th> <th>J</th> <th>A</th> <th>S</th> <th>O</th> <th>N</th> <th>D</th> </tr> </thead> <tbody> <tr> <td></td> <td>1.48</td> <td>0.89</td> <td>0.39</td> <td>0.04</td> <td>0.02</td> <td>0.20</td> <td>0.67</td> <td>0.89</td> <td>0.36</td> <td>0.45</td> <td>0.39</td> <td>1.17</td> </tr> </tbody> </table> | | | | | | | | | | | | | | | | J | F | M | A | M | J | J | A | S | O | N | D | | 1.48 | 0.89 | 0.39 | 0.04 | 0.02 | 0.20 | 0.67 | 0.89 | 0.36 | 0.45 | 0.39 | 1.17 |
| | J | F | M | A | M | J | J | A | S | O | N | D | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1.48 | 0.89 | 0.39 | 0.04 | 0.02 | 0.20 | 0.67 | 0.89 | 0.36 | 0.45 | 0.39 | 1.17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table A.4.19 Crop Production of Without and With Project Conditions

| | Without Project | | | With Project | | | Incremental Production 1000ton |
|-------------------------|-----------------|---------------|---------------------|-----------------|---------------|---------------------|--------------------------------------|
| | Cropped Area | Unit Yield | Total Production | Cropped Area | Unit Yield | Total Production | |
| | ha | ton/ha | 1000 ton | ha | ton/ha | 1000 ton | |
| Jalaur Proper | | | | | | | |
| 1st Paddy Irrigated | 5,910 | 3.40 | 20.09 | 8,820 | 5.00 | 44.10 | |
| 2nd Paddy Irrigated | 4,620 | 3.30 | 15.25 | 8,820 | 5.00 | 44.10 | |
| 1st Paddy Rainfed | 2,600 | 2.24 | 5.82 | 0 | | | |
| 2nd Paddy Rainfed | 1,940 | 2.24 | 4.35 | 0 | | | |
| Paddy Total | 15,070 | | 45.51 | 17,640 | | 88.20 | 42.69 |
| Vegetables | 0 | | | 0 | 6.00 | 0.00 | 0.00 |
| Tree Fruits | 0 | | | 0 | 4.00 | 0.00 | |
| Total | 15,070 | | | 17,640 | | | |
| Jalaur Extension | | | | | | | |
| 1st Paddy Irrigated | 2,260 | 3.70 | 8.36 | 2,620 | 5.00 | 13.10 | |
| 2nd Paddy Irrigated | 2,170 | 3.43 | 7.44 | 2,620 | 5.00 | 13.10 | |
| 1st Paddy Rainfed | 360 | 2.24 | 0.81 | 0 | | | |
| 2nd Paddy Rainfed | 450 | 2.24 | 1.01 | 0 | | | |
| Paddy Total | 5,240 | | 17.62 | 5,240 | | 26.20 | 8.58 |
| Vegetables | 0 | | | 0 | 6.00 | 0.00 | 0.00 |
| Tree Fruits | 0 | | | 0 | 4.00 | 0.00 | |
| Total | 5,240 | | | 5,240 | | | |
| Suague | | | | | | | |
| 1st Paddy Irrigated | 2,600 | 3.64 | 9.46 | 2,960 | 5.00 | 14.80 | |
| 2nd Paddy Irrigated | 420 | 3.41 | 1.43 | 600 | 5.00 | 3.00 | |
| 1st Paddy Rainfed | 360 | 2.24 | 0.81 | 0 | | | |
| 2nd Paddy Rainfed | 610 | 2.24 | 1.37 | 610 | 3.00 | 1.83 | |
| Paddy Total | 3,990 | | 13.07 | 4,170 | | 19.63 | 6.56 |
| Vegetables | 0 | | | 0 | 6.00 | 0.00 | 0.00 |
| Tree Fruits | 0 | | | 0 | 4.00 | 0.00 | |
| Total | 3,990 | | | 4,170 | | | |
| Aganan | | | | | | | |
| 1st Paddy Irrigated | 3,000 | 3.56 | 10.68 | 4,290 | 5.00 | 21.45 | |
| 2nd Paddy Irrigated | 550 | 3.40 | 1.87 | 500 | 5.00 | 2.50 | |
| 1st Paddy Rainfed | 1,360 | 2.24 | 3.05 | 0 | 3.00 | 0.00 | |
| 2nd Paddy Rainfed | 900 | 2.24 | 2.02 | 900 | 3.00 | 2.70 | |
| Paddy Total | 5,810 | | 17.61 | 5,690 | | 26.65 | 9.04 |
| Vegetables | 0 | | | 200 | 6.00 | 1.20 | 1.20 |
| Tree Fruits | 0 | | | 70 | 4.00 | 0.28 | 0.28 |
| Total | 5,810 | | | 5,960 | | | |
| Sta. Barbara | | | | | | | |
| 1st Paddy Irrigated | 2,700 | 3.86 | 10.42 | 2,960 | 5.00 | 14.80 | |
| 2nd Paddy Irrigated | 880 | 3.56 | 3.13 | 1,000 | 5.00 | 5.00 | |
| 1st Paddy Rainfed | 300 | 2.24 | 0.67 | 0 | | | |
| 2nd Paddy Rainfed | 100 | 2.24 | 0.22 | 100 | 3.00 | 0.30 | |
| Paddy Total | 3,980 | | 14.45 | 4,060 | | 20.10 | 5.65 |
| Vegetables | 0 | | | 300 | 6.00 | 1.80 | 1.80 |
| Tree Fruits | 0 | | | 40 | 4.00 | 0.16 | 0.16 |
| Total | 3,980 | | | 4,400 | | | |
| Total | | | | | | | |
| 1st Paddy Irrigated | 16,470 | | 59.02 | 21,650 | | 108.25 | |
| 2nd Paddy Irrigated | 8,640 | | 29.12 | 13,540 | | 67.70 | |
| 1st Paddy Rainfed | 4,980 | | 11.16 | 0 | | 0.00 | |
| 2nd Paddy Rainfed | 4,000 | | 8.96 | 1,610 | | 4.83 | |
| Paddy Total | 34,090 | | 108.26 | 36,800 | | 180.78 | 72.52 |
| Vegetables | 0 | | 0.00 | 500 | | 3.00 | 3.00 |
| Tree Fruits | 0 | | 0.00 | 110 | | 0.44 | 0.44 |
| Total | 34,090 | | | 37,410 | | | |

Table A.4.20 Production Cost under With Project Condition

| Crop Category | 1st Paddy Irrigated | | | 2nd Paddy Irrigated | | | Vegetables (Eggplant) | | | |
|------------------------|---------------------|-------|-------|---------------------|-------|-------|-----------------------|-------|-------|--------|
| | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value | |
| | | peso | peso | | peso | peso | | peso | peso | |
| Seeds | kg | 100 | 15 | 1,500 | 100 | 15 | 1,500 | 0.25 | 4,000 | 1,000 |
| Fertilizer | | | | | | | | | | |
| N | kg | 100 | 17 | 1,700 | 120 | 17 | 2,040 | 230 | 17 | 3,910 |
| P2O5 | kg | 35 | 22 | 770 | 35 | 22 | 770 | 70 | 22 | 1,540 |
| K2O | kg | 35 | 11 | 385 | 35 | 11 | 385 | 90 | 11 | 990 |
| 14-14-14 | bag | 5 | 325 | | 5 | 325 | | 10 | 325 | |
| Urea | bag | 3 | 340 | | 4 | 340 | | 7 | 340 | |
| Chemicals | | | | | | | | | | |
| Herbicide | l | 1 | 400 | 400 | 1 | 400 | 400 | 0.5 | 400 | 200 |
| Insecticide | l | 1.5 | 500 | 750 | 1.5 | 500 | 750 | 2 | 500 | 1,000 |
| Fungicide | l | 0.5 | 500 | 250 | 0.5 | 500 | 250 | 2 | 500 | 1,000 |
| Others | | | | 250 | | | 250 | | | 100 |
| Labor | | | | | | | | | | |
| Hired | man-day | 33 | 80 | 2,640 | 35 | 80 | 2,800 | 52 | 80 | 4,160 |
| Family | man-day | 31 | 0 | 0 | 32 | 0 | 0 | 43 | 0 | 0 |
| Machine/Tool/Animal | | | | | | | | | | |
| Handtractor | | | | 1,600 | | | 1,600 | | | 1,200 |
| Carabao | | | | 0 | | | 0 | | | 0 |
| Thresher | | | | 500 | | | 500 | | | 0 |
| Blower | | | | 250 | | | 250 | | | 0 |
| Pump | | | | 100 | | | 100 | | | 50 |
| Others | | | | 150 | | | 150 | | | 100 |
| Fuel/Oil | | | | 200 | | | 300 | | | 200 |
| Irrigation Service Fee | peso | | | 800 | | | 1,200 | | | 600 |
| Harvesters Share | peso | | | 2,360 | | | 2,440 | | | 0 |
| Land Lease | peso | | | 400 | | | 400 | | | 400 |
| Land Tax | peso | | | 140 | | | 140 | | | 140 |
| Interest | Peso | | | 570 | | | 600 | | | 770 |
| Total | Peso | | | 15,715 | | | 16,825 | | | 17,360 |

| Crop Category | Perennial Fruits (Mango) | | | | | | | | | |
|----------------------------|--------------------------|-------|-------|------------|-------|-------|--------------|-------|-------|--------|
| | 1st year | | | 2 - 5 year | | | Bearing year | | | |
| | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value | |
| | | peso | peso | | peso | peso | | peso | peso | |
| Seedling | tree | 100 | 70 | 7,000 | 5 | 70 | 350 | 5 | 70 | 350 |
| Inter crop seed (Mungbean) | kg | 20 | 50 | 1,000 | 20 | 50 | 1,000 | | | 0 |
| Fertilizer | | | | | | | | | | |
| N | kg | 60 | 17 | 1,020 | 150 | 17 | 2,550 | 150 | 17 | 2,550 |
| P2O5 | kg | 60 | 22 | 1,320 | 100 | 22 | 2,200 | 100 | 22 | 2,200 |
| K2O | kg | 40 | 11 | 440 | 60 | 11 | 660 | 60 | 11 | 660 |
| 14-14-14 | bag | | 325 | | | 325 | | | 325 | |
| Urea | bag | | 340 | | | 340 | | | 340 | |
| Chemicals | | | | | | | | | | |
| Herbicide | l | 1.0 | 400 | 400 | 1.0 | 400 | 400 | 1.0 | 400 | 400 |
| Insecticide | l | 1.0 | 500 | 500 | 1.0 | 500 | 500 | 1.0 | 500 | 500 |
| Fungicide | l | 1.0 | 500 | 500 | 1.0 | 500 | 500 | 1.0 | 500 | 500 |
| Others | | | | 300 | | | 300 | | | 300 |
| Labor | | | | | | | | | | |
| Hired | man-day | 60 | 80 | 4,800 | 42 | 80 | 3,360 | 66 | 80 | 5,280 |
| Family | man-day | 50 | 0 | 0 | 33 | 0 | 0 | 55 | 0 | 0 |
| Machine/Tool/Animal | | | | | | | | | | |
| Handtractor | | | | 1,200 | | | 1,000 | | | 1,000 |
| Carabao | | | | 0 | | | 0 | | | 0 |
| Thresher | | | | 300 | | | 300 | | | 300 |
| Blower | | | | 150 | | | 150 | | | 150 |
| Pump | | | | 50 | | | 50 | | | 50 |
| Others | | | | 100 | | | 100 | | | 100 |
| Fuel/Oil | | | | 200 | | | 200 | | | 200 |
| Irrig. Service Fee | peso | | | 500 | | | 500 | | | 500 |
| Harvesters' Share | peso | | | | | | | | | |
| Land Lease | peso | | | 400 | | | 400 | | | 400 |
| Land Tax | peso | | | 140 | | | 140 | | | 140 |
| Interest | Peso | | | 610 | | | 660 | | | 710 |
| Total | Peso | | | 20,930 | | | 15,320 | | | 16,290 |

Average cost of mango period of 30 years:

16,315

Table A.4.21 Production Cost under Without Project Condition

| Crop Category | 1st Paddy Irrigated | | | 2nd Paddy Irrigated | | | 1st Paddy Rainfed | | | |
|------------------------|---------------------|-------|-------|---------------------|-------|-------|-------------------|-------|-------|---------------|
| | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value | |
| | | peso | peso | | peso | peso | | peso | peso | |
| Seeds | kg | 200 | 11 | 2,200 | 200 | 11 | 2,200 | 200 | 11 | 2,200 |
| Fertilizer | | | | | | | | | | |
| N | kg | 93 | 17 | 1,581 | 93 | 17 | 1,581 | 40 | 17 | 680 |
| P2O5 | kg | 28 | 22 | 616 | 28 | 22 | 616 | 25 | 22 | 550 |
| K2O | kg | 13 | 11 | 143 | 13 | 11 | 143 | 10 | 11 | 110 |
| 14-14-14 | bag | | 325 | | | 325 | | 325 | | |
| Urea | bag | | 340 | | | 340 | | 340 | | |
| Chemicals | | | | | | | | | | |
| Herbicide | l | 1 | 400 | 400 | 1 | 400 | 400 | 0.75 | 400 | 300 |
| Insecticide | l | 1 | 500 | 500 | 1 | 500 | 500 | 0.75 | 500 | 375 |
| Fungicide | l | 0.5 | 500 | 250 | 0.5 | 500 | 250 | 0.3 | 500 | 150 |
| Others | | | | 250 | | | 250 | | | 100 |
| Labor | | | 69 | | | | | | | |
| Hired | man-day | 38 | 80 | 3,040 | 39 | 80 | 3,120 | 31 | 80 | 2,480 |
| Family | man-day | 31 | 0 | 0 | 32 | 0 | 0 | 25 | 0 | 0 |
| Machine/Tool/Animal | | | | | | | | | | |
| Handtractor | | | | 1,400 | | | 1,400 | | | 1,400 |
| Carabao | | | | 200 | | | 200 | | | 200 |
| Thresher | | | | 400 | | | 400 | | | 350 |
| Blower | | | | 200 | | | 200 | | | 180 |
| Pump | | | | 200 | | | 300 | | | 0 |
| Others | | | | 150 | | | 150 | | | 150 |
| Fuel/Oil | | | | 300 | | | 300 | | | 200 |
| Irrigation Service Fee | peso | | | 400 | | | 600 | | | 0 |
| Harvesters Share | peso | | | 1,540 | | | 1,450 | | | 960 |
| Land Lease | peso | | | 400 | | | 400 | | | 400 |
| Land Tax | peso | | | 140 | | | 140 | | | 140 |
| Interest | Peso | | | 590 | | | 600 | | | 470 |
| Total | Peso | | | 14,900 | | | 15,200 | | | 11,395 |

| Crop Category | 2nd Paddy Rainfed | | | |
|---------------------|-------------------|-------|-------|---------------|
| | Qty | Price | Value | |
| | | peso | peso | |
| Seeds | kg | 200 | 11 | 2,200 |
| Fertilizer | | | | |
| N | kg | 40 | 17 | 680 |
| P2O5 | kg | 25 | 22 | 550 |
| K2O | kg | 10 | 11 | 110 |
| 14-14-14 | bag | | 325 | |
| Urea | bag | | 340 | |
| Chemicals | | | | |
| Herbicide | l | 0.75 | 400 | 300 |
| Insecticide | l | 0.75 | 500 | 375 |
| Fungicide | l | 0.3 | 500 | 150 |
| Others | | | | 100 |
| Labor | | | | |
| Hired | man-day | 32 | 80 | 2,560 |
| Family | man-day | 26 | 0 | 0 |
| Machine/Tool/Animal | | | | |
| Handtractor | | | | 1,400 |
| Carabao | | | | 200 |
| Thresher | | | | 350 |
| Blower | | | | 180 |
| Pump | | | | 300 |
| Others | | | | 150 |
| Fuel/Oil | | | | 200 |
| Irrig. Service Fee | peso | | | 0 |
| Harvesters' Share | peso | | | 960 |
| Land Lease | peso | | | 400 |
| Land Tax | peso | | | 140 |
| Interest | Peso | | | 490 |
| Total | Peso | | | 11,795 |

Table A.4.22 Crop Profit per Hectare under Without Project and With Project Conditions

| | Without Project | | | | | | With Project | | | | | |
|-------------------------|-----------------|----------|-------|------------|--------|--------|--|--------|--------|------------|--------|--------|
| | Output | Output | | Production | | Profit | Output | Output | | Production | | Profit |
| | | Qty | Price | Value | Cost | | | Qty | Price | Value | Cost | |
| | ton | peso/ton | peso | peso | peso | ton | peso/ton | peso | peso | peso | | |
| Jalaur Proper | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.40 | 8,580 | 29,170 | 14,900 | 14,270 | 1st palay | 5.00 | 8,580 | 42,900 | 15,720 | 27,180 |
| 2nd Paddy Irrigated | palay | 3.30 | 8,580 | 28,310 | 15,200 | 13,110 | 2nd palay | 5.00 | 8,580 | 42,900 | 16,830 | 26,070 |
| 1st Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,400 | 7,820 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,800 | 7,420 | | | | | | |
| Vegetables | | | | | | | eggplant | 6.00 | 9,000 | 54,000 | 17,360 | 36,640 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 22,000 | 74,330 | 16,320 | 58,010 |
| Jalaur Extension | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.70 | 8,580 | 31,750 | 14,900 | 16,850 | 1st palay | 5.00 | 8,580 | 42,900 | 15,720 | 27,180 |
| 2nd Paddy Irrigated | palay | 3.43 | 8,580 | 29,430 | 15,200 | 14,230 | 2nd palay | 5.00 | 8,580 | 42,900 | 16,830 | 26,070 |
| 1st Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,400 | 7,820 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,800 | 7,420 | | | | | | |
| Vegetables | | | | | | | eggplant | 6.00 | 9,000 | 54,000 | 17,360 | 36,640 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 22,000 | 74,330 | 16,320 | 58,010 |
| Suague | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.64 | 8,580 | 31,230 | 14,900 | 16,330 | 1st palay | 5.00 | 8,580 | 42,900 | 15,720 | 27,180 |
| 2nd Paddy Irrigated | palay | 3.41 | 8,580 | 29,260 | 15,200 | 14,060 | 2nd palay | 5.00 | 8,580 | 42,900 | 16,830 | 26,070 |
| 1st Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,400 | 7,820 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,800 | 7,420 | | | | | | |
| Vegetables | | | | | | | eggplant | 6.00 | 9,000 | 54,000 | 17,360 | 36,640 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 22,000 | 74,330 | 16,320 | 58,010 |
| Aganan | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.56 | 8,580 | 30,540 | 14,900 | 15,640 | 1st palay | 5.00 | 8,580 | 42,900 | 15,720 | 27,180 |
| 2nd Paddy Irrigated | palay | 3.40 | 8,580 | 29,170 | 15,200 | 13,970 | 2nd palay | 5.00 | 8,580 | 42,900 | 16,830 | 26,070 |
| 1st Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,400 | 7,820 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,800 | 7,420 | | | | | | |
| Vegetables | | | | | | | eggplant | 6.00 | 9,000 | 54,000 | 17,360 | 36,640 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 22,000 | 74,330 | 16,320 | 58,010 |
| Sta. Barbara | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.86 | 8,580 | 33,120 | 14,900 | 18,220 | 1st palay | 5.00 | 8,580 | 42,900 | 15,720 | 27,180 |
| 2nd Paddy Irrigated | palay | 3.56 | 8,580 | 30,540 | 15,200 | 15,340 | 2nd palay | 5.00 | 8,580 | 42,900 | 16,830 | 26,070 |
| 1st Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,400 | 7,820 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 8,580 | 19,220 | 11,800 | 7,420 | | | | | | |
| Vegetables | | | | | | | eggplant | 6.00 | 9,000 | 54,000 | 17,360 | 36,640 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 22,000 | 74,330 | 16,320 | 58,010 |
| | | | | | | | Average gross income of tree fruits | | | | | |
| | | | | | | | Mungbean: 0.3ton/ha x P20,000/ton x 5yrs = 30,000 | | | | | |
| | | | | | | | Mango: 4 ton/ha x P22,000peso/ton x 25 yrs = 2,200,000 | | | | | |
| | | | | | | | Total 2,230,000 | | | | | |
| | | | | | | | Average profit per year 74,333 | | | | | |

Table A.4.23 Profit under Without and With Project Conditions and Project Benefit

| | Without Project | | | With Project | | | Incremental | |
|-------------------------|--------------------|-------------------|----------------------|--------------------|-------------------|----------------------|--------------------|----------------------------|
| | Cropped Area ha | per ha peso/ha | Profit x 1000peso | Cropped Area ha | per ha peso/ha | Profit x 1000peso | Cropped Area ha | Total Profit x 1000peso |
| Jalaur Proper | | | | | | | | |
| 1st Paddy Irrigated | 5,910 | 14,270 | 84,336 | 8,820 | 27,180 | 239,728 | 2,910 | |
| 2nd Paddy Irrigated | 4,620 | 13,110 | 60,568 | 8,820 | 26,070 | 229,937 | 4,200 | |
| Total | 10,530 | 144,904 | 144,904 | 17,640 | 139,515 | 469,665 | 7,110 | 324,761 |
| Jalaur Extension | | | | | | | | |
| 1st Paddy Irrigated | 2,260 | 16,850 | 38,081 | 2,620 | 27,180 | 71,212 | 360 | |
| 2nd Paddy Irrigated | 2,170 | 14,230 | 30,879 | 2,620 | 26,070 | 68,303 | 450 | |
| Total | 4,430 | 68,960 | 68,960 | 5,240 | 139,515 | 139,515 | 810 | 70,555 |
| Suague | | | | | | | | |
| 1st Paddy Irrigated | 1,550 | 16,330 | 25,312 | 2,960 | 27,180 | 80,453 | 1,410 | |
| 2nd Paddy Irrigated | 420 | 14,060 | 5,905 | 600 | 26,070 | 15,642 | 180 | |
| Total | 1,970 | 31,217 | 31,217 | 3,560 | 96,095 | 96,095 | 1,590 | 64,878 |
| Agunan | | | | | | | | |
| 1st Paddy Irrigated | 1,780 | 15,640 | 27,839 | 3,000 | 27,180 | 81,540 | 1,220 | |
| 2nd Paddy Irrigated | 550 | 13,970 | 7,684 | 500 | 26,070 | 13,035 | -50 | |
| Vegetables | | | | 200 | 36,640 | 7,328 | 200 | |
| Tree Fruits | | | | 70 | 58,010 | 4,061 | 70 | |
| Total | 2,330 | 35,523 | 35,523 | 3,770 | 105,964 | 105,964 | 1,440 | 70,441 |
| Sta. Barbara | | | | | | | | |
| 1st Paddy Irrigated | 1,970 | 18,220 | 35,893 | 2,960 | 27,180 | 80,453 | 990 | |
| 2nd Paddy Irrigated | 1,000 | 15,340 | 15,340 | 800 | 26,070 | 20,856 | -200 | |
| Vegetables | | | | 300 | 36,640 | 10,992 | 300 | |
| Tree Fruits | | | | 40 | 58,010 | 2,320 | 40 | |
| Total | 2,970 | 51,233 | 51,233 | 4,100 | 114,621 | 114,621 | 1,130 | 63,388 |
| Total | | | | | | | | |
| 1st Paddy Irrigated | 13,470 | | 211,461 | 20,360 | | 553,385 | 6,890 | |
| 2nd Paddy Irrigated | 8,760 | | 120,376 | 13,340 | | 347,774 | 4,580 | |
| Vegetables | 0 | | 0 | 500 | | 18,320 | 500 | |
| Tree Fruits | 0 | | 0 | 110 | | 6,381 | 110 | |
| Total | 22,230 | | 331,837 | 34,310 | | 925,860 | 12,080 | 594,023 |

Table A.4.24 No. of Field Staff by Division

| RIS | Irrigation Service Area ISA (ha) | Length of Main Canal & Laterals (km) | Present Conditions (1996) | | | | *4 Proposed | | Balance | | |
|-------------------------|----------------------------------|--------------------------------------|---------------------------|--------------------------------|-------------------------|-------------|--------------|-------------|--------------|-------------|--------------|
| | | | IA Contract | Length of Contract Type I (km) | Charge of WRFDT *1 (km) | No. of WRFT | No. of WRFDT | No. of WRFT | No. of WRFDT | No. of WRFT | No. of WRFDT |
| Jalaur proper | | | | | | | | | | | |
| Div. 1 | 760 | 14 | Type I | 13 | 1 | 1 | 2 | 1 | 4 | 0 | +2 |
| Div. 2 | 730 | 12 | Type I | 8 | 4 | 1 | 2 | 1 | 3 | 0 | +1 |
| Div. 3 | 890 | 14 | Type I | 4 | 10 | 1 | 4 | 1 | 4 | 0 | 0 |
| Div. 4 | 950 | 15 | Type I | 8 | 7 | 1 | 3 | 1 | 4 | 0 | +1 |
| Div. 5 | 780 | 9 | Type I | 4 | 5 | 1 | 2 | 1 | 3 | 0 | +1 |
| Div. 6 | 750 | 19 | Type I | 6 | 13 | 1 | 3 | 1 | 5 | 0 | +2 |
| Div. 7 | 810 | 9 | Type I | 6 | 3 | 0 *2 | 2 | 1 | 3 | +1 | +1 |
| Div. 8 | 740 | 11 | Type I&II | 11 | 0 | 0 *2 | 2 | 1 | 3 | +1 | +1 |
| Div. 9 | 810 | 10 | None | 0 | 10 | 1 | 2 | 1 | 3 | 0 | +1 |
| Div. 10 | 790 | 10 | Type I | 5 | 5 | 0 *2 | 2 | 1 | 3 | +1 | +1 |
| Div. 11 | 810 | 11 | Type I | 9 | 2 | 1 | 2 | 1 | 3 | 0 | +1 |
| Sub-Total | 8,820 | 134 | | 74 | 60 | 8 | 26 | 11 | 38 | +3 | +12 |
| Jalaur extension | | | | | | | | | | | |
| Div. 1 | 590 | 23 | None | 0 | 23 | 1 | 2 | 1 | 4 | 0 | +2 |
| Div. 2 | 580 | 12 | Type I | 5 | 7 | 0 *2 | 2 | 1 | 3 | +1 | +1 |
| Div. 3 | 690 | 13 | Type I | 10 | 3 | 1 | 2 | 1 | 4 | 0 | +2 |
| Div. 4 | 760 | 8 | Type I | 8 | 0 | 1 | 1 | 1 | 2 | 0 | +1 |
| Sub-Total | 2,620 | 56 | | 23 | 33 | 3 | 7 | 4 | 13 | +1 | +6 |
| Suague | | | | | | | | | | | |
| Div. 1 | 960 | 12 | Type I | 12 | 0 | 1 | 2 | 1 | 3 | 0 | +1 |
| Div. 2 | 660 | 7 | Type I | 6 | 1 | 0 *2 | 2 | 1 | 2 | +1 | 0 |
| Div. 3 | 640 | 12 | Type I | 7 | 5 | 0 *2 | 3 | 1 | 3 | +1 | 0 |
| Div. 4 | 700 | 9 | Type I | 4 | 5 | 0 *2 | 2 | 1 | 3 | +1 | +1 |
| Sub-Total | 2,960 | 40 | | 29 | 11 | 1 | 9 | 4 | 11 | +3 | +2 |
| Total | 14,400 | 230 | | 126 | 104 | 12 | 42 | 19 | 62 | +7 | +20 |
| Aganan | | | | | | | | | | | |
| Div. 1 | 910 | 11 | Type I&II | 11 | 0 | 1 | 2 | 1 | 3 | 0 | +1 |
| Div. 2 | 370 | 6 | Type I&II | 4 | 2 | 1 | 2 | 1 | 2 | 0 | 0 |
| Div. 3 | 890 | 9 | Type I&II | 4 | 5 | 0 *2 | 2 | 1 | 3 | +1 | +1 |
| Div. 4 | 930 | 9 | None | 0 | 9 | 1 | 3 | 1 | 3 | 0 | 0 |
| Div. 5 | 930 | 10 | None | 0 | 10 | 1 | 3 | 1 | 3 | 0 | 0 |
| Div. 6 | 330 | 8 | None | 0 | 8 | 1 | 3 | 1 | 3 | 0 | 0 |
| Sub-Total | 4,360 | 53 | | 19 | 34 | 5 | 15 | 6 | 17 | +1 | +2 |
| Sta. Barbara | | | | | | | | | | | |
| Div. 1 | 900 | 10 | None | 0 | 10 | 1 | 2 | 1 | 3 | 0 | +1 |
| Div. 2 | 630 | 15 | None | 0 | 15 | 0 *3 | 3 | 1 | 3 | +1 | 0 |
| Div. 3 | 770 | 10 | Type I&II | 10 | 0 | 0 *2 | 2 | 1 | 3 | +1 | +1 |
| Div. 4 | 700 | 14 | Type I&II | 6 | 8 | 1 | 2 | 1 | 4 | 0 | +2 |
| Sub-Total | 3,000 | 49 | | 16 | 33 | 2 | 9 | 4 | 13 | +2 | +4 |
| Total | 7,360 | 102 | | 35 | 67 | 7 | 24 | 10 | 30 | +3 | +6 |
| Grand Total | 21,760 | 332 | | 161 | 121 | 19 | 66 | 29 | 92 | +10 | +26 |

Notes: WRFT : Water Resources Facilities Technician

WRFDT : Water Resources Facilities Ditch Tender

*1 : Length of canals under charge of WRFDT for the works equivalent to Type I contract by IA.

*2 : WRFDT is acting for WRFT.

*3 : Agriculturist is holding the position of WRFT in addition.

*4 : No. of proposed field staff is within the approved No. of positions by Department of Budget and Management.

Source : NIA JSRIS Office and ASRIS Office

Table A.4.25 ISF Collection Efficiency by Division

| RIS Area (1997) (ha) | 1992 | | | | 1993 | | | | 1994 | | | | 1995 | | | | Average | |
|-------------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|---------------------|-------------------|---------------------------|---------------------------|-----|
| | Benefited Area (Wet) (ha) | IA Type II Contract | No. of Collectors | ISF Collection Efficiency | Benefited Area (Wet) (ha) | IA Type II Contract | No. of Collectors | ISF Collection Efficiency | Benefited Area (Wet) (ha) | IA Type II Contract | No. of Collectors | ISF Collection Efficiency | Benefited Area (Wet) (ha) | IA Type II Contract | No. of Collectors | ISF Collection Efficiency | ISF Collection Efficiency | |
| Jalaur | | | | | | | | | | | | | | | | | | |
| Div. 1 | 721 | - | 2 | 31% | 709 | - | 2 | 30% | 723 | - | 2 | 32% | 625 | - | 2 | 23% | 722 | 27% |
| Div. 2 | 637 | - | 2 | 38% | 643 | - | 2 | 27% | 591 | - | 2 | 30% | 541 | - | 2 | 29% | 700 | 37% |
| Div. 3 | 890 | - | 3 | 41% | 869 | - | 3 | 39% | 780 | - | 2 | 31% | 735 | - | 2 | 26% | 830 | 27% |
| Div. 4 | 950 | Type II | 2 | 39% | 910 | Type II | 2 | 37% | 934 | - | 2 | 23% | 872 | - | 3 | 20% | 847 | 29% |
| Div. 5 | 780 | - | 2 | 35% | 795 | - | 2 | 32% | 461 | - | 2 | 18% | 421 | - | 2 | 12% | 480 | 22% |
| Div. 6 | 696 | Type II | 2 | 32% | 690 | Type II | 2 | 35% | 688 | - | 2 | 23% | 632 | - | 2 | 17% | 650 | 25% |
| Div. 7 | 810 | - | 2 | 49% | 439 | - | 2 | 42% | 568 | - | 2 | 24% | 306 | - | 2 | 20% | 550 | 21% |
| Div. 8 | 740 | Type II | 1 | 39% | 554 | Type II | 1 | 33% | 508 | - | 2 | 16% | 627 | Type II | 2 | 14% | 710 | 24% |
| Div. 9 | 810 | - | 1 | 46% | 329 | - | 1 | 32% | 309 | - | 1 | 34% | 255 | - | 1 | 28% | 440 | 17% |
| Div. 10 | 790 | - | 2 | 64% | 360 | - | 2 | 47% | 273 | - | 1 | 15% | 261 | - | 1 | 20% | 560 | 14% |
| Div. 11 | 810 | - | 1 | 60% | 453 | - | 1 | 60% | 148 | - | 1 | 9% | 157 | - | 1 | 11% | 330 | 21% |
| Jalaur extension | | | | | | | | | | | | | | | | | | |
| Div. 1 | 590 | - | 2 | 36% | 496 | - | 2 | 67% | 572 | - | 2 | 28% | 600 | - | 2 | 28% | 520 | 26% |
| Div. 2 | 580 | - | 2 | 58% | 453 | - | 2 | 57% | 456 | - | 2 | 49% | 441 | - | 2 | 48% | 555 | 46% |
| Div. 3 | 690 | - | 2 | 37% | 613 | - | 2 | 48% | 592 | - | 2 | 23% | 605 | - | 2 | 28% | 618 | 28% |
| Div. 4 | 760 | - | 3 | 33% | 690 | - | 2 | 33% | 565 | - | 2 | 30% | 547 | - | 3 | 29% | 540 | 37% |
| Suaras | | | | | | | | | | | | | | | | | | |
| Div. 1 | 960 | - | 3 | 28% | 724 | - | 2 | 52% | 653 | - | 2 | 45% | 732 | - | 2 | 40% | 750 | 53% |
| Div. 2 | 660 | - | 3 | 21% | 649 | - | 2 | 33% | 657 | - | 2 | 39% | 660 | - | 2 | 38% | 660 | 35% |
| Div. 3 | 640 | - | 3 | 33% | 544 | - | 2 | 35% | 523 | - | 2 | 37% | 559 | - | 2 | 34% | 534 | 37% |
| Div. 4 | 700 | - | 2 | 30% | 701 | - | 2 | 20% | 648 | - | 2 | 20% | 693 | - | 2 | 10% | 600 | 19% |
| Asuaras | | | | | | | | | | | | | | | | | | |
| Div. 1 | 910 | - | 2 | 29% | 903 | - | 2 | 46% | 900 | - | 2 | 22% | 888 | Type II | 2 | 11% | 808 | 14% |
| Div. 2 | 370 | Type II | 1 | 33% | 359 | Type II | 1 | 52% | 359 | Type II | 1 | 41% | 353 | Type II | 1 | 14% | 356 | 23% |
| Div. 3 | 890 | Type II | 1 | 38% | 890 | Type II | 1 | 34% | 878 | - | 1 | 22% | 795 | Type II | 1 | 19% | 878 | 19% |
| Div. 4 | 930 | Type II | 2 | 36% | 925 | Type II | 2 | 53% | 988 | - | 2 | 29% | 927 | - | 2 | 23% | 896 | 27% |
| Div. 5 | 930 | Type II | 1 | 40% | 884 | Type II | 1 | 34% | 938 | - | 1 | 25% | 848 | - | 1 | 16% | 870 | 15% |
| Div. 6 | 330 | - | 1 | 41% | 720 | - | 1 | 41% | 627 | - | 1 | 25% | 505 | - | 1 | 18% | 41 | 11% |
| Sua Bachara | | | | | | | | | | | | | | | | | | |
| Div. 1 | 900 | Type II | 3 | 34% | 841 | Type II | 3 | 45% | 841 | - | 3 | 40% | 833 | - | 2 | 43% | 832 | 47% |
| Div. 2 | 650 | Type II | 2 | 61% | 838 | Type II | 2 | 61% | 736 | - | 2 | 37% | 738 | - | 2 | 36% | 453 | 41% |
| Div. 3 | 770 | Type II | 1 | 38% | 784 | Type II | 1 | 48% | 827 | - | 1 | 33% | 806 | Type II | 1 | 37% | 762 | 32% |
| Div. 4 | 700 | Type II | 2 | 27% | 678 | Type II | 2 | 44% | 672 | - | 2 | 31% | 677 | Type II | 2 | 34% | 666 | 28% |

Notes: ISF : Irrigation Service Fee
 Current Account (CA) : ISF charge for the current cropping (wet & dry) year which such cropping was done.
 Back Account (BA) : ISF charge for the previous cropping year which ISF were not collected in the previous year.
 ISF Collection Efficiency = CA of ISF Actual Collection / CA of ISF Collectibles
 *1 : No available data

Source : NIA, JSRIS Office and ASRIS Office

Table A.4. 26 Cost Estimate for Training Center Construction / Renovation, Facilities and Equipment

| Item | Unit (m ² /L.S.) | Unit Rate/* (Pesos) | Amount (Pesos '000) |
|--|--------------------------------|------------------------|------------------------|
| 1. Strengthening of NIA | | | |
| A. Renovation of Training Center in JSRIS Office Compound | 180 m ² | 1,200 | 216 |
| B. Construction of Training Center in ASBRIS Office | 100 m ² | 4,000 | 400 |
| C. Training and Communication Equipment (JSRIS & ASBRIS Offices) | 2 L.S. | 800,000 | 1,600 |
| D. Transport Facilities | | | |
| JSRIS Office | 1 L.S. | 3,540,000 | 3,540 |
| ASBRIS Office | 1 L.S. | 3,000,000 | 3,000 |
| E. Furniture and Fixtures | | | |
| JSRIS Office | 1 L.S. | 200,000 | 200 |
| ASBRIS Office | 1 L.S. | 150,000 | 150 |
| 2. Strengthening of Farmers' Organizations | | | |
| A. Office (35 buildings) | 25 m ² | 2,860 | 2,500 |
| B. Portable Hand-held Radio Set (35 sets) | 1 set | 28,500 | 1,000 |
| 3. Upgrading Municipal Agricultural Extension Services | | | |
| A. Extension Communication Equipment | | | |
| Municipal Agricultural Offices (MAO) in JSRIS service areas | 8 L.S. | 500,000 | 4,000 |
| City/Municipal Agricultural Offices in ASBRIS service areas | 6 L.S. | 500,000 | 3,000 |
| B. Transport Facilities | | | |
| MAO in JSRIS service areas | 8 L.S. | 120,000 | 960 |
| C/MAO in ASBRIS service areas | 6 L.S. | 120,000 | 720 |
| TOTAL | | | 21,286 |

Note: /*Unit rate of equipment includes spare parts and transportation cost.

Table A.4. 27 Cost Estimate for Training of Farmers' Organization and NIA Field Staff (1/2)

| Main Training Areas | Unit Cost/* (Pesos/trainee- day) | No. of Participants | Amount (Pesos '000) |
|---|--|------------------------|------------------------|
| I. Farmers' Organizations | | | |
| A. Jalaur-Suague RIS | | | |
| Leadership Development and Organizational Management (2-5 days, 3 modules) | 100 | 250 | 375.0 |
| Participatory Planning and Management (5 days, 2 modules) | 300 | 760 | 2,280.0 |
| Organization and Management of IA Federation (2 days, 2 modules) | 100 | 80 | 32.0 |
| Farmers' Cooperative Development (2 days, 4 modules) | 200 | 200 | 320.0 |
| Record System Management (2 days) | 100 | 50 | 10.0 |
| O&M of Irrigation Canal/Facilities (4 days, 2 batches) | 100 | 100 | 80.0 |
| ISF Collection Strategy (2 days) | 100 | 50 | 10.0 |
| System Management (Type III contract) (4 days) | 100 | 750 | 300.0 |
| Appropriate Irrigated Paddy Rice Production Practices (2-3 days, 2 batches) | 100 | 380 | 228.0 |
| Post-Harvest Facility Operation and Management (3 days) | 100 | 50 | 15.0 |
| Agricultural Marketing (3 days, 2 batches) | 200 | 100 | 120.0 |
| Field Exposure and Nonformal Learning (3 days, 10 modules) | 200 | 250 | 1,500.0 |
| Sub-total | | | <u>5,270.0</u> |
| B. Agenan-Sta. Barbara RIS | | | |
| Strengthening of IA and IA Federation (2-5 days, 4 modules) | 100 | 100 | 200.0 |
| Participatory Planning and Management (5 days, 2 modules) | 300 | 370 | 1,110.0 |
| Farmers' Cooperative Development (2 days, 4 modules) | 200 | 80 | 128.0 |
| Business Cooperative Development/Management (2 days, 3 modules) | 200 | 80 | 96.0 |
| Record System Management (2 days) | 100 | 20 | 4.0 |
| Refresher Course in O&M of Irrigation Canal/Facilities (2 days) | 100 | 40 | 8.0 |
| Refresher Course in ISF Collection Strategy (2 days) | 100 | 20 | 4.0 |
| System Management (Type III contract) (4 days) | 100 | 370 | 148.0 |
| Appropriate Diversified Crop Production Technologies (2-3 days) | 100 | 190 | 57.0 |
| Post-Harvest Facility Operation and Management (3 days) | 100 | 20 | 6.0 |
| Agricultural Marketing (3 days) | 200 | 40 | 24.0 |
| Field Exposure and Nonformal Learning (3 days, 10 modules) | 200 | 100 | 600.0 |
| Sub-total | | | <u>2,385.0</u> |

Table A.4. 27 Cost Estimate for Training of Farmers' Organization and NIA Field Staff (2/2)

| Main Training Areas | Unit Cost* (Pesos/trainee- day) | No. of Participants | Amount (Pesos '000) |
|--|---------------------------------------|------------------------|------------------------|
| 2. NIA Field Staff | | | |
| A. Jalaor-Suague RIS | | | |
| <u>Existing Field Staff</u> | | | |
| Participatory Planning and Management (10 days) | 400 | 58 | 232.0 |
| Specialized technical training (5 days x 12 courses) | 500 | 58 | 1,740.0 |
| Field Trip/Study Tour (4 days x 10 batches) | 1,000 | 58 | 2,320.0 |
| <u>New Field Staff (WRFI/WRFDT)</u> | | | |
| System Management/Water Management (4 days) | 200 | 27 | 21.6 |
| ISF Collection Strategy (2 days) | 200 | 27 | 10.8 |
| Essential Structural Maintenance (12 days) | 300 | 27 | 97.2 |
| Participatory Planning and Management (10 days) | 400 | 27 | 108.0 |
| Field Exposure with IA (3 days) | 500 | 27 | 40.5 |
| Sub-total | | | <u>4,570.1</u> |
| B. Aganan-Sta. Barbara RIS | | | |
| <u>Existing Field Staff</u> | | | |
| Participatory Planning and Management (10 days) | 400 | 42 | 168.0 |
| Specialized technical training (5 days x 10 courses) | 500 | 42 | 1,050.0 |
| Field Trip/Study Tour (4 days x 8 batches) | 1,000 | 42 | 1,344.0 |
| <u>New Field Staff (WRFI/WRFDT)</u> | | | |
| System Management/Water Management (4 days) | 200 | 9 | 7.2 |
| ISF Collection Strategy (2 days) | 200 | 9 | 3.6 |
| Essential Structural Maintenance (12 days) | 300 | 9 | 32.4 |
| Participatory Planning and Management (10 days) | 400 | 9 | 36.0 |
| Field Exposure with IA (3 days) | 500 | 9 | 13.5 |
| Sub-total | | | <u>2,622.3</u> |
| TOTAL | | | <u>14,847.4</u> |

Note: /*Unit cost refers to direct training cost.

Table A.4.28 List of Soil Erosion Control Measures

| Descriptions | Merits | Demerits |
|---|---|---|
| Vegetative Measures | | |
| <p>1. Contour hedgerow (Strip cropping)</p> <p>Vegetative rows or strips established along the contour. Trees serve as live barrier to surface runoff and soil erosion. If the nitrogen fixing crops or trees such as leguminous crops are used, it can improve soil condition.</p> | <ol style="list-style-type: none"> 1. Economical 2. Adaptable to various conditions 3. Easier to establish and repair 4. Durable if maintained properly 5. Improve the soil condition, if nitrogen fixing crops are used | <ol style="list-style-type: none"> 1. It takes some time to attain benefits 2. Less effective when slope is too steep 3. Hedgerows may pose competition with crops |
| <p>2. Mulching</p> <p>The mulching is the covering of the soil with crop residues such as straw, maize stalks, palm fronds or standing stubbles. The effect of mulching is the reducing of raindrop impact and of the velocity of runoff.</p> | <ol style="list-style-type: none"> 1. Economical 2. Adaptable to various conditions 3. Easier to establish and repair 4. Keeping of soil moisture and temperature 5. Improve the soil condition | <ol style="list-style-type: none"> 1. Application of mulch may be required on each cropping season in tropical area 2. It requires a large amount of grasses (materials) for mulching |
| <p>3. Wattling</p> <p>It is vegetative structure established in contour line or intermittently along the contour. It is used to trap the soil particles that are eroded down with surface runoff. Cutting of brushwoods are interwoven to form fence.</p> | <ol style="list-style-type: none"> 1. Very effective and stable 2. Early achievement of protection 3. When brushwoods sprout, the leaves can be used as green manure or mulching materials | <ol style="list-style-type: none"> 1. Difficult to find suitable sprouting brushwood rods. 2. Difficult to construct |
| <p>4. Agroforestry</p> <p>It is a system to incorporate trees within a farming system by planting them on land.</p> | <ol style="list-style-type: none"> 1. Economically 2. Trees can provide fuels, fodder, fruits, etc. to the farmers. | <ol style="list-style-type: none"> 1. It takes some time to attain benefits 2. Trees may pose competition with crops 3. Less effective when slope is too steep |
| Structural Measures | | |
| <p>5. Contour bunds</p> <p>They are earth bunds, 1.5 to 2 m wide, thrown across the slope to act as a barrier to runoff, to form a water storage area on their upslope side and to break up a slope into segments shorter in length than is required to generate overland flow. They are frequently used with strip-cropping system.</p> | <ol style="list-style-type: none"> 1. Relatively easier to construct and repair 2. They are suitable for slopes of 1 to 7 degree. | <ol style="list-style-type: none"> 1. The effectiveness is limited when heavy rains continue long. 2. The effectiveness is limited when used in very steep slope. |
| <p>6. Terraces</p> <p>They are series of level or nearly level strips running across the slopes supported by steep risers.</p> | <ol style="list-style-type: none"> 1. Most effective measures for minimising soil erosion | <ol style="list-style-type: none"> 1. They require a lot of time and manpower to construct. 2. Soil erosion during construction stage may be high. 3. Not suitable for the sites in which topsoils only have thin layer. |
| <p>7. Waterways (Contour Ditches and Drainage Canals)</p> <p>They are digging structures established in the hillsides to check the erosive power of surface runoff by tapping soil particles. Drainage canal (grass waterways) are used as the outlet for contour ditches. It runs downslope and empty into river system or other outlets.</p> | <ol style="list-style-type: none"> 1. Relatively easier to construct and repair 2. Ditches and canals can be good water impoundment structures that can hold water for plants. | <ol style="list-style-type: none"> 1. The effectiveness is limited when heavy rains continue long. 2. The effectiveness is limited when used in very steep slope. |
| Cultural Measures | | |
| <p>8. Contour Plowing</p> <p>It is a plowing method to create furrows following the contour of the land.</p> | <ol style="list-style-type: none"> 1. It increases water absorption capacity of the soil. 2. It also reduces both the quantity and velocity of surface runoff. | <ol style="list-style-type: none"> 1. A bit difficult to plow properly. |
| <p>9. Contour Planting</p> <p>It is a planting method following the contour of the land. The crops planted act as barriers to the force of surface runoff.</p> | <ol style="list-style-type: none"> 1. Easy to adopt | <ol style="list-style-type: none"> 1. The effect is not high, if only it is adopted. |

Table A.4.29 Probable Environmental Issues and Tentative Mitigation Measures

| Environmental Issues | Main Causes | Significance at present | Remedial Measures to be considered | Significance in future | Relating project |
|--|--|-------------------------|---|------------------------|----------------------|
| 1. Health hazard from chemicals | Improper use of agro-chemical with introduction of diversified cropping system and increasing crop intensity | moderate - minor | <ul style="list-style-type: none"> • Agricultural extension service for proper use • Introduction of IPM system | minor | all project |
| 2. Deterioration of downstream water quality | Increase of fertilizer use by the introduction of intensive farming | moderate - minor | <ul style="list-style-type: none"> • Use of compost and green manure • Introduction of IPM system • Proper water management | minor | all project |
| 3. Loss of farm land | New construction of farm pond | minor - moderate | <ul style="list-style-type: none"> • Making a consensus among RIS by using a participatory approach • Applying social supports to fill their economical gaps up | minor | Aganan, Sta. Barbara |
| 4. Beneficial impacts on farm and regional economy | Drastically increase of farm production Increase of employment opportunity Ripple effect to the regional economy | major | - | major | all project |
| 5. Reduction of excessive use of ground water | Stabilization of irrigation water throughout a year | major | - | major | all project |

Table A.5.1 Project Cost

| | Jalaur pro. | Jalaur ext. | Susque | Apatan | Siz. Barbara | Overall |
|--|-------------|-------------|-------------|-------------|--------------|---------------|
| <IRRIGATION AND DRAIN> | | | | | | |
| 1. Canal and Drain | | | | | | |
| 1.1 Rehabilitation of canal and drain | 226,207,000 | 63,277,000 | 24,563,000 | 25,428,000 | 31,111,000 | 370,586,000 |
| Earth Work | 103,950,000 | 103,950,000 | 17,861,000 | - | 19,725,000 | 245,486,000 |
| 1.2 Canal Lining | 5,576,000 | - | 3,672,000 | 8,092,000 | 340,000 | 17,680,000 |
| 1.3 Footer Canal and added canal section | | | | | | |
| 2. Related Structures | 17,712,000 | 18,220,000 | 7,665,000 | 9,142,000 | 10,065,000 | 62,804,000 |
| 2.1 Rehabilitation of structures including diversion dam | | | | | | |
| 2.2 New Structure | 1,465,000 | - | 1,156,000 | 771,000 | 437,000 | 3,829,000 |
| Turn Out | - | - | - | - | 17,643,000 | 17,643,000 |
| Siphon | - | - | - | 1,982,000 | 2,358,000 | 4,340,000 |
| Farm Pond | - | - | - | 1,055,000 | 1,470,000 | 28,454,000 |
| Settling Basin | 14,500,000 | 10,669,000 | 760,000 | | | |
| 2.3 Metal Works | 2,962,000 | 3,046,000 | 1,285,000 | 3,928,000 | 2,276,000 | 13,497,000 |
| Rehabilitation | 1,097,000 | - | 866,000 | 578,000 | 327,000 | 2,868,000 |
| New structures | 32,493,000 | 9,652,000 | 10,905,000 | 16,062,000 | 11,052,000 | 80,164,000 |
| <RURAL INFRASTRUCTURE> | | | | | | |
| 3. On-Farm Development | | | | | | |
| 4. Farm and Link Road | 152,376,000 | 59,430,000 | 32,046,000 | 40,194,000 | 37,086,000 | 321,132,000 |
| 4.1 Pavement | 25,389,000 | 9,419,000 | 6,625,000 | 4,687,000 | 4,550,000 | 50,670,000 |
| 4.2 Embankment | | | | | | |
| 4.3 Related Structure | 14,972,000 | 14,972,000 | 3,306,000 | 3,914,000 | 3,800,000 | 40,964,000 |
| Culvert | 4,328,000 | 2,164,000 | - | 6,492,000 | 2,164,000 | 15,148,000 |
| Bridge | | | | | | 0 |
| 5. Buildings | 39,528,000 | 7,945,000 | 5,646,000 | 7,735,000 | 5,160,000 | 66,014,000 |
| Warehouse | 1,566,000 | 767,000 | 583,000 | 930,000 | 620,000 | 4,466,000 |
| Institutional Strengthening | | | | | | |
| 6. Procurement of Equipment | 2,480,000 | 1,240,000 | 1,240,000 | 1,860,000 | 1,860,000 | 8,680,000 |
| Agricultural Extension | 2,296,000 | 1,976,000 | 1,068,000 | 2,520,000 | 1,680,000 | 9,540,000 |
| Institutional Strengthening | | | | | | |
| 7. Training | 541,000 | 500,000 | 258,000 | 436,000 | 282,000 | 2,017,000 |
| Agricultural Extension | 3,968,000 | 2,265,000 | 1,656,000 | 2,313,000 | 1,508,000 | 11,710,000 |
| Institutional Strengthening | 653,406,000 | 309,492,000 | 121,161,000 | 138,119,000 | 155,514,000 | 1,377,692,000 |
| Sub Total 1 | | | | | | |
| 9. Engineering Cost (10%) | 65,341,000 | 30,949,000 | 12,116,000 | 13,812,000 | 15,551,000 | 137,769,000 |
| 10. Administration Cost (2.5% of Sub Total 1) | 16,335,000 | 7,737,000 | 3,029,000 | 3,453,000 | 3,888,000 | 34,442,000 |
| 11. Land Acquisition | 11,718,000 | 4,347,000 | 1,827,000 | 3,503,000 | 3,757,000 | 25,152,000 |
| Sub Total 2 | 746,800,000 | 362,525,000 | 138,133,000 | 158,887,000 | 178,710,000 | 1,575,055,000 |
| 12. Physical contingency (10% of Sub Total 2) | 74,680,000 | 35,252,500 | 13,813,300 | 15,889,000 | 17,871,000 | 157,506,000 |
| Sub Total 3 | 821,480,000 | 387,778,000 | 151,946,000 | 174,776,000 | 196,581,000 | 1,732,561,000 |
| 13. Price contingency (15% of Sub Total 3) | 123,222,000 | 58,167,000 | 22,792,000 | 26,216,000 | 29,487,000 | 259,884,000 |
| GRAND TOTAL | 944,702,000 | 445,945,000 | 174,738,000 | 200,992,000 | 226,068,000 | 1,992,445,000 |

Table A.6.1 Economic Incremental Benefit

| | Without-Project | | | With-Project | | | Incremental | | Incremental | | Service Area ha |
|-------------------------|-----------------|-----------------------|-------------------------|-----------------|-----------------------|-------------------------|-----------------|-------------------------|----------------|------------|-----------------|
| | Cropped Area ha | Profit per ha peso/ha | Total Profit x 1000peso | Cropped Area ha | Profit per ha peso/ha | Total Profit x 1000peso | Cropped Area ha | Total Profit x 1000peso | Benefit per ha | | |
| | | | | | | | | | Without | With | |
| | | | | | | | | | | | |
| Jalaur Proper | | | | | | | | | | | |
| 1st Paddy Irrigated | 5,910 | 6,900 | 40,779 | 8,820 | 14,760 | 130,183 | 2,910 | | | | 8,820 |
| 2nd Paddy Irrigated | 4,620 | 6,030 | 27,859 | 8,820 | 14,200 | 125,244 | 4,200 | | | | |
| 1st Paddy Rainfed | 2,600 | 3,250 | 8,450 | 0 | 0 | 0 | -2,600 | | | | |
| 2nd Paddy Rainfed | 1,940 | 2,890 | 5,607 | 0 | 2,890 | 0 | -1,940 | | | | |
| Total | 15,070 | | 68,638 | 17,640 | | 255,427 | 2,570 | 186,790 | 21.2 | 171 | 200 |
| Jalaur Extension | | | | | | | | | | | |
| 1st Paddy Irrigated | 2,260 | 8,470 | 19,142 | 2,620 | 14,760 | 38,671 | 360 | | | | 2,620 |
| 2nd Paddy Irrigated | 2,170 | 6,710 | 14,561 | 2,620 | 14,200 | 37,204 | 450 | | | | |
| 1st Paddy Rainfed | 360 | 3,250 | 1,170 | 0 | 0 | 0 | -360 | | | | |
| 2nd Paddy Rainfed | 450 | 16,250 | 5,850 | 0 | 16,250 | 0 | -450 | | | | |
| Total | 5,240 | | 33,703 | 5,240 | | 75,875 | 0 | 42,172 | 16.1 | 200 | 200 |
| Sague | | | | | | | | | | | |
| 1st Paddy Irrigated | 2,600 | 8,150 | 21,190 | 2,960 | 14,760 | 43,690 | 360 | | | | 2,960 |
| 2nd Paddy Irrigated | 420 | 6,610 | 2,776 | 600 | 14,200 | 8,520 | 180 | | | | |
| 1st Paddy Rainfed | 360 | 3,250 | 1,170 | 0 | 0 | 0 | -360 | | | | |
| 2nd Paddy Rainfed | 610 | 2,890 | 1,763 | 610 | 2,890 | 1,763 | 0 | | | | |
| Total | 3,990 | | 23,966 | 4,170 | | 53,973 | 180 | 30,006 | 10.1 | 135 | 141 |
| Aganan | | | | | | | | | | | |
| 1st Paddy Irrigated | 3,000 | 7,740 | 23,220 | 4,290 | 14,760 | 63,320 | 1,290 | | | | 4,360 |
| 2nd Paddy Irrigated | 550 | 6,550 | 3,603 | 500 | 14,200 | 7,100 | -50 | | | | |
| 1st Paddy Rainfed | 1,360 | 3,250 | 4,420 | 0 | 0 | 0 | -1,360 | | | | |
| 2nd Paddy Rainfed | 900 | 2,890 | 2,601 | 900 | 2,890 | 2,601 | 0 | | | | |
| Vegetables | 0 | 0 | 0 | 200 | 31,600 | 6,320 | 200 | | | | |
| Tree Fruits | 0 | 0 | 0 | 70 | 61,690 | 4,318 | 70 | | | | |
| Total | 5,810 | | 33,844 | 5,960 | | 83,660 | 150 | 49,816 | 11.4 | 133 | 137 |
| Sia, Barbura | | | | | | | | | | | |
| 1st Paddy Irrigated | 2,700 | 9,300 | 25,110 | 2,960 | 14,760 | 43,690 | 260 | | | | 3,000 |
| 2nd Paddy Irrigated | 880 | 7,390 | 6,503 | 1,000 | 14,200 | 14,200 | 120 | | | | |
| 1st Paddy Rainfed | 300 | 3,250 | 975 | 0 | 0 | 0 | -300 | | | | |
| 2nd Paddy Rainfed | 100 | 16,250 | 4,875 | 100 | 16,250 | 1,625 | 0 | | | | |
| Vegetables | 0 | 0 | 0 | 300 | 31,600 | 9,480 | 300 | | | | |
| Tree Fruits | 0 | 0 | 0 | 40 | 61,690 | 2,468 | 40 | | | | |
| Total | 3,980 | | 37,463 | 4,400 | | 71,462 | 420 | 33,999 | 11.3 | 133 | 147 |
| Total | | | | | | | | | | | |
| 1st Paddy Irrigated | 16,470 | | 129,441 | 21,650 | | 319,554 | 5,180 | | | | 21,760 |
| 2nd Paddy Irrigated | 8,640 | | 55,301 | 13,540 | | 192,268 | 4,900 | | | | |
| 1st Paddy Rainfed | 4,000 | | 16,185 | 0 | | 0 | -4,980 | | | | |
| 2nd Paddy Rainfed | 4,000 | | 20,696 | 1,610 | | 5,989 | -2,390 | | | | |
| Vegetables | 0 | | 0 | 500 | | 15,800 | 500 | | | | |
| Tree Fruits | 0 | | 0 | 110 | | 6,786 | 110 | | | | |
| Total | 34,090 | | 221,623 | 37,410 | | 540,397 | 3,320 | 318,774 | 14.6 | 157 | 172 |

Table A.6.2 Economic Prices (continued)

| Urea | Unit | 1997 | 2000 | 2005 | 2010 |
|--|------|------|------|------|------|
| WB price, 1990 constant, FOB Indonesia | \$/t | 169 | 143 | 135 | 128 |
| WB price, 1997 constant, FOB Indonesia | \$/t | 185 | 157 | 148 | 140 |
| Ocean freight & insurance | \$/t | 53 | 53 | 53 | 53 |
| CIF, Iloilo | \$/t | 238 | 210 | 201 | 193 |
| In peso | P/t | 6188 | 5448 | 5234 | 5023 |
| Marketing cost, 7% of CIF estimated by ADB | P/t | 433 | 381 | 366 | 352 |
| Retail price | P/t | 6621 | 5829 | 5601 | 5375 |
| Transport cost to farm, | P/t | 388 | 388 | 388 | 388 |
| Farm gate price | P/t | 7009 | 6217 | 5989 | 5763 |
| Farm gate price of nitrogen | P/kg | 15.6 | 13.8 | 13.3 | 12.8 |
| | | | | | |
| TSP | Unit | 1997 | 2000 | 2005 | 2010 |
| WB price, 1990 constant, FOB Indonesia | \$/t | 155 | 126 | 114 | 104 |
| WB price, 1997 constant, FOB Indonesia | \$/t | 170 | 138 | 125 | 114 |
| Ocean freight & insurance | \$/t | 53 | 53 | 53 | 53 |
| CIF, Iloilo | \$/t | 223 | 191 | 178 | 167 |
| In peso | P/t | 5798 | 4958 | 4638 | 4330 |
| Marketing cost, 7% of CIF estimated by ADB | P/t | 406 | 347 | 325 | 303 |
| Retail price | P/t | 6204 | 5305 | 4963 | 4633 |
| Transport cost to farm | P/t | 388 | 388 | 388 | 388 |
| Farm gate price | P/t | 6592 | 5693 | 5351 | 5021 |
| Farm gate price of phosphoric oxide | P/kg | 14.6 | 12.7 | 11.9 | 11.2 |
| | | | | | |
| Potassium chloride | Unit | 1997 | 2000 | 2005 | 2010 |
| WB price, 1990 constant, FOB Indonesia | \$/t | 107 | 103 | 87 | 88 |
| WB price, 1997 constant, FOB Indonesia | \$/t | 117 | 112 | 95 | 96 |
| Ocean freight & insurance | \$/t | 53 | 53 | 53 | 53 |
| CIF, Iloilo | \$/t | 170 | 165 | 148 | 149 |
| In peso | P/t | 4420 | 4302 | 3854 | 3874 |
| Marketing cost, 8% of CIF estimated by ADB | P/t | 354 | 344 | 308 | 310 |
| Retail price | P/t | 4774 | 4646 | 4162 | 4184 |
| Transport cost to farm | P/t | 388 | 388 | 388 | 388 |
| Farm gate price | P/t | 5162 | 5034 | 4550 | 4572 |
| Farm gate price of potash | P/kg | 9.4 | 9.2 | 8.3 | 8.3 |

Table A.6.2 Economic Prices (continue)

| Rice | Unit | 1997 | 2000 | 2005 | 2010 |
|--|------|------|------|------|------|
| WB price, 1990 constant, FOB Bangkok | \$/t | 301 | 279 | 267 | 262 |
| WB price, 1997 constant, FOB Bangkok | \$/t | 330 | 306 | 293 | 287 |
| Quality discount | % | 20 | 20 | 20 | 20 |
| Ocean freight & insurance | \$/t | 53 | 53 | 53 | 53 |
| CIF, Iloilo | \$/t | 317 | 298 | 287 | 283 |
| In peso, 1US\$ = 26 peso | P/t | 8242 | 7742 | 7466 | 7356 |
| Port handling & other costs | P/t | 145 | 145 | 145 | 145 |
| Importer's margin, 7.5% of CIF | P/t | 618 | 581 | 560 | 552 |
| Ex-warehouse price(a) | P/t | 9005 | 8467 | 8171 | 8053 |
| Transport cost to markets(b) 70peso/3km/ton*0.83(SCF) | P/t | 58 | 58 | 58 | 58 |
| Trader's margin, 2% of (a)+(b) | P/t | 181 | 171 | 165 | 162 |
| Wholesale price | P/t | 9244 | 8696 | 8393 | 8273 |
| Transport cost to mill 467peso/20km/ton x 0.83 | P/t | 388 | 388 | 388 | 388 |
| Ex-mill price | P/t | 8856 | 8308 | 8005 | 7885 |
| Milling cost | P/t | 332 | 332 | 332 | 332 |
| By-product value, 100kg x 5.5P x 0.83 | P/t | 457 | 457 | 457 | 457 |
| Pre-mill price | P/t | 8981 | 8433 | 8130 | 8010 |
| Palay equivalent price, x 0.65 | P/t | 5838 | 5481 | 5285 | 5207 |
| Transport cost to mill, 4km | P/t | 77 | 77 | 77 | 77 |
| Farm gate price of palay | P/t | 5760 | 5404 | 5207 | 5129 |

Table A.6.3 Economic Production Cost in With-project Condition

| Crop Category | | 1st Paddy Irrigated | | | 2nd Paddy Irrigated | | | Mungbean | | | Watermelon | | | Vegetables (Eggplant) | | |
|---------------------|-------------|---------------------|-------|---------------|---------------------|-------|---------------|----------|-------|--------------|------------|-------|---------------|-----------------------|-------|---------------|
| | | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value |
| | | | peso | peso | | peso | peso | | peso | peso | | peso | peso | | peso | peso |
| Seeds | kg | 100 | 5 | 521 | 100 | 5 | 521 | 25 | 25 | 623 | 4 | 830 | 3,320 | 0.25 | 3,320 | 830 |
| Fertilizer | | | | | | | | | | | | | | | | |
| N | kg | 100 | 13 | 1,331 | 120 | 13 | 1,597 | 30 | 13 | 399 | 80 | 13 | 1,065 | 230 | 13 | 3,061 |
| P2O5 | kg | 35 | 12 | 416 | 35 | 12 | 416 | 30 | 12 | 357 | 30 | 12 | 357 | 70 | 12 | 832 |
| K2O | kg | 35 | 8 | 290 | 35 | 8 | 290 | 30 | 8 | 248 | 30 | 8 | 248 | 90 | 8 | 745 |
| Chemicals | | | | 1,370 | | | 1,370 | | | 830 | | | 1,868 | | | 1,909 |
| Labor | | | | | | | | | | | | | | | | |
| Hired | man-day | 33 | 48 | 1,584 | 35 | 48 | 1,680 | 16 | 48 | 768 | 44 | 48 | 2,112 | 52 | 48 | 2,496 |
| Family | man-day | 31 | 48 | 1,488 | 32 | 48 | 1,536 | 13 | 48 | 624 | 38 | 48 | 1,824 | 43 | 48 | 2,064 |
| Machine/Tool/Animal | | | | 2,158 | | | 2,158 | | | 1,370 | | | 1,121 | | | 1,121 |
| Fuel/Oil | | | | 166 | | | 249 | | | 83 | | | 166 | | | 166 |
| Irrigation Service | Peso | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 |
| Harvesters Share | peso | | | 1,959 | | | 2,025 | | | 0 | | | 0 | | | 0 |
| Interest | Peso | | | 0 | | | 0 | | | 0 | | | 0 | | | 0 |
| Total | Peso | | | 11,282 | | | 11,841 | | | 5,301 | | | 12,080 | | | 13,223 |

| Crop Category | | Perennial Fruits (Mango) | | | | | | | | |
|---------------------|-------------|--------------------------|-------|---------------|------------|-------|---------------|--------------|-------|---------------|
| | | 1st year | | | 2 - 5 year | | | Bearing year | | |
| | | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value |
| | | | peso | peso | | peso | peso | | peso | peso |
| Seedling | tree | 100 | 58.1 | 5,810 | 5 | 58.1 | 291 | 5 | 58.1 | 291 |
| Inter crop seed | kg | 20 | 42 | 830 | 20 | 42 | 830 | | | 0 (Mungbean) |
| Fertilizer | | | | | | | | | | |
| N | kg | 60 | 13 | 798 | 150 | 13 | 1,996 | 150 | 13 | 1,996 |
| P2O5 | kg | 60 | 12 | 713 | 100 | 12 | 1,189 | 100 | 12 | 1,189 |
| K2O | kg | 40 | 8 | 331 | 60 | 8 | 496 | 60 | 8 | 496 |
| Chemicals | | | | 1,411 | | | 1,411 | | | 1,411 |
| Labor | | | | | | | | | | |
| Hired | man-day | 60 | 48 | 2,880 | 42 | 48 | 2,016 | 66 | 48 | 3,168 |
| Family | man-day | 50 | 48 | 2,400 | 33 | 48 | 1,584 | 55 | 48 | 2,640 |
| Machine/Tool/Animal | | | | 1,494 | | | 1,328 | | | 1,328 |
| Fuel/Oil | | | | 166 | | | 166 | | | 166 |
| Irrig. Service Fee | peso | | | 0 | | | 0 | | | 0 |
| Interest | Peso | | | 0 | | | 0 | | | 0 |
| Total | Peso | | | 16,834 | | | 11,307 | | | 12,685 |

Average cost of mango period of 30 years: 12,640

Table A.6.4 Economic Production Cost in Without-project Condition

| Crop Category | | 1st Paddy Irrigated | | | 2nd Paddy Irrigated | | | 3rd Paddy | | | 1st Paddy Rainfed | | |
|------------------------|-------------|---------------------|-------|---------------|---------------------|-------|---------------|-----------|-------|---------------|-------------------|-------|--------------|
| | | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value |
| | | | peso | peso | | peso | peso | | peso | peso | | peso | peso |
| Seeds | kg | 200 | 5 | 1,041 | 200 | 5 | 1,041 | 200 | 5 | 1,041 | 200 | 5 | 1,041 |
| Fertilizer | | | | | | | | | | | | | |
| N | kg | 93 | 13 | 1,238 | 93 | 13 | 1,238 | 93 | 13 | 1,238 | 40 | 13 | 532 |
| P2O5 | kg | 28 | 12 | 333 | 28 | 12 | 333 | 28 | 12 | 333 | 25 | 12 | 297 |
| K2O | kg | 13 | 8 | 108 | 13 | 8 | 108 | 13 | 8 | 108 | 10 | 8 | 83 |
| Chemicals | | | | 1,127 | | | 1,127 | | | 1,023 | | | 754 |
| Labor | | 69 | | | | | | | | | | | |
| Hired | man-day | 38 | 48 | 1,824 | 39 | 48 | 1,872 | 39 | 48 | 1,872 | 31 | 48 | 1,488 |
| Family | man-day | 31 | 48 | 1,488 | 32 | 48 | 1,536 | 32 | 48 | 1,536 | 25 | 48 | 1,200 |
| Machine/Tool/Animal | | | | 2,117 | | | 2,200 | | | 2,224 | | | 1,892 |
| Fuel/Oil | | | | 249 | | | 249 | | | 249 | | | 166 |
| Irrigation Service Fee | peso | | | 0 | | | 0 | | | 0 | | | 0 |
| Harvesters Share | peso | | | 1,278 | | | 1,450 | | | 860 | | | 960 |
| Interest | Peso | | | 0 | | | 0 | | | 0 | | | 0 |
| Total | Peso | | | 10,802 | | | 11,153 | | | 10,484 | | | 8,414 |

| Crop Category | | 2st Paddy Rainfed | | | Mungbean | | | Watermelon(Vegetables) | | |
|---------------------|-------------|-------------------|-------|--------------|----------|-------|--------------|------------------------|-------|--------------|
| | | Qty | Price | Value | Qty | Price | Value | Qty | Price | Value |
| | | | peso | peso | | peso | peso | | peso | peso |
| Seeds | kg | 200 | 5 | 1,041 | 25 | 25 | 623 | 1 | 830 | 830 |
| Fertilizer | | | | | | | | | | |
| N | kg | 40 | 13 | 532 | 30 | 13 | 399 | 50 | 13 | 665 |
| P2O5 | kg | 25 | 12 | 297 | 0 | 12 | 0 | 14 | 12 | 166 |
| K2O | kg | 10 | 8 | 83 | 0 | 8 | 0 | 14 | 8 | 116 |
| Chemicals | | | | 925 | | | | | | 1,500 |
| Labor | | | | | | | | | | |
| Hired | man-day | 32 | 48 | 1,536 | 10 | 48 | 480 | 47 | 48 | 2,256 |
| Family | man-day | 26 | 48 | 1,248 | 7 | 48 | 336 | 38 | 48 | 1,824 |
| Machine/Tool/Animal | | | | 2,141 | | | 291 | | | 166 |
| Fuel/Oil | | | | 166 | | | 83 | | | 166 |
| Irrig. Service Fee | peso | | | 0 | | | 0 | | | 0 |
| Harvesters' Share | peso | | | 797 | | | 0 | | | 0 |
| Interest | Peso | | | 0 | | | 0 | | | 0 |
| Total | Peso | | | 8,767 | | | 2,211 | | | 7,690 |

Table A.6.5 Economic Crop Net Income in the Future

| | Without Project | | | | | | With Project | | | | | |
|-------------------------|-----------------|----------|--------|------------|--------|--------|--------------|--------|--------|------------|--------|--------|
| | Output | Output | | Production | | Profit | Output | Output | | Production | | Profit |
| | | Qty | Price | Value | Cost | | | Qty | Price | Value | Cost | |
| | ton | peso/ton | peso | peso | peso | ton | peso/ton | peso | peso | peso | | |
| Jalaur Proper | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.40 | 5,207 | 17,700 | 10,800 | 6,900 | palay | 5.00 | 5,207 | 26,040 | 11,280 | 14,760 |
| 2nd Paddy Irrigated | palay | 3.30 | 5,207 | 17,180 | 11,150 | 6,030 | palay | 5.00 | 5,207 | 26,040 | 11,840 | 14,200 |
| 3rd Paddy | palay | 2.00 | 5,207 | 10,410 | 10,480 | -70 | | | | | | |
| 1st Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,410 | 3,250 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,770 | 2,890 | | | | | | |
| Mungbean | dry bean | 0.40 | 16,600 | 6,640 | 2,210 | 4,430 | dry bean | 0.70 | 16,600 | 11,620 | 5,300 | 6,320 |
| Watermelon | watermelon | 4.00 | 6,640 | 26,560 | 7,690 | 18,870 | watermelon | 7.00 | 6,640 | 46,480 | 12,080 | 34,400 |
| Vegetables | | | | | | | eggplant | 6.00 | 7,470 | 44,820 | 13,220 | 31,600 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 18,260 | 74,330 | 12,640 | 61,690 |
| Jalaur Extension | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.70 | 5,207 | 19,270 | 10,800 | 8,470 | palay | 5.00 | 5,207 | 26,040 | 11,280 | 14,760 |
| 2nd Paddy Irrigated | palay | 3.43 | 5,207 | 17,860 | 11,150 | 6,710 | palay | 5.00 | 5,207 | 26,040 | 11,840 | 14,200 |
| 3rd Paddy | palay | 2.00 | 5,207 | 10,410 | 10,480 | -70 | | | | | | |
| 1st Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,410 | 3,250 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,770 | 2,890 | | | | | | |
| Mungbean | dry bean | 0.40 | 16,600 | 6,640 | 2,210 | 4,430 | dry bean | 0.70 | 16,600 | 11,620 | 5,300 | 6,320 |
| Watermelon | watermelon | 4.00 | 6,640 | 26,560 | 7,690 | 18,870 | watermelon | 7.00 | 6,640 | 46,480 | 12,080 | 34,400 |
| Vegetables | | | | | | | eggplant | 6.00 | 7,470 | 44,820 | 13,220 | 31,600 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 18,260 | 74,330 | 12,640 | 61,690 |
| Suague | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.64 | 5,207 | 18,950 | 10,800 | 8,150 | palay | 5.00 | 5,207 | 26,040 | 11,280 | 14,760 |
| 2nd Paddy Irrigated | palay | 3.41 | 5,207 | 17,760 | 11,150 | 6,610 | palay | 5.00 | 5,207 | 26,040 | 11,840 | 14,200 |
| 3rd Paddy | palay | 2.00 | 5,207 | 10,410 | 10,480 | -70 | | | | | | |
| 1st Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,410 | 3,250 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,770 | 2,890 | | | | | | |
| Mungbean | dry bean | 0.40 | 16,600 | 6,640 | 2,210 | 4,430 | dry bean | 0.70 | 16,600 | 11,620 | 5,300 | 6,320 |
| Watermelon | watermelon | 4.00 | 6,640 | 26,560 | 7,690 | 18,870 | watermelon | 7.00 | 6,640 | 46,480 | 12,080 | 34,400 |
| Vegetables | | | | | | | eggplant | 6.00 | 7,470 | 44,820 | 13,220 | 31,600 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 18,260 | 74,330 | 12,640 | 61,690 |
| Aganan | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.56 | 5,207 | 18,540 | 10,800 | 7,740 | palay | 5.00 | 5,207 | 26,040 | 11,280 | 14,760 |
| 2nd Paddy Irrigated | palay | 3.40 | 5,207 | 17,700 | 11,150 | 6,550 | palay | 5.00 | 5,207 | 26,040 | 11,840 | 14,200 |
| 3rd Paddy | palay | 2.00 | 5,207 | 10,410 | 10,480 | -70 | | | | | | |
| 1st Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,410 | 3,250 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,770 | 2,890 | | | | | | |
| Mungbean | dry bean | 0.40 | 16,600 | 6,640 | 2,210 | 4,430 | dry bean | 0.70 | 16,600 | 11,620 | 5,300 | 6,320 |
| Watermelon | watermelon | 4.00 | 6,640 | 26,560 | 7,690 | 18,870 | watermelon | 7.00 | 6,640 | 46,480 | 12,080 | 34,400 |
| Vegetables | | | | | | | eggplant | 6.00 | 7,470 | 44,820 | 13,220 | 31,600 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 18,260 | 74,330 | 12,640 | 61,690 |
| Sta. Barbara | | | | | | | | | | | | |
| 1st Paddy Irrigated | palay | 3.86 | 5,207 | 20,100 | 10,800 | 9,300 | palay | 5.00 | 5,207 | 26,040 | 11,280 | 14,760 |
| 2nd Paddy Irrigated | palay | 3.56 | 5,207 | 18,540 | 11,150 | 7,390 | palay | 5.00 | 5,207 | 26,040 | 11,840 | 14,200 |
| 3rd Paddy | palay | 2.00 | 5,207 | 10,410 | 10,480 | -70 | | | | | | |
| 1st Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,410 | 3,250 | | | | | | |
| 2nd Paddy Rainfed | palay | 2.24 | 5,207 | 11,660 | 8,770 | 2,890 | | | | | | |
| Mungbean | dry bean | 0.40 | 16,600 | 6,640 | 2,210 | 4,430 | dry bean | 0.70 | 16,600 | 11,620 | 5,300 | 6,320 |
| Watermelon | watermelon | 4.00 | 6,640 | 26,560 | 7,690 | 18,870 | watermelon | 7.00 | 6,640 | 46,480 | 12,080 | 34,400 |
| Vegetables | | | | | | | eggplant | 6.00 | 7,470 | 44,820 | 13,220 | 31,600 |
| Tree Fruits | | | | | | | fresh mango | 4.00 | 18,260 | 74,330 | 12,640 | 61,690 |

Table A.6.6 Economic Rate of Return

| Project Year | Jalaur proper | | Jalaur extension | | Suague | | Aganan | | Sta. Barbara | | Total | |
|--------------|---------------|------------------|------------------|------------------|---------|------------------|---------|------------------|--------------|------------------|---------|------------------|
| | Benefit | Net Cost Benefit | Benefit | Net Cost Benefit | Benefit | Net Cost Benefit | Benefit | Net Cost Benefit | Benefit | Net Cost Benefit | Benefit | Net Cost Benefit |
| 1 | | 336 | | 159 | 124 | 124 | 85 | 85 | 96 | 96 | 0 | 800 |
| 2 | | 336 | | 159 | | -124 | | 57 | 64 | 64 | 0 | 615 |
| 3 | 37 | 37 | 8 | 8 | 6 | 6 | 10 | 10 | 7 | 7 | 69 | 69 |
| 4 | 75 | 75 | 17 | 17 | 12 | 12 | 20 | 20 | 14 | 14 | 137 | 137 |
| 5 | 112 | 112 | 25 | 25 | 18 | 18 | 30 | 30 | 20 | 20 | 206 | 206 |
| 6 | 149 | 149 | 34 | 34 | 24 | 24 | 40 | 40 | 27 | 27 | 274 | 274 |
| 7 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 8 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 9 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 10 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 11 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 12 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 13 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 14 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 15 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 16 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 17 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 18 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 19 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 20 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 21 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 22 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 23 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 24 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 25 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 26 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 27 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 28 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 29 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| 30 | 187 | 187 | 42 | 42 | 30 | 30 | 50 | 50 | 34 | 34 | 343 | 343 |
| IRR | | 18.49% | | 9.74% | 15.58% | 21.68% | | 14.72% | | | | 16.42% |
| Initial cost | | 671 | | 318 | 124 | 142 | | 160 | | | | 1415 |