# ATTACHMENT C

Kerckhoff Lake and Big Creek No. 4 Trip Logs and Photos

Field Trip Log - Aquatic		
Trip Log Number:	3	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Kerckhoff Reservoir and Big Creek No. 4 Power Plant	
Location:	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4	
Prepared By:	Philip Unger	
Date:	July 10, 2003	

Weather Conditions:	Warm and dry
Areas Covered (attach map with notations)	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	Yes

# **Existing Facilities:**

Existing facilities include Kerckhoff Dam, Kerckhoff Reservoir, Big Creek No. 4 Powerhouse, ancillary power facilities, developed recreation facilities, paved and unpaved roads, Auberry Road bridge.

Kerckhoff Reservoir is about 2.5 miles long. The upstream half of the reservoir appears to be very shallow due to the deposition of silt and has a well vegetated shoreline. The lower end of the reservoir is in a steep-walled canyon with a shoreline of mostly bedrock and little useful habitat for fish. The reservoir volume is small relative to the amount of flow in the San Joaquin River and consequently the flushing rate is high. The San Joaquin River upstream of the reservoir to Big Creek No. 4 has a low gradient channel with well-developed riparian vegetation and high flow at the time of the field visit. River flow was much lower upstream of the powerhouse. A number of unidentified fish fry were seen in a small, unnamed tributary that enters at the north shore of the Kerckhoff Reservoir. The lower several hundred feet of this creek was inundated by the reservoir at the time of the visit, forming a long, shallow pool. Gravel and rock substrate was covered with algae. Upstream of the pool, the gradient increased and water depth decreased sharply, making the stream impassable to fish. A larger tributary, Fish Creek, enters the reservoir about 0.5 mile east of the unnamed tributary, but was not visited. Both streams may provide spawning habitat for hardhead in the reservoir.

# Need for additional (engineering/hydrological, or other) information on measures

Need surface area vs. elevation projections for proposed Temperance Flat Reservoirs (RM 274, RM 279 and RM 286 dams), and monthly reservoir surface area projections for different water year types.

Need information on how operation of new reservoir would affect upstream reservoirs and river flows.

Also, would Kerckhoff Dam be removed?

# Additional data needs (within each specific discipline)

Need the following information:

Principal fish species of Kerckhoff Reservoir.

Tributary streams used for spawning by hardhead and other fish species, and the spawning locations in the streams.

Information on American shad and striped bass spawning runs in the San Joaquin River downstream of Kerckhoff Reservoir.

Information on abundance and distribution of hardhead, Kern brook lamprey and other fish species in (or potentially in) the San Joaquin River downstream of Kerckhoff

#### Reservoir.

Contaminants in sediments behind Kerckhoff Dam and how inundation of the reservoir would affect these sediments.

Projected water temperature and dissolved oxygen regimes in new reservoirs for different seasons and water surface elevations.

Field Trip Log - Botany		
Trip Log Number:	3	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Kerckhoff Reservoir and Big Creek No. 4 Power Plant	
Location:	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4	
Prepared By:	Jeff Glazner	
Date:	July 25, 2003	

Weather	Warm and dry
Conditions:	
Areas Covered	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River
(attach map with	upstream to Big Creek No. 4
notations)	
Attachments	
Photo Log	Yes
Photos	Yes
Topographic	
Map(s)	

# **Existing Facilities:**

Existing facilities include Kerckhoff Dam, Kerckhoff Reservoir, Big Creek No. 4 Powerhouse, ancillary power facilities, developed recreation facilities, paved and unpaved roads, Auberry Road bridge.

Kerckhoff Reservoir is about 2.5 miles long. The upstream half of the reservoir appears to be very shallow. The shoreline contains a wetland fringe and riparian vegetation due to shallow waters and slope. The lower end of the reservoir is in a steep-walled canyon with a shoreline of mostly bedrock and little vegetation. The San Joaquin River upstream of the reservoir to Big Creek Powerhouse No. 4 has a lower gradient channel with a narrow, discontinuous band of riparian vegetation. Flows were high between the powerhouse and the lake during our field visit on June 18, 2003. Tributary streams with riparian corridors flow into Kerckhoff Reservoir. Riparian vegetation along these streams includes alder, willow and Oregon ash.

#### Need for additional (engineering/hydrological, or other) information on measures

None at present.

#### Additional data needs (within each specific discipline)

Need to locate any additional information on presence or absence of rare plant species in area.

Need to spend time on ground in wetland habitats to determine potential for rare plants.

Field Trip Log - Recreation		
Trip Log Number:	3	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Kerckhoff Reservoir and Big Creek No. 4 Power Plant	
Location:	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4	
Prepared By:	Sandra Walter-Perry	
Date:	July 15, 2003	

Weather Conditions:	Warm and dry
Areas Covered (attach map with notations)	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4
Attachments	
Photo Log	None
Photos	None
Topographic Map(s)	Excerpts from USGS 7.5 minute quads, North Fork and Cascadel Point

#### **Existing Facilities:**

PG&E's Kerckhoff Lake, PG&E's Smalley Cove Recreation Area, PG&E's Wishon PH, Powerhouse Road (which crosses San Joaquin River at upper end of Kerckhoff Lake), SCE's Big Creek No. 4 Powerhouse, which is accessible on foot via a gated paved road (private SCE road). Existing Environmental Features as Appropriate to Discipline (hydrology; aquaticwater quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Kerckhoff Lake is an existing lake, which impounds water for PG&E's Kerckhoff No. 1 and Kerckhoff No. 2 power projects. PG&E's Smalley Cove Recreation Area is located on the north shore of the lake and is accessible from Powerhouse Road (also referred to as Auberry Road or North Fork Road). There are no other developed recreation facilities in the immediate vicinity of Kerckhoff Lake or upstream to SCE's Big Creek No. 4 Powerhouse.

Smalley Cove is used as a put-in location for the Patterson Bend WW boating run located downstream. It is also the take-out for a WW boating run referred to as the Horseshoe Bend Run, located upstream.

# Need for additional (engineering/hydrological, or other) information on measures

None at present.

#### Additional data needs (within each specific discipline)

Information and alignment maps for the San Joaquin River Trail.

Whitewater boating use data for Patterson Bend and Horseshoe Bend Runs, if available. We may have to rely on anecdotal information available from local paddling groups (e.g. San Joaquin Paddlers, Gold Country Paddlers)

Can rely on SCE's boating flow study for information about minimum and optimum boating flows, rapids, etc. associated with the Horseshoe Bend Run.

Use data for Smalley Cove Recreation Area (can use PG&E's form 80 data).

Field Trip Log - Wildlife		
Trip Log Number:	3	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Kerckhoff Reservoir and Big Creek No. 4 Power Plant	
Location:	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4	
Prepared By:	David Stevens	
Date:	July 19, 2003	

Weather	Warm and dry
Conditions:	
Areas Covered (attach map with notations)	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4
Attachments	None
Photo Log	
Photos	
Topographic Map(s)	

#### **Existing Facilities:**

Kerckhoff Reservoir and dam, Wishon Powerhouse, Big Creek No. 4, associated public and private roads, gauging station at Willow Creek and San Joaquin River.

The river between Kerckhoff Reservoir and Big Creek No. 4 has a varied setting where portions are located in rather steep walled canyons and other in more open, gently sloped terrain, however the former condition is predominant. The river is subtended by granitic bedrock over much of the area and this limits development of wildlife habitat, and, thus, wildlife communities. Willow Creek is an important tributary to the San Joaquin River as it historically hosted populations of mountain yellow-legged frog (a species of special concern and one that has experienced significant population declines in recent years), and it currently supports a population of western pond turtles. It is expected that the San Joaquin itself supports a population of western pond turtles in this reach. Upland wildlife habitat in this section of the project area is foothill woodland with open grassland and meadow habitats present. However, extensive cattle grazing have significantly affected the qualities of upland habitats. This area appears to support large populations of California quail, an important game bird. The tributary streams and more gentle sloped areas of this reach may support a number of species of significant concern.

# Need for additional (engineering/hydrological, or other) information on measures

Planned reservoir operations including yearly and seasonal fluctuations, dry year vrs wet year comparative levels, etc.

# Additional data needs (within each specific discipline)

Wildlife population status for important game species, including deer, bear, quail, rabbits, and other species.

Known distribution and habitat requirements for species of special concern.

Known habitat conditions for game and species of special concern.

Known limiting factors governing current wildlife populations and trends.

Wildlife species and species of special concern associated with tributary streams.

Field Trip Log - Cultural		
Trip Log Number:	3	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Kerckhoff Reservoir and Big Creek No. 4 Power Plant	
Location:	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4	
Prepared By:	David White	
Date:	June 18, 2003	

Weather Conditions:	Warm and dry
Areas Covered (attach map with notations)	Kerckhoff Reservoir, Wishon Power Plant, and San Joaquin River upstream to Big Creek No. 4
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	North Fork and Auberry

#### **Existing Facilities:**

PG&E's A. G. Wishon Powerhouse; associated employee housing and remnants of former housing; roads, bridges, transportation infrastructure; SCE's Big Creek Powerhouse No. 4.

Prehistoric: Blue Oak/Foothill Pines vegetation along the San Joaquin River would have presented diverse natural resources. There is a high probability of prehistoric archaeological sites on gentler terrain, including BRM stations, hunting & fishing camps. A known Toltichi (Yokuts) village site was formerly located in the vicinity of the Wishon Powerhouse, and there may be some remains of this village. Some sites are known to be inundated by the existing Kerckhoff Reservoir. Ephemeral use sites are likely in the San Joaquin River canyon around SCE's Big Creek Powerhouse No. 4.

Historic: Remains of the PG&E employee community at Wishon Powerhouse; various other sites likely, associated with mining, logging, hydroelectric development, recreation and other activities.

#### Need for additional (engineering/hydrological, or other) information on measures

Need footprint of all associated project-related ground disturbance areas, to include but not be limited to project offices and maintenance buildings, construction set-up and laydown areas, access roads, electric transmission lines, water conveyance structures, and all other project facilities.

#### Additional data needs (within each specific discipline)

Need archaeological records search with California Historic Resources Inventory System (CHRIS) information center. Clearinghouse: Southern San Joaquin Valley Info Center, CSU-Bakersfield.

Need consultation with BuRec, BLM and USFS (Sierra NF) cultural resource specialists regarding sites that may not be recorded with the CHRIS information center.

Also need brief review of archaeological and ethnographic literature pertaining to the area. Minimal level of effort: 1) to identify types of archaeological remains expected, time periods represented; and 2) to identify Native American tribes historically occupying the area, along with published information on major named villages or other ethnographic sites.

Wildlife population status for important game species, including deer, bear, quail, rabbits, and other species.

Known distribution and habitat requirements for species of special concern.

Known habitat conditions for game and species of special concern.

Known limiting factors governing current wildlife populations and trends.

Wildlife species and species of special concern associated with tributary streams.



Above: A.G. Wishon Powerhouse (PG&E), view north; late morning. (P6180021.JPG)



Above: Former PG&E residential area across from A.G. Wishon Powerhouse; note oleanders (late morning). (P6180022.JPG)



Above: General view of A.G. Wishon Powerhouse (PG&E) from across the road, view northeast (late morning). (P6180023.JPG)



Above: Former PG&E residential area across from A.G. Wishon Powerhouse; note rock walls (late morning). (P6180024.JPG)



Above: Former PG&E residential area across from A.G. Wishon Powerhouse; note rock walls and entrance gate (late morning). (P6180025.JPG)



Above: MWH team walking downhill to SCE's Big Creek Powerhouse No. 4 (late morning). (P6180026.JPG)



Above: Dave Stevens and Jeff Glazner looking upstream at SCE's Big Creek Powerhouse No. 4 (late morning). (P6180027.JPG)



Above: View upstream, at SCE's Big Creek Powerhouse No. 4 (late morning). (P6180028.JPG)



Above: View downstream, from SCE's Big Creek Powerhouse No. 4 (late morning). (P6180029.JPG)



Above: View downstream at creek or discharge channel just west of A.G. Wishon Powerhouse (early afternoon). (P6180032.JPG)



Left: View upstream at creek or discharge channel just west of A.G. Wishon Powerhouse (early afternoon). (P6180033.JPG)



Above: Joel Sturm (L) and Phil Unger (R), view downstream at creek or discharge channel just west of A.G. Wishon Powerhouse (early afternoon). (P6180034.JPG)



Above: View east at mouth of creek or discharge channel; A.G. Wishon Powerhouse in background (early afternoon). (P6180035.JPG)



Above: Fish Creek near Kerckhoff Reservoir, most of this water comes from reservoir (view upstream, June 18 2003) (039.JPG)



Above: Fish Creek near Kerckhoff Reservoir, most of this water comes from reservoir (view upstream, June 18 2003) (040.JPG)



Above: Fish Creek near Kerckhoff Reservoir, most of this water comes from reservoir (view upstream, June 18 2003) (043.JPG)



Above: Fish Creek near Kerckhoff Reservoir, most of this water comes from reservoir (view upstream, June 18 2003) (046.JPG)



Above: Kerkhoff Reservoir near Wishon Powerhouse (view upstream, June 18 2003) (011\_8.JPG)



Above: San Joaquin River at Big Creek No. 4 Powerhouse (view downstream, June 18 2003) (012\_9.JPG)



Above: San Joaquin River at Big Creek No. 4 Powerhouse (view upstream, June 18 2003) (013\_10.JPG)



Above: Fish Creek near Kerckhoff Reservoir, upstream fish passage barrier – flow upstream very low (view upstream, June 18 2003) (015\_12.JPG)



Above: Fish Creek near Kerckhoff Reservoir, most of this water comes from reservoir (view upstream, June 18 2003) (016\_13.JPG)



Above: Fish Creek near Kerckhoff Reservoir, most of this water comes from reservoir (view upstream, June 18 2003) (017\_14.JPG)



Above: Kerkhoff Reservoir with Wishon Powerhouse (view upstream, June 18 2003) (018\_15.JPG)

# ATTACHMENT D

San Joaquin River Below Redinger Dam and Redinger Lake Trip Logs and Photos

Field Trip Log - Aquatic		
Trip Log Number:	4	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Redinger Lake and SJR between Redinger and Kerckhoff Lakes	
Location:	San Joaquin River	
Prepared By:	Phil Unger	
Date:	July 11, 2003	

Weather	Sunny and hot
Conditions:	
Areas Covered	Kerckhoff Lake, PG&E's Smalley Cove Recreation Area, Big Creek No.
(attach map with	4 Powerhouse, Redinger Lake, SJR between Redinger and Kerckhoff
notations)	Lakes
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	

#### **Existing Facilities:**

Existing facilities include Redinger Dam, Redinger Reservoir, Big Creek Power Plant No. 3, ancillary power facilities, developed recreation facilities, Chawanakee community buildings, paved and unpaved roads and Italian Bar Road Bridge.

Redinger Reservoir is 5.25 miles long and less than 2,000 feet wide. The steep topography of the basin results in little shallow water habitat and no significant coves. The reservoir volume is small relative to the amount of inflow from the San Joaquin River and the Big Creek No. 3 powerhouse, resulting in a high flushing rate. The inflow is cold and nutrient-poor, which, combined with the high flushing rate and dearth of shallow water habitat, results in low reservoir fish production. According to past studies (SCE 1997 relicensing studies), Redinger Reservoir thermally stratifies in low but not high inflow years, while dissolved oxygen concentration is generally high and pH is slightly acidic at all depths. The fish fauna of Redinger Reservoir primarily consists of native species, including hardhead, a California State Species of Special Concern. The San Joaquin River between Redinger Dam and the Big Creek No. 4 powerhouse, known as the Horseshoe Bend Reach, runs through a steep-sided canyon similar to the canyon below Kerckhoff Reservoir. The channel is low-gradient and bedrock-controlled, forming a series of long, deep pools and runs separated by rock-fall debris. Willow Creek, a major tributary that is a major source of fine sediments and warm water to the reach, joins the river about a half-mile downstream of Redinger Dam. Lower Willow Creek has very low surface flow which helps keep exotic species in upper Willow Creek and Bass Lake from invading Horseshoe Bend. Much of the natural flow of the San Joaquin River is diverted from Redinger Dam to Big Creek No. 4. Like Redinger Reservoir, the fish fauna of the Horseshoe Bend is mostly comprised of native species, with hardhead the most abundant species. The DFG currently manages the Horseshoe Bend Reach and Redinger Reservoir as a native species fishery.

# Need for additional (engineering/hydrological, or other) information on measures

Need surface area vs. elevation projections for proposed Temperance Flat Reservoirs (RM 274, RM 279 and RM 286 dams), and monthly reservoir surface area projections for different water year types.

Need information on how operation of new reservoir would affect upstream reservoirs and river flows.

Also, would Redinger Dam be removed?

# Additional data needs (within each specific discipline)

Need the following information:

Tributary streams used for spawning by hardhead and other fish species, and the spawning locations in the streams.

Effects of inundation of lower Willow Creek on passage of exotic fish species.

Projected water temperature and dissolved oxygen regimes in new reservoirs for different seasons and water surface elevations.

Field Trip Log - Botany		
Trip Log Number:	4	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	•
Site Name:	Redinger Lake and SJR between Redinger a	nd Kerckhoff Lakes
Location:	San Joaquin River	
Prepared By:	Jeff Glazner	
Date:	July 25, 2003	

Weather	Sunny and hot
Conditions:	
Areas Covered	Kerckhoff Lake, PG&E's Smalley Cove Recreation Area, Big Creek No.
(attach map with	4 Powerhouse, Redinger Lake, SJR between Redinger and Kerckhoff
notations)	Lakes
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	

# **Existing Facilities:**

Existing facilities include Redinger Dam, Redinger Reservoir, Big Creek No. 4, quarry, ancillary power facilities, developed recreation facilities, Chawanakee community buildings, paved and unpaved roads and Italian Bar Road Bridge.

Narrow, steep, rocky channel below dam. Little vegetation on banks. Willow Creek confluence approx 3000 feet downstream. Willow Creek with riparian corridor (alder, cottonwood, willow, blackberry). Upper slopes are foothill woodland (primarily foothill pine and interior live oak).

Redinger Reservoir is 5.25 miles long and less than 2,000 feet wide. Banks above Redinger Lake are steep and contain very little riparian vegetation (occasional buttonwillow, willow and alder). Pool level almost at capacity- approx 10 feet below high water mark. Upper slopes are foothill woodland (primarily foothill pine and interior live oak).

#### Need for additional (engineering/hydrological, or other) information on measures

None at present.

#### Additional data needs (within each specific discipline)

Need to locate any additional information on presence or absence of rare plant species in area.

Spring ground surveys.

Field Trip Log – Cultural Resources		
Trip Log Number:	4	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Redinger Lake and SJR between Redinger and Kerckhoff Lakes	
Location:	San Joaquin River	
Prepared By:	David Whites	
Date:	June 18, 2003	

Weather	Sunny and hot
Conditions:	
Areas Covered	Kerckhoff Lake, PG&E's Smalley Cove Recreation Area, Big Creek No.
(attach map with	4 Powerhouse, Redinger Lake, SJR between Redinger and Kerckhoff
notations)	Lakes
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	Auberry

#### **Existing Facilities:**

Redinger Dam and Lake; penstock from Redinger Dam to Big Creek Powerhouse No. 4; roads and other transportation infrastructure including Italian Bar Bridge; SCE's Powerhouse No. 3, Chawanakee School and remains of the Powerhouse No. 3 community.

Prehistoric: Blue Oak/Foothill Pines vegetation along the San Joaquin River would have presented diverse natural resources. Numbers of archaeological sites are known to have been inundated by Redinger Lake. There are also known archaeological sites at Chawanakee Flats and other areas, including the vicinity of Edison's Powerhouse No. 3. There is a high probability of prehistoric archaeological sites on gentler terrain throughout, including BRM stations, hunting & fishing camps. Ephemeral use sites are likely in the San Joaquin River canyon extending downstream from Redinger Dam to SCE's Big Creek Powerhouse No. 4.

Historic: Remains of the SCE employee community at SCE's Powerhouse No. 3; various other sites likely, associated with mining, logging, hydroelectric development (e.g., a construction camp located near Redinger Dam), recreation and other activities.

#### Need for additional (engineering/hydrological, or other) information on measures

Need footprint of all associated project-related ground disturbance areas, to include but not be limited to project offices and maintenance buildings, construction set-up and laydown areas, access roads, electric transmission lines, water conveyance structures, and all other project facilities.

# Additional data needs (within each specific discipline)

Need archaeological records search with California Historic Resources Inventory System (CHRIS) information center. Clearinghouse: Southern San Joaquin Valley Info Center, CSU-Bakersfield.

Need consultation with BuRec, BLM and USFS (Sierra NF) cultural resource specialists regarding sites that may not be recorded with the CHRIS information center.

Also need brief review of archaeological and ethnographic literature pertaining to the area. Minimal level of effort: 1) to identify types of archaeological remains expected, time periods represented; and 2) to identify Native American tribes historically occupying the area, along with published information on major named villages or other ethnographic sites.

Field Trip Log - Recreation		
Trip Log Number:	4	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Redinger Lake and SJR between Redinger and Kerckhoff Lakes	
Location:	San Joaquin River	
Prepared By:	Sandra Walter-Perry	
Date:	July 15, 2003	

Weather	Sunny and hot
Conditions:	
Areas Covered	Kerckhoff Lake, PG&E's Smalley Cove Recreation Area, Big Creek No.
(attach map with	4 Powerhouse, Redinger Lake, SJR between Redinger and Kerckhoff
notations)	Lakes
Attachments	
Photo Log	None
Photos	None
Topographic	North Fork and Cascadel Point
Map(s)	

# **Existing Facilities:**

PG&E's Kerckhoff Lake, PG&E's Smalley Cove Recreation Area, PG&E's Wishon Powerhouse, Powerhouse Road (which crosses San Joaquin River at upper end of Kerckhoff Lake), SCE's Big Creek No. 4 Powerhouse, which is accessible on foot via a gated paved road (private SCE road), Redinger Lake Road (paved), Italian Bar bridge, SCE's Powerhouse No. 3., located at upper end of Redinger Lake, boat launch and other semi-developed recreation facilities on shoreline of Redinger Lake.

# Existing Environmental Features as Appropriate to Discipline (hydrology; aquaticwater quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Kerckhoff Lake is an existing lake, which impounds water for PG&E's Kerckhoff No. 1 and Kerckhoff No. 2 power projects. Redinger Lake is an existing lake, which impounds water for SCE's Big Creek No. 4 power project.

PG&E's Smalley Cove Recreation Area is located on the north shore of the Kerckhoff Lake and is accessible from Powerhouse Road (also referred to as Auberry Road or North Fork Road). There are no other developed recreation facilities in the immediate vicinity of Kerckhoff Lake or upstream to SCE's Redinger Lake.

Redinger Reservoir is not heavily developed for recreation use. Camping and day use is allowed in designated areas. Portable toilets and a boat launch are also available.

Whitewater boating occurs on the San Joaquin River between Redinger and Kerckhoff Lake (Horseshoe Bend Run) and between Kerckhoff Lake and Millerton Reservoir (Patterson Bend Run).

# Need for additional (engineering/hydrological, or other) information on measures

None at present.

# Additional data needs (within each specific discipline)

Information and alignment maps for the San Joaquin River Trail.

Whitewater boating use data for Patterson Bend and Horseshoe Bend Runs, if available. We may have to rely on anecdotal information available from local paddling groups (e.g. San Joaquin Paddlers, Gold Country Paddlers).

Can rely on SCE's boating flow study for information about minimum and optimum boating flows, rapids, etc. associated with the Horseshoe Bend Run.

Use data for Smalley Cove Recreation Area (can use PG&E's form 80 data).

Use data for recreation facilities around Redinger Lake (can rely on information contained in SCE's license application).

Field Trip Log - Wildlife		
Trip Log Number:	4	<b>Project No:</b> 1003811.010101
Dates:	June 18, 2003	
Site Name:	Redinger Lake and SJR between Redinger and Kerckhoff Lakes	
Location:	San Joaquin River	
Prepared By:	David Stevens	
Date:	July 19, 2003	

Weather	Sunny and hot
Conditions:	
Areas Covered	Kerckhoff Lake, PG&E's Smalley Cove Recreation Area, Big Creek No.
(attach map with	4 Powerhouse, Redinger Lake, SJR between Redinger and Kerckhoff
notations)	Lakes
Attachments	
Photo Log	None
Photos	None
Topographic	None
Map(s)	

#### **Existing Facilities:**

Redinger Lake, Big Creek No. 3; housing, old school, and support facilities for SCE's Big Creek operations.

The San Joaquin River between Big Creek No. 4 and Redinger is quite similar in its setting as areas of the river below this reach, as discussed in Trip Reports 2 and 3. The river is situated in a narrow canyon subtended by granitic bedrock that limits development of riparian wildlife habitat. The river in this reach is highly regulated by hydro operations and flows do not appear to be significantly augmented by tributary streams in this reach. Foothill woodland is the dominant upland habitat type, as with other areas of the project area. It is likely the area provides winter range for deer and also supports other game species such as black bear, quail, rabbit, dove and band-tailed pigeons.

Redinger Lake is long and relatively narrow owing to the river topography. The lake provides resting habitat for waterfowl and may support feeding bald eagles and osprey. Western pond turtles are expected to be found in areas of the lake shoreline.

The river above Big Creek No. 4 is located in a narrow, steep walled canyon with little riparian habitat. This area would not likely be considered important habitat for any species of special concern.

#### Need for additional (engineering/hydrological, or other) information on measures

Expected reservoir operational levels, seasonal levels and differences in levels during wet and dry years.

# Additional data needs (within each specific discipline)

Quality of upland and riparian habitats.

Known upland game species and population status and trends.

Distribution and population status of species of special concern.

Factors limiting or affecting status of important wildlife species in this portion of the project area.

Importance of tributary streams to the terrestrial wildlife populations of the area.



Above: SCE's Redinger Lake Dam, view east from Redinger Lake Road in Sect.17, T9S, R23E; note borrow pit scar on hillside, left of dam & slightly to foreground (midafternoon).(P6180036.JPG)

Right: SCE's Redinger Lake Dam, view east from Redinger Lake Road in Sect.17, T9S, R23E (mid-afternoon). (P6180037.JPG)





Above: Another view of SCE's Redinger Lake Dam, view east from Redinger Lake Road in Sect.17, T9S, R23E; note penstock to Powerhouse No. 4 in left foreground (midafternoon). (P6180038.JPG)



Above: Redinger Lake Dam, close-up, view east (mid-afternoon). (P6180039.JPG)



Above: Monument to David Hubbard Redinger, just above the dam that bears his name. (mid-afternoon).(P6180040.JPG)



Close-up of Redinger monument (midafternoon).(P6180041.JPG)



Above: Redinger Lake, Italian Bar bridge in background, view southeast; elbow and rearview mirror in foreground (mid-afternoon). (P6180042.JPG)



Above: Chawanakee School at SCE's former Powerhouse 3 community, view northeast but only shows one end of the building (midafternoon). (P6180043.JPG)


Above: Chawanakee School at SCE's former Powerhouse 3 community, view askance shows more of vehicle interior (midafternoon).(P6180044.JPG)



Above: Chawanakee School at SCE's former Powerhouse 3 community, view northeast shows entire building (mid-afternoon). (P6180045.JPG)



Above: Upper Redinger Lake, view east showing penstocks to SCE's Powerhouse 3 (mid-afternoon). (P6180046.JPG)



Above: Redinger Dam and Reservoir and San Joaquin River (view upstream, June 18 2003) (052.JPG)



Above: San Joaquin River below Redinger Dam (view downstream, June 18 2003) (056.JPG)



Above: San Joaquin River below Redinger Dam (view downstream, June 18 2003) (060.JPG)



Above: San Joaquin River above Redinger Dam (June 18 2003) (058.JPG)



Above: San Joaquin River above Redinger Dam (June 18 2003) (059.JPG)



Above: Redinger Dam and Reservoir (view of dam, June 18 2003) (065.JPG)



Above: Upper Redinger Lake, view east showing penstocks to SCE's Powerhouse 3 (mid-afternoon) (057.JPG)



Above: Redinger Dam and Reservoir and San Joaquin River (view upstream, June 18 2003) (019\_16.JPG)



Above: Redinger Dam and Reservoir and San Joaquin River (view upstream, June 18 2003) (020\_17.JPG)



Above: San Joaquin River below Redinger Dam (view upstream, June 18 2003) (021\_18.JPG)



Above: Redinger Dam (June 18 2003) (022\_19.JPG)

# ATTACHMENT E Temperance Flat and Patterson Mine Sites Trip Logs and Photos

Field Trip Log - Aquatic		
Trip Log Number:	5	<b>Project No:</b> 1003811.010101
Dates:	June 19, 2003	
Site Name:	Temperance Flat and Patterson Mine Dam Sites	
Location:	Temperance Flat in the vicinity of the Sullivan Mine and the opposite shore of Millerton Reservoir near the Patterson Mine	
Prepared By:	Philip Unger	
Date:	July 15, 2003	

Weather	Warm and dry
Conditions:	
Areas Covered	The Temperance Flat reach of Millerton Reservoir and upland areas on
(attach map with	Temperance Flat and in the vicinity of Patterson Mine.
notations)	
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	

## **Existing Facilities:**

Millerton Reservoir. Unpaved roads, abandoned and active residences, abandoned mines and mining equipment. Moderate to steeply sloping hillsides comprised of open grassland and oak woodlands characterizes the Temperance Flat and Patterson Mine areas.

## Existing Environmental Features as Appropriate to Discipline (hydrology; aquaticwater quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

This trip log covers the upper portion Millerton Reservoir in the vicinity of the Temperance Flat Recreation Area and the RM 279 dam site. Upper Millerton Reservoir is mostly narrow and steep-sided, but the reach at Temperance Flat is broader and more open than other parts of the upper reservoir. This log also covers two small, unnamed creeks: one on Temperance Flat in the Sullivan Mine drainage and the other east of the Patterson Mine site. The reservoir water level was high at the time of the field trip and much of the shoreline aquatic habitat was out of view. The shoreline in much of this portion of the reservoir is steep-sided and rocky, with little vegetation, but the shoreline near Temperance Flat Recreation Area is gradual with many bushes and trees that would provide excellent fish habitat if flooded. Partially submerged trees (mostly willows) were observed in the Temperance Flat area. The creek in the Sullivan Mine drainage was densely covered with blackberry and grapes and an overstory of oaks and pines. This creek had too little flow to support fish. Smallmouth bass were observed in the cove in Millerton Reservoir at the mouth of this stream. The stream near Patterson Mine site had no flowing water, but the channel contained a few highly vegetated pools with many insects (water boatmen). No other aquatic habitats were seen in the area.

## Need for additional (engineering/hydrological, or other) information on measures

Need surface area vs. elevation projections for the two proposed downstream Temperance Flat Reservoirs (dam sites at RM 274 and RM 279) and monthly surface area projections for different water year types for each reservoir.

Need to know how the new reservoirs would affect Millerton Reservoir operations, including the magnitude and timing of lake level fluctuations, and they would affect operation of upstream reservoirs.

Also, need detailed flow projections for the San Joaquin River downstream of Kerkhoff Dam to Millerton Lake, during May and June (American shad and striped bass spawning seasons).

## Additional data needs (within each specific discipline)

Need the following information:

Principal fish species of Millerton Reservoir, especially in the Temperance Flat

Recreation Area and upstream.

Water temperature, dissolved oxygen profiles and any other existing water quality data from Millerton Reservoir, especially from sites near Temperance Flats and upstream.

Projected water temperature and dissolved oxygen regimes in the new reservoirs for different seasons and water surface elevations.

Water temperature and other water quality data for the San Joaquin River upstream of Millerton Reservoir.

Information on American shad and striped bass spawning runs in the San Joaquin River upstream of Millerton Reservoir and in upper Millerton Reservoir.

Information on abundance and distribution of hardhead, Kern brook lamprey and other fish species in the San Joaquin River upstream of Millerton Reservoir.

Field Trip Log - Biology		
Trip Log Number:	5	<b>Project No:</b> 1003811.010101
Dates:	June 19, 2003	
Site Name:	Temperance Flat and Patterson Mine Dam Sites	
Location:	Temperance Flat in the vicinity of the Sullivan Mine and the opposite shore of Millerton Reservoir near the Patterson Mine	
Prepared By:	David Stevens	
Date:	July 19, 2003	

Weather	Warm and dry
Conditions:	
Areas Covered	The Temperance Flat reach of Millerton Reservoir and upland areas on
(attach map with	Temperance Flat and in the vicinity of Patterson Mine.
notations)	
Attachments	None
Photo Log	
Photos	
Topographic Map(s)	

## **Existing Facilities:**

Campgrounds and picnic areas, restrooms, old mines, few residences, unimproved dirt roads.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquaticwater quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic) The Patterson Mine area is flatter in terrain than much of the overall project area. This condition allows development and establishment of wildlife populations that are more limited in areas of steep terrain. This includes deer, black bear, and mountain lions. The upland habitat is foothill woodland, as occurs throughout this region. There are tributary streams in this area and these may contribute to wildlife habitat diversity and may host some species of special concern. This area may also provide deer winter range. Several species of special concern may occur in this area, and include western pond turtles, tiger salamanders, western spadefoot toads and bats. Mine shafts in the area may provide refugia, roosting and breeding habitats for several bat species considered species of special concern.

## Need for additional (engineering/hydrological, or other) information on measures

Potential and expected reservoir operational levels, including dry and wet year differences, seasonal differences.

#### Additional data needs (within each specific discipline)

Maps of all known mine shafts and similar structures in the area.

Status of game animal populations and factors influencing statuses.

Identification of habitats that may host, and that are known to host, species of special concern.

Calculations of habitat loss due to potential reservoir levels.

Field Trip Log - Botany		
Trip Log Number:	5	<b>Project No:</b> 1003811.010101
Dates:	June 19, 2003	•
Site Name:	Temperance Flat and Patterson Mine Dam Sites	
Location:	Temperance Flat in the vicinity of the Sullivan Mine and the opposite shore of Millerton Reservoir near the Patterson Mine	
Prepared By:	Jeff Glazner	
Date:	July 25, 2003	

Weather	Warm and dry
Conditions:	
Areas Covered	The Temperance Flat reach of Millerton Reservoir and upland areas on
(attach map with	Temperance Flat and in the vicinity of Patterson Mine.
notations)	
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	

## **Existing Facilities:**

Millerton Reservoir. Unpaved roads, abandoned and active residences, abandoned mines and mining equipment. Moderate to steeply sloping hillsides comprised of open grassland and oak woodlands characterizes the Temperance Flat and Patterson Mine areas. Existing Environmental Features as Appropriate to Discipline (hydrology; aquaticwater quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Upper Millertown Reservoir is steep sided and contains sparse foothill woodland. Foothill pine is the most common tree species with interior live oak, blue oak, buckeye, buckbrush, and poison oak as common shrubs. Riparian vegetation is minimal and confined to a few narrow drainages entering lake.

Proposed dam sites at RM 274 and RM 279 are typical of area- steep with low species diversity. A seasonal stream tributary entering Millertown Lake supports riparian vegetation. Willow, fig, blackberry and abundant California wild grape are common. Herbaceous vegetation is weedy.

#### Need for additional (engineering/hydrological, or other) information on measures

None at present.

## Additional data needs (within each specific discipline)

Need to locate any additional information on presence or absence of rare plant species in area.

Spring ground surveys.

Field Trip Log - Cultural		
Trip Log Number:	5	<b>Project No:</b> 1003811.010101
Dates:	June 19, 2003	
Site Name:	Temperance Flat and Patterson Mine Dam Sites	
Location:	Temperance Flat in the vicinity of the Sullivan Mine and the opposite shore of Millerton Reservoir near the Patterson Mine	
Prepared By:	David White	
Date:	June 19, 2003	

Weather	Warm and dry
Conditions:	
Areas Covered	The Temperance Flat reach of Millerton Reservoir and upland areas on
(attach map with	Temperance Flat and in the vicinity of Patterson Mine.
notations)	
Attachments	
Photo Log	Yes
Photos	Yes
Topographic Map(s)	Millerton Lake East

#### **Existing Facilities:**

Private residential cabins in Temperance Flat area; camping area and restroom facilities along south shore of river; foot trails, camping area and restrooms on north shore; Sullivan mine remains on Fresno Co. side of river at Temperance Flat; Patterson Mine on Madera Co. side farther downstream (was used by Department of Parks & Recreation as public interpretive site); more recent/contemporary cabin with remains of mining activity also on Madera Co. side slightly upstream from Patterson Mine.

## Existing Environmental Features as Appropriate to Discipline (hydrology; aquaticwater quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

Prehistoric: Blue Oak/Foothill Pines vegetation along San Joaquin River would have presented diverse natural resources. Some sites are inundated by the existing Millerton Lake reservoir. There remains a high probability of prehistoric archaeological sites on gentler terrain, including BRM stations, hunting & fishing camps.

Historic: Fairly diverse mining features occur around Temperance Flat: remains from Chinese placer mining, an arrastra, and two mine portals associated with the Sullivan Mine. On the north side of the river, the Patterson Mine presents an exceptionally diverse set of remains, including an arrastra, mine portals, remains of cabins, and can/equipment dumps. A two-stamp lift wheel and various other mining remains, including a ball mill, an ore car and rail tracks, are present near a contemporary cabin on the north side of the river a short distance upstream from the Patterson Mine.

## Need for additional (engineering/hydrological, or other) information on measures

Need footprint of all associated project-related ground disturbance areas, to include but not be limited to project offices and maintenance buildings, construction set-up and laydown areas, access roads, electric transmission lines, water conveyance structures, and all other project facilities.

## Additional data needs (within each specific discipline)

Need archaeological records search with California Historic Resources Inventory System (CHRIS) information center. Clearinghouse: Southern San Joaquin Valley Info Center, CSU-Bakersfield.

Need consultation with BuRec and BLM cultural resource specialists regarding sites that may not be recorded with the CHRIS information center. Department of Parks and Recreation should be consulted in regard to the Patterson Mine.

Also need brief review of archaeological and ethnographic literature pertaining to the area. Minimal level of effort: 1) to identify types of archaeological remains expected, time periods represented; and 2) to identify Native American tribes historically occupying the area, along with published information on major named villages or other ethnographic sites.

Field Trip Log - Mining		
Trip Log Number:	5	<b>Project No:</b> 1003811.010101
Dates:	June 19, 2003	
Site Name:	Temperance Flat and Patterson Mine Dam Sites	
Location:	Temperance Flat in the vicinity of the Sullivan Mine and the opposite shore of Millerton Reservoir near the Patterson Mine	
Prepared By:	Sandra Walter-Perry	
Date:	July 15, 2003	

Weather	Warm and dry
Conditions:	
Areas Covered	The Temperance Flat reach of Millerton Reservoir and upland areas on
(attach map with	Temperance Flat and in the vicinity of Patterson Mine.
notations)	
Attachments	
Photo Log	
Photos	
Topographic Map(s)	Millerton Lake East

## **Existing Facilities:**

Temperance Flat, located on the south side of the upper end of Millerton Reservoir is undeveloped. Remnants of the Sullivan Mine, an historic gold mine are present but mostly hidden by brush. Remnants include two partially collapsed mine tunnels, small tailings piles, arastras, and hand stacked walls. An unpaved road provides access from Wellbarn Road. The Patterson Mine, another historic gold mine, is located across the river, downstream. Remnants of the Patterson Mine include several mine tunnels, a wellpreserved arastra, small tailings piles, and a small stamp mill foundation. A cabin and stamp mill are located upstream and upslope, but it is unclear whether these features are part of the Patterson Mine or another historic mining operation.

Existing Environmental Features as Appropriate to Discipline (hydrology; aquaticwater quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

See No. 1 above.

#### Need for additional (engineering/hydrological, or other) information on measures

None at present.

#### Additional data needs (within each specific discipline)

More detailed information about historic mining operations in the area.

Soil sampling to test for the presence of mercury, if historic records indicate a high likelihood that mercury was used as part of historic mining operations.

Field Trip Log - Recreation		
Trip Log Number:	5	<b>Project No:</b> 1003811.010101
Dates:	June 19, 2003	
Site Name:	Temperance Flat and Patterson Mine Dam Sites	
Location:	Temperance Flat in the vicinity of the Sullivan Mine and the opposite shore of Millerton Reservoir near the Patterson Mine	
Prepared By:	Sandra Walter-Perry	
Date:	July 15, 2003	

Weather	Warm and dry
Conditions:	
Areas Covered	The Temperance Flat reach of Millerton Reservoir and upland areas on
(attach map with	Temperance Flat and in the vicinity of Patterson Mine.
notations)	
Attachments	
Photo Log	None
Photos	None
Topographic Map(s)	Millerton Lake East

## **Existing Facilities:**

Temperance Flat, located on the south side of the upper end of Millerton Reservoir is undeveloped. Remnants of the Sullivan Mine, an historic gold mine are present but mostly hidden by brush. Remnants include two partially collapsed mine tunnels, small tailings piles, arrastras, and hand stacked walls. An unpaved road provides access from Wellbarn Road. The Patterson Mine, another historic gold mine, is located across the river, downstream. Remnants of the Patterson Mine include several mine tunnels, a well preserved arastra, small tailings piles, and a small stamp mill foundation. A cabin and stamp mill are located upstream and upslope, but it is unclear whether these features are part of the Patterson Mine or another historic mining operation.

## Existing Environmental Features as Appropriate to Discipline (hydrology; aquaticwater quality; terrestrial—plants; wildlife; recreation; cultural resources; land use; aesthetic)

The area referred to as Temperance Flat is located on private land, outside the boundaries of the Millerton Lake Recreation Area and the BLM's San Joaquin River Gorge Area. A pit or vault toilet is located just to the west of Temperance Flat, on the eastern edge of BLM land. A boat in camp is located across the river (lake) from Temperance Flat and the Hewitt Valley Environmental Camp is located downstream. The lake in the immediate area of Temperance Flat is marked as a 5 mph zone.

#### Need for additional (engineering/hydrological, or other) information on measures

None at present.

### Additional data needs (within each specific discipline)

Information and alignment maps for the San Joaquin River Trail.

Use data for the Temperance Flat Boat in camp and the Hewitt Valley Environmental Camp.

Better maps showing the trails in the area.

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Above: Lift wheel for two-stamp mill (wood construction is unusual); near cabin in Sect.8, R22E, T10S, approximate elevation 860'; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (mid-afternoon).(P6190001.JPG)



Above: Cabin in Sect.8, R22E, T10S, approximate elevation 860', view east; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (mid-afternoon). (P6190003.JPG)



Above: Interior of cabin in Sect.8, R22E, T10S, approximate elevation 860'; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (midafternoon). (P6190008.JPG)



Above: Ball mill near cabin & mine portal in Sect.8, R22E, T10S, approximate elevation 860'; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (mid-afternoon). (P6190017.JPG)



Above: Ore cart and sheets of corrugated tin west of cabin in Sect.8, R22E, T10S, approximate elevation 860', near mine portal; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (midafternoon). (P6190011.JPG)



Above: Another tractor, and ore cart tracks coming from mine portal west of cabin in Sect.8, R22E, T10S, approximate elevation 860'; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (mid-afternoon). (P6190012.JPG)



Above: Bifurcation in tracks, view east; Sect.8, R22E, T10S, approximate elevation 860'; tracks to left go to spot where dumptruck could be backed up for loading ore while tracks to right go to spoil pile; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (mid-afternoon). (P6190014.JPG)



Above: Close-up of mine portal w/ ore cart track; pipe to right may drain seepage from mine; in Sect.8, R22E, T10S, approximate elevation 860'; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (mid-afternoon). (P6190015.JPG)



Above: Arrastra (very well preserved) at Patterson Mine, in Millerton Lake State Recreation Area, SE <sup>1</sup>/<sub>4</sub> Sect. 7, R22E T10S, elevation < 800' (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190078.JPG)



Above: Arrastra at Patterson Mine, in Millerton Lake State Recreation Area, SE ¼ Sect. 7, R22E T10S, elevation < 800' (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190079.JPG)



Above: Arrastra at Patterson Mine, in Millerton Lake State Recreation Area, SE ¼ Sect. 7, R22E T10S, elevation < 800' (note grooves where milling stone rotated) (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190080.JPG)



Above: MWH team examining arrastra at Patterson Mine, in Millerton Lake State Recreation Area, SE <sup>1</sup>/<sub>4</sub> Sect. 7, R22E T10S, elevation < 800' (Patterson Mine would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190081.JPG)



Above: Overview of arrastra at Patterson Mine, w/ MWH team members; Millerton Lake State Recreation Area, SE <sup>1</sup>/<sub>4</sub> Sect. 7, R22E T10S, elevation < 800' (Patterson Mine would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190082.JPG)



Above: Excavation for stamp mill at Patterson Mine, Millerton Lake State Recreation Area, SE  $\frac{1}{4}$ Sect. 7, R22E T10S, elevation < 800'; concrete foundation of stamp mill barely shows (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190083.JPG)



Above: Stamp mill foundation Patterson Mine, Millerton Lake State Recreation Area, SE ¼ Sect. 7, R22E T10S, elevation < 800' (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190084.JPG)



Above: Dump (cans, corrugated tin, other artifacts) at Patterson Mine, Millerton Lake State Recreation Area, SE <sup>1</sup>/<sub>4</sub> Sect. 7, R22E T10S, elevation < 800' (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190085.JPG)



Above: Mine portal, boarded up for safety reasons, at Patterson Mine, Millerton Lake State Recreation Area, SE <sup>1</sup>/<sub>4</sub> Sect. 7, R22E T10S, elevation < 800' (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190086.JPG)



Above: Phil Unger standing alongside stone and timber cabin foundation at Patterson Mine, Millerton Lake State Recreation Area, SE <sup>1</sup>/<sub>4</sub> Sect. 7, R22E T10S, elevation < 800' (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190087.JPG)



Above: Another view of the stone and timber cabin foundation at Patterson Mine, Millerton Lake State Recreation Area, SE <sup>1</sup>/<sub>4</sub> Sect. 7, R22E T10S, elevation < 800' (would be inundated by MP 279 dam, and by MP 274 dam) (early afternoon). (P190088.JPG)



Above: MWH team examining lift wheel for twostamp mill (wood construction is unusual); near cabin in Sect.8, R22E, T10S, approximate elevation 860'; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (mid-afternoon). (P190089.JPG)



Above: Closer view of MWH team examining lift wheel for two-stamp mill (wood construction is unusual); near cabin in Sect.8, R22E, T10S, approximate elevation 860'; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (midafternoon). (P190090.JPG)



Above: Lift wheel for two-stamp mill (wood construction is unusual); near cabin in Sect.8, R22E, T10S, approximate elevation 860'; inundated by 900' pool contour or greater, RM274 damsite; inundated by any configuration of RM279 damsite (mid-afternoon). (P190091.JPG)





Above: Cabin at Patterson Mine/Prospect site (June 19, 2003) (018\_15.JPG)

Above: Wheel-type gold ore grinding tool at Patterson Mine/Prospect site (June 19, 2003) (020\_17.JPG)



Above: Table Mountain over Millerton Reservoir near Patterson Mine/Prospect site (June 19, 2003) (022\_19.JPG)



Above: John L. Sullivan Mine, at < elevation 800' in SE <sup>1</sup>/<sub>4</sub> Sect. 17, R22E T10S (#1, lower, view showing portal in background) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190068.JPG)



Above: John L. Sullivan Mine, at < elevation 800' in SE <sup>1</sup>/<sub>4</sub> Sect. 17, R22E T10S (#1, lower, view showing tailings pile below portal) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190069.JPG)



Above: John L. Sullivan Mine, at < elevation 800' in SE <sup>1</sup>/<sub>4</sub> Sect. 17, R22E T10S (#1, lower, another view of tailings pile below portal) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190070.JPG)



Above: John L. Sullivan Mine, at < elevation 800' in SE <sup>1</sup>/<sub>4</sub> Sect. 17, R22E T10S (#1, lower, close-up view of portal) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190071.JPG)

Right: John L. Sullivan Mine, at < elevation 800' in SE ¼ Sect. 17, R22E T10S (#2, upper, view showing portal in background) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190073.JPG)





Above: John L. Sullivan Mine, at < elevation 800' in SE ¼ Sect. 17, R22E T10S (#2, upper, view showing arrastra; only the center post shows clearly) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190074.JPG)



Above: John L. Sullivan Mine, at < elevation 800' in SE <sup>1</sup>/<sub>4</sub> Sect. 17, R22E T10S (#2, upper, view showing arrastra; only the center post shows clearly) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190075.JPG)



Above: John L. Sullivan Mine, at < elevation 800' in SE <sup>1</sup>/<sub>4</sub> Sect. 17, R22E T10S (#2, upper, view of portal) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190076.JPG)



Above: John L. Sullivan Mine, at < elevation 800' in SE <sup>1</sup>/<sub>4</sub> Sect. 17, R22E T10S (#2, upper, close-up view of portal) (would be inundated by MP 279 dam, and by MP 274 dam) (late morning). (P190077.JPG)



Above: Temperance Flat; part of panoramic view NE to NW from access road at about 1300' elevation; view NE (early morning). (P190057.JPG)

Above: Temperance Flat; part of panoramic view NE to NW from access road at about 1300' elevation; view NNE (early morning). (P190058.JPG)



Above: Temperance Flat; part of panoramic view NE to NW from access road at about 1300' elevation; view N (early morning). (P190059.JPG)

Above: Temperance Flat; part of panoramic view NE to NW from access road at about 1300' elevation; view NNW (early morning). (P190060.JPG)



Above: Temperance Flat; part of panoramic view NE to NW from access road at about 1300' elevation; view WNW (early morning).(P190062.JPG)



Above: Temperance Flat; placer mining area; Chinese rock walls along drainages; roughly 840' elevation in SW ¼ Sect. 16, R22E T10S (would be inundated by MP 279 dam, and by all but 800' pool from MP 274 dam) (mid-morning). (P190063.JPG)



Above: Temperance Flat; placer mining area; arrastra (difficult to see through poison oak; is indicative of hard rock mining but no source in the area has been identified); roughly 840' elevation in SW <sup>1</sup>/<sub>4</sub> Sect. 16, R22E T10S (would be inundated by MP 279 dam, and by all but 800' pool from MP 274 dam) (mid-morning). (P190066.JPG)



Above: Temperance Flat; placer mining area; arrastra (difficult to see through poison oak; is indicative of hard rock mining but no source in the area has been identified); roughly 840' elevation in SW <sup>1</sup>/<sub>4</sub> Sect. 16, R22E T10S (would be inundated by MP 279 dam, and by all but 800' pool from MP 274 dam) (mid-morning). (P190067.JPG)



Above: Temperance Flat; placer mining area; Chinese rock walls along drainages; roughly 840' elevation in SW <sup>1</sup>/<sub>4</sub> Sect. 16, R22E T10S (would be inundated by MP 279 dam, and by all but 800' pool from MP 274 dam) (mid-morning). (P190064.JPG)

Above: Temperance Flat; placer mining area; Chinese rock walls along drainages; roughly 840' elevation in SW <sup>1</sup>/<sub>4</sub> Sect. 16, R22E T10S (would be inundated by MP 279 dam, and by all but 800' pool from MP 274 dam) (mid-morning). (P190065.JPG)



Above: Temperance Flat vegetation, mining area (June 19, 2003) [(19).JPG]



Above: Temperance Flat vegetation, mining area (June 19, 2003) [(20).JPG]



Above: Temperance Flat vegetation, mining area (June 19, 2003) [(21).JPG]



Above: Temperance Flat vegetation, mining area (June 19, 2003) [(22).JPG]



Above: Temperance Flat vegetation, mining area (June 19, 2003) [(23).JPG]



Above: Temperance Flat vegetation, mining area (June 19, 2003) [(24).JPG]



Above: Temperance Flat vegetation, mining area (June 19, 2003) [(25).JPG]



Above: Blackberry-choked stream upstream of road, minimal base flow (June 19, 2003) 006\_3.JPG)


Above: Grape vines, blackberries and figs along stream below road (June 19, 2003) (008\_5.JPG)



Above: Grape vines along stream below road (view downstream towards Millerton Reservoir, June 19, 2003) (007\_4.JPG)



Above: Cove at stream mouth on Millerton Reservoir (June 19, 2003) (009\_6.JPG)



Above: Cove at stream mouth on Millerton Reservoir (June 19, 2003) (010\_7.JPG)





Above: Millerton Reservoir from cove at stream mouth (June 19, 2003) (014\_11.JPG)

Above: Fish (possibly smallmouth bass) in cove at stream mouth on Millerton Reservoir (June 19, 2003) (013\_10.JPG)

**APPENDIX C** 

**Cost Estimate Tables** 

**Temperance Flat Reservoir** 

CODE:D-8	ODE:D-8170 ESTIMATE WORKSHEET			т			SHEET_1_OF_	_3		
FEATU	JRE:			PROJE	ECT:					
					USJRBSI					
	RM274	Dam Site								
	Elev. 80	00		DIVISI	ON:					
	Concre	te Faced Ro	ockfill Dam (CFRD)							
				EU E.	FILE: P:\US_Bureau_Reclamation\\DIQ_01CS20210B\Upper_San_Joaq					
				FILE.						
					_Phase_1\Documen	ts\Surface Ste	orage Option I	MS\IM Is1MP274_1100		
PLANT	PAY									
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
	1	Diversion	and care of river			<b>0</b> ) (				
		Upstream	Cofferdam (Crest @ El. 635)		1,892,500	CY	\$13.00	\$24,602,500		
		Excavation	for Left Abutment Diversion Tunnel		141,300	CY	\$145.00	\$20,488,500		
		Concrete L	Liner for Left Abutment Diversion Tunnel		31,300	CY	\$260.00	\$8,138,000		
		ROCK BOIts	S - Left Abt. Div. Tunnel		3,270	BOIts	\$500.00	\$1,635,000		
		Total Drill	Ig - Leit Abi, Div. Tulliel		20,000		\$20.00	\$1,177,200		
		Concrete	inor for Right Abutment Diversion Tunnel		201,700		\$140.00	\$39,430,000		
		Dook Polto	Pight Abt. Div. Tuppol		46,900	C T Rolto	\$200.00	\$12,714,000		
		Total Drillin	a Pight Abt. Div. Tunnel		3,050 70 150		3000.00 00.00	\$1,630,000		
		Furnishing	and Handling Cement		22 620		\$20.00	\$2,262,000		
		Furnishing	and Handling Beinforcement		12 030 000		00.00	\$7,202,000		
		runnsning	Diversion and Care of River Subtotal		12,000,000	LDO	φ0.00	\$120 906 200		
								\$120,000,200		
		Spillway								
		Excavation	n for Spillway		5,296,800	CY	\$7.50	\$39,726,000		
		Concrete i	n spillway crest		7,670	CY	\$180.00	\$1,380,600		
		Concrete i	n spillway training walls and Apron		7,500	CY	\$210.00	\$1,575,000		
		Furnishing	and Handling Cement		4,280	TONS	\$110.00	\$470,800		
		Furnishing	and Handling Reinforcement		2,275,500	LBS	\$0.65	\$1,479,075		
			Spillway subtotal					\$44,631,475		
						EQ				
DV.		Q		DV	FRIC					
БТ	C Lliainh	otham	UNEUNED	ВТ	P. Baumgarton	CHECKED				
		)		DATE	N. Dauliyarten		-			
	REFAREL	,	AFFROVED	DATE		FRICE LEVE	-∟ ∆nnraieal 0?			
						Appraisar 03				

CODE:D-8	ESTIMATE	ESTIMATE WORKSHEET	TE WORKSHEET				SHEET_2 OF3		
FEATI	URE:			PROJI	ECT:				
	RM274	Dam Site							
	Elev. 80	)0 te Faced Ri	ockfill Dam (CERD)	DIVISI	ON:				
	Concre			FILE:	_Phase_1\Documen	ts\Surface St	orage Option T	Ms\TM	
	DAV			_	Temperance\Interpo	lated Costs (		ISJMP274_1100	
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT	
		OutletWo	rks						
		Concrete i	n Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150	
		Excavatio	on of Outlet Shaft and Gate Structure		14,730	CY	\$280.00	\$4,124,400	
		Rock Bolt	Supports		600	Bolts	\$360.00	\$216,000	
		Total Drillir	ng for Rock Bolts		7,200	LF	\$20.00	\$144,000	
		Concrete i	n Outlet Shaft and Gate Structure		6,530	CY	\$450.00	\$2,938,500	
		Furnishina	and Handling Cement		2,720	TONS	\$120.00	\$326,400	
		Furnishina	and Handling Reinforcement		1.446.000	LBS	\$0.65	\$939,900	
		Outlet Wo	rks Trashracks		495,000	LBS	\$2.50	\$1,237,500	
			Outlet Works subtotal					\$10,750,850	
		Control H	ouse and Powerplant						
		Steel Pipe			11,735,300	LBS	\$1.50	\$17,602,950	
		Valves, all	Sizes and Types		4,340,000	LBS	\$4.00	\$17,360,000	
		Hydraulic (	Control System		120,000	LBS	\$10.00	\$1,200,000	
		Concrete i	n Control House & Powerplant		42,350	CY	\$350.00	\$14,822,500	
		Excavation	n for Powerplant		426,800	CY	\$12.00	\$5,121,600	
		Furnishing	and Handling Cement		11,945	TONS	\$100.00	\$1,194,500	
		Furnishing	and Handling Reinforcement		2,666,000	LBS	\$0.60	\$1,599,600	
		Turbines			1,956,000	LBS	\$6.50	\$12,714,000	
		Generators	S		1,500,000	LBS	\$8.00	\$12,000,000	
		Governors	, Motors, etc.		3-Units	LS		\$3,600,000	
			Powerplant subtotal					\$87,215,150	
				_					
		Q	UANTITIES		PRIC	ES			
BY	S. Higinh	otham	CHECKED	BY	R. Baumgarten	CHECKED			
DATE P	REPARE	)	APPROVED	DATE	guiton	PRICE LEV	EL		
						Appraisal 03			

CODE:D-8	CODE:D-8170 ESTIMATE WORKSHEET				SHEET_3 OF3					
FEAT	URE:			PROJECT:						
	RM274	Dam Site								
	Elevation	n = 800'		DIVISION:						
	Embankr	nent								
				FILE:	P:\US_Bureau_Recl	amation\IDIQ ts\Surface St	O1CS20210B	Upper_San_Joaquin Ms\TM		
					Temperance\Interpo	lated Costs	MP274 CFRF.x	ls]MP274_1100		
PLANT	PAY						UNIT			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
		CERE Dan	2							
		Excavation	- common (removal of alluvium, rock slope							
	20	cleaning by	dozer to sound rock, minimal ripping.)	8313	177,000	CY	\$6.50	\$1,150,500		
		Zone 1A - E	Exc, haul, & place (CL, SM, GM in 6" lifts to 98%							
	30	Proctor, 2 r	nile haul) Toe slab imperv. Cap	8313	12,000	CY	\$11.00	\$132,000		
		Zone 1B - E	Exc, haul, & place (random in 18" lifts to 95%							
	40	Proctor, 0.5	o mile haul) Shell for Zone 1A	8313	68,000	CY	\$6.50	\$442,000		
		Zone 2 - E>	c, haul, & place processed SM, GM in 18" lifts to			<b>O</b> V				
	50	98% Procto	or, 0.5 mile haul) Deck foundation	8313	93,200	CY	\$20.00	\$1,864,000		
	60	Zone 3A - E	EXC, haul, & place (processed GP in 18" lifts to	0212	93 200	cv	\$19.50	\$1 817 400		
	00	70no 3B - F	Exc. haul. & place (rockfill, 18" max in 3' lifts	0313	30,200		ψ13.50	ψ1,017,400		
	70	blasting op	eration 0.5 mile away) Upstream Shell	8313	2.352.000	CY	\$9.00	\$21,168,000		
		Zone 3C - F	Exc. haul & place (rockfill 4' max in 4' lifts		_,,	-		+= -,,		
	80	blasting op	eration 0.5 mile away) Downstream Shell	8313	2,400,000	CY	\$8.75	\$21,000,000		
	90	Concrete d	eck (3,000 psi strength, 0.4% reinforcing)	8313	31,500	CY	\$240.00	\$7,560,000		
	100	Concrete to	be slab (3,000 psi strength, 0.3% reinforcing	8313	2,170	CY	\$240.00	\$520,800		
	110	Anchor bar	s for toe slab (4' deep grouted into granite)	8313	9,750	anchors	\$40.00	\$390,000		
	120	Parapet Wa	all (3,000 psi, 0.4% reinforcing)	8313	2,000	CY	\$460.00	\$920,000		
	130	Drilling for	grout program (setup, drill, test), setups=455	8313	28,000	LF	\$33.00	\$924,000		
	140	Grouting (g	rout injection into competent granite.	8313	21,000	bags	\$27.00	\$567,000		
	150	Unwatering	Subtotal CEBE Dam	8313	1	LS		\$1,500,000		
								\$59,955,700		
		SUMMATI	ON OF COSTS							
		Diversion a	and Care of River					\$120.900.000		
		Spillway						\$44,600,000		
		Outlet Wor	ks					\$10,800,000		
		Control Ho	use and Powerplant					\$87,200,000		
		CFRF Dan	1					\$60,000,000		
		Mobilizatio	n - 5%					\$16,000,000		
		Subtotal						\$339,500,000		
		Unlisted Ite	ems - 15%					\$50,500,000		
		Contract						\$390,000,000		
		Field Cost	Sies - 20 %					\$100,000,000		
								ψ-100,000,000		
	-	-	QUANTITIES		•	PRICES				
BY			CHECKED	BY	R. Baumgarten	CHECKED				
L	Mark Pab	st	Mark Pabst							
DATE P	REPARED	)	APPROVED	DATE		PRICE LEV	EL			
	7/1/2003					Appraisal 03				

CODE:D-	CODE:D-8170 ESTIMATE WORKSHEET				SHEET_1_OF _3					
FEAT	URE:			P	PROJECT:					
						USJRBSI				
	RM27	4 Dam Site	1							
	Elev.	960 (Interp	olated)	D	DIVISION:					
	Conc	rete Faced	Rockfill Dam (CFRD)	L						
				F	ILE:	P:\US_Bureau_Re	clamation\IDI	Q_01CS20210B\ In Option TM stT	Upper_San_Joaquin_Ph M	
						IS]M P274_800				
PLANT	PAY							UNIT		
ACCT.	ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	PRICE	AMOUNT	
		<b>.</b>								
	1	Diversion	and care of river			1 902 500	CV	¢12.00	¢24 602 600	
<u> </u>		Everyotion	for Loft Abutmont Diversion Tunnel			1,092,500		\$13.00 \$145.00	\$24,002,000	
<u> </u>		Concrete Li	ner for Left Abutment Diversion Tu	nnel		31 300		\$145.00	\$8 138 000	
		Rock Bolts	- Left Abt Div Tunnel			3 270	Bolts	\$500.00	\$1,635,000	
		Total Drillin	ng - Left Abt. Div. Tunnel			58,860	LF	\$20.00	\$1,177,200	
		Excavation	for Right Abutment Diversion Tunn	el		281.700	CY	\$140.00	\$39,438,000	
		Concrete Li	ner for Right Abutment Diversion T	unnel		48,900	CY	\$260.00	\$12,714,000	
		Rock Bolts	- Right Abt. Div. Tunnel			3,050	Bolts	\$600.00	\$1,830,000	
	Total Drilling - Right Abt. Div. Tunnel			70,150	LF	\$20.00	\$1,403,000			
		Furnishing a	and Handling Cement			22,620	TONS	\$100.00	\$2,262,000	
		Furnishing a	and Handling Reinforcement			12,030,000	LBS	\$0.60	\$7,218,000	
			Diversion and Care of River S	ubtotal					\$120,906,200	
		<b>.</b>								
		Spillway	for Crilling			2 200 222	01/	¢0.00	¢00 404 044	
		Excavation				3,289,333		\$8.03 ¢190.00	\$20,424,311	
		Concrete in	n spillway crest	n		7,070	CV	\$100.00	\$1,360,000	
<u> </u>		Furnishing	and Handling Cement			4 280	TONS	\$210.00	\$470,800	
		Furnishing	and Handling Reinforcement			2 275 500	LBS	\$0.65	\$1 479 075	
		. arriering	Spillway subtotal			_,_: 0,000		<b>\$0.00</b>	\$31.329.786	
									, , , , , ,	
<u> </u>										
<b>—</b>		<u> </u>								
L		Q	UANTITIES			PR	IUES			
BY				В	βY	D. Frank	CHECKED		22/22	
DATE	B. Fost	er	5. Usgood 11/20/03			B. Foster		5. Usgood 11/	20/03	
DATER	KEPAR	ED 44/40/2002	APPROVED	D	AIE	11/10/02	PRICE LEVE	L Approioal C2		
		11/10/2003				11/10/03		Appraisal 03		

CODE:D-	CODE:D-8170 ESTIMATE WORKSHEET			KSHEET	SHEET_2_ OF _3					
FEAT	URE:	4 Dom Sito		PR	ROJE	CT:				
	Elev.	960 (Interp rete Faced	olated) Rockfill Dam (CFRD)	DI	DIVISION:					
				FII	LE:	P:\US_Bureau_Re ase_1\Documents\ Temperance\Inter	clamation\I DI Surface Storag polated Costs\	Q_01CS20210B e Option TM s\T MP274 CFRF.x	Upper_San_Joaquin_Ph M IsjM P274_800	
PLANT ACCT.	PAY ITEM		DESCRIPTION	c	ODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
		OutletWor	ks							
		Concrete in	n Outlet Works Intake Structure			3,110	CY	\$265.00	\$824,150	
		Excavation	on of Outlet Shaft and Gate Struct	ture		14,730	CY	\$280.00	\$4,124,400	
		Rock Bolt	Supports			600	Bolts	\$360.00	\$216,000	
		Total Drillir	ng for Rock Bolts			7,200	LF	\$20.00	\$144,000	
		Concrete in	n Outlet Shaft and Gate Structure			6,530	CY	\$450.00	\$2,938,500	
		Furnishing	and Handling Cement			2,720	TONS	\$120.00	\$326,400	
		Furnishing	and Handling Reinforcement			1,446,000	LBS	\$0.65	\$939,900	
		Outlet Wor	ks Irashracks			495,000	LBS	\$2.50	\$1,237,500	
		Outlet Works subtotal Powerplant							\$10,750,850	
		Steel Pipe				15,645,753	LBS	\$1.50	\$23,468,630	
		Valves, all	Sizes and Types			4,749,280	LBS	\$4.53	\$21,530,069	
		Hydraulic (	Control System			136,000	LBS	\$10.00	\$1,360,000	
		Concrete in	n Powerplant			42,350	CY	\$350.00	\$14,822,500	
		Excavation	for Powerplant			426,800	CY	\$12.00	\$5,121,600	
		Furnishing	and Handling Cement			11,945	TONS	\$100.00	\$1,194,500	
		Furnishing	and Handling Reinforcement			4,632,133	LBS	\$0.60	\$2,779,280	
		Turbines				1,920,800	LBS	\$6.50	\$12,485,200	
		Generators	8			1,948,000	LBS	\$8.00	\$15,584,000	
		Governors	, Motors, etc.			3-Units	LS		\$3,600,000	
			Powerplant subtotal						\$101,945,779	
<b>—</b>	QUANTITIES		UANTITIES			PR	ICES			
BY				BY	,		CHECKED		100100	
	B. FOS	er	5. USG000 11/20/03		<b>TF</b>	B. FOSTER		5. Usgood 11.	20/03	
DATE F	APPROVED		DA	DATE PRICE LEVEL						
		11/10/2003				11/10/03				

CODE:D-	DE:D-8170 ESTIMATE WORKSHEET				SHEET_3OF3					
FEAT	URE:			PROJE	ECT: USJRBSI					
	RM27	4 Dam Site								
	Elevati Emban	on = 960' (In kment	nterpolated)	DIVISI	ON:					
				FILE:	P:\US_Bureau_Re ase_1\Documents\	clamation\IDI Surface Storag	Q_01CS20210B ge Option TM s\T	Upper_San_Joaquin_Ph M		
					r emperance/inter			15jW1F274_000		
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
<u> </u>		CFRF Dam	]							
		Excavation	- common (removal of alluvium, rock slope							
	20	cleaning by	dozer to sound rock, minimal ripping.)	8313	460,200	CY	\$5.70	\$2,623,140		
		Zone 1A - E	Exc, haul, & place (CL, SM, GM in 6" lifts to 98%							
	30	Proctor, 2 n	nile haul) Toe slab imperv. Cap	8313	40,267	CY	\$9.40	\$378,507		
		Zone 1B - E	Exc, haul, & place (random in 18" lifts to 95%							
	40	Proctor, 0.5	mile haul) Shell for Zone 1A	8313	239,733	CY	\$6.23	\$1,494,338		
		Zone 2 - Ex	c, haul, & place processed SM, GM in 18" lifts to							
	50	98% Procto	r, 0.5 mile haul) Deck foundation	8313	224,293	CY	\$17.87	\$4,007,374		
	Zone 3A - Exc, haul, & place (processed GP in 18" lifts to									
	60 95% Proctor, 0.5 mile haul) Transition to Shell		8313	224,293	CY	\$17.37	\$3,895,228			
		Zone 3B - Exc, haul, & place (rockfill, 18" max in 3' lifts,								
	70	70 blasting operation 0.5 mile away) Upstream Shell		8313	8,350,933	CY	\$8.20	\$68,477,653		
		Zone 3C - E	Exc, haul, & place (rockfill, 4' max in 4' lifts,			a. /				
	80	blasting ope	eration 0.5 mile away) Downstream Shell	8313	8,522,667	CY	\$7.95	\$67,755,200		
	90	Concrete de	eck (3,000 psi strength, 0.4% reinforcing)	8313	103,367	CY	\$213.33	\$22,051,556		
	100	Concrete to	e slab (3,000 psi strength, 0.3% reinforcing	8313	3,679	CY	\$213.33	\$784,924		
	110	Anchor bars	s for toe slab (4' deep grouted into granite)	8313	17,878	anchors	\$40.00	\$715,120		
	120	Parapet Wa	all (3,000 psi, 0.4% reinforcing)	8313	3,397	CY	\$420.00	\$1,426,880		
	130	Drilling for g	grout program (setup, drill, test), setups=1165	8313	51,200	LF	\$31.93	\$1,634,987		
<u> </u>	140	Grouting (g	rout injection into competent granite.	8313	38,413	bags	\$24.33	\$934,724		
<u> </u>	150	Unwatering	Subtatal CEDE Dam	8313	1	15		\$1,980,000		
<u> </u>			Subtotal, CFRF Dam					\$178,159,631		
		SUMMATI	ON OF COSTS							
		Diversion a	and Care of River					\$120,900,000		
		Spillway						\$31,300,000		
		Outlet Wor	ks					\$10,800,000		
		Powerplant	t					\$101,900,000		
		CFRF Dam	1					\$178,200,000		
		Mobilizatio	n - 5%					\$22,000,000		
		Subtotal						\$465,100,000		
	Unlisted Items - 15%		ems - 15%					\$64,900,000		
	Contract Cost						\$530,000,000			
	Contingencies - 25%						\$140,000,000			
		Field Cost						\$670,000,000		
<u> </u>						DDIOSO				
			QUANTITIES			PRICES				
BY	B Foet	er	CHECKED	BY	B Foster	CHECKED	S Osnood 11	/20/03		
		FD			D. 103(6)			20/03		
DAILI	ALLENK	11/10/2003			11/10/03		Appraisal 03			

CODE:D-	DDE:D-8170 ESTIMATE WORKSHEET				SHEET_1_OF_3				
FEAT	URE: RM2 <sup>-</sup>	74 Dam Sit	e	PROJEC	t: Usjrbsi				
	Elev. Cond	1100 crete Faceo	l Rockfill Dam (CFRD)	DIVISIO	N:				
				FILE:	P:\US_Bureau_F n_Joaquin_Phas TMs\TM Tempe CFRF.xls]MP274	:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_S I_Joaquin_Phase_1\Documents\Surface Storage Option `Ms\TM Temperance\Interpolated Costs\[MP274 CFRF.xls]MP274_800			
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
	1	Diversion	and care of river						
	· ·	Unstream (	Cofferdam (Crest @ FL 635)		1 892 500	CY	\$13.00	\$24 602 500	
		Excavation	for Left Abutment Diversion Tunnel		141,300	CY	\$145.00	\$20,488,500	
		Concrete Li	ner for Left Abutment Diversion Tunnel		31,300	CY	\$260.00	\$8 138 000	
		Rock Bolts	- Left Abt. Div. Tunnel		3.270	Bolts	\$500.00	\$1.635.000	
		Total Drilli	ng - Left Abt. Div. Tunnel		58,860	LF	\$20.00	\$1,177,200	
		Excavation	for Right Abutment Diversion Tunnel		281,700	CY	\$140.00	\$39,438,000	
		Concrete Li	ner for Right Abutment Diversion Tunnel		48,900	CY	\$260.00	\$12,714,000	
		Rock Bolts	- Right Abt. Div. Tunnel		3,050	Bolts	\$600.00	\$1.830.000	
		Total Drilli	na - Right Abt. Div. Tunnel		70,150	LF	\$20.00	\$1,403,000	
		Furnishing	and Handling Cement		22,620	TONS	\$100.00	\$2,262,000	
		Furnishing	and Handling Reinforcement		12,030,000	LBS	\$0.60	\$7,218,000	
		Ŭ	Diversion and Care of River Subtotal					\$120,906,200	
		Spillway							
		Excavation	n for Spillway		1,532,800	CY	\$8.50	\$13,028,800	
		Concrete i	n spillway crest		7,670	CY	\$180.00	\$1,380,600	
		Concrete i	n spillway training walls and Apron		7,500	CY	\$210.00	\$1,575,000	
		Furnishing	and Handling Cement		4,280	TONS	\$110.00	\$470,800	
		Furnishing	and Handling Reinforcement		2,275,500	LBS	\$0.65	\$1,479,075	
			Spillway subtotal					\$17,934,275	
	QUANTITIES				PRI	JES			
BY	Y CHECKED S. Higinbotham		BY	R. Baumgarten	CHECKED				
DATE F	ATE PREPARED APPROVED		DATE	~	PRICE LEVEL				

CODE:D-8170			ESTIMATE WORKSH	EET	ET SHEET_2_ OF _3				
FEAT	URE:			PROJEC	T:				
	RM2 Elev Cone	74 Dam Sit . 1100 crete Faceo	e d Rockfill Dam (CFRD)	DIVISIO	N:				
				FILE:	P:\US_Bureau_Reclamation\DIQ_01CS20210B\Upper_San_Joaquin_P hase_1\Documents\Surface Storage Option TM sTM Temper ance\Inter Interlated CostSiM P274_CERE visiM P274_800				
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT	
		OutletWo	rks						
		Concrete i	n Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150	
		Excavation	on of Outlet Shaft and Gate Structure		14,730	CY	\$280.00	\$4,124,400	
		Rock Bolt	Supports		600	Bolts	\$360.00	\$216,000	
		Total Drilli	ng for Rock Bolts		7,200	LF	\$20.00	\$144,000	
		Concrete i	n Outlet Shaft and Gate Structure		6,530	CY	\$450.00	\$2,938,500	
		Furnishing	and Handling Cement		2,720	TONS	\$120.00	\$326,400	
		Furnishing	and Handling Reinforcement		1,446,000	LBS	\$0.65	\$939,900	
		Outlet Wo	rks Trashracks		495,000	LBS	\$2.50	\$1,237,500	
	Outlet Works subtotal					\$10,750,850			
		Powerpla	nt			. – –			
		Steel Pipe	<u>.</u>		19,067,400	LBS	\$1.50	\$28,601,100	
		Valves, all	Sizes and Types		5,107,400	LBS	\$5.00	\$25,537,000	
		Hydraulic (	Control System		150,000	LBS	\$10.00	\$1,500,000	
		Concreter	n Powerplant		42,350		\$350.00 \$12.00	\$14,622,500	
<u> </u>		Excavation			420,000		\$12.00 ¢100.00	\$3,121,000	
		Furnishing			6 252 500		\$100.00 ¢0.60	\$1,194,500	
	<u> </u>	Turbinee	and Handling Reinforcement		1 800 000		\$0.00 \$6.50	\$3,611,500	
		Generator	6		2 340 000	LDS	\$0.00 \$8.00	\$12,203,000	
		Governors	Motors etc		3-1 Inits		φ0.00	\$3,600,000	
		Covernois	Powerplant subtotal		0 Onits	- 10		\$115.193.200	
								÷:::;:::;,:::;,:::;	
	OLIANTITIES			DDI					
ВΥ		<u> </u>	CHECKED	BY		CHECKED			
	S. Hig	inbotham			R. Baumgarten				
DATE	DATE PREPARED APPROVED		APPROVED	DATE	DATE		PRICE LEVEL Appraisal 03		
							••		

CODE:D-8170 ESTIMATE WORKSHEET					SHEET_3_OF	_3		
FEAT	URE:			PROJECT	:			
	RM2	74 Dam Site						
	Eleva	tion = 1100'		DIVISION				
	Emba	nkment						
				EII E.				
				FILE.	P:\US_Bureau_Recta	urface Storage	01CS20210B\U	pper_San_Joaquin_P
					Temperance\Interpo	lated Costs/[M	P274 CFRF.xls	M P274 800
PLANT	PAY						UNIT	
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT
		CFRF Dan	1			<b>.</b>		
	20	Excavation	- common (removal of alluvium, rock slope	8313	708,000	CY	\$5.00	\$3,540,000
		Zone 1A - E	Exc, haul, & place (CL, SM, GM in 6" lifts to 98%		05 000	<b>N</b>	<b>*</b> 0.00	<b>*</b> 500.000
	30	Proctor, 2 r	nile naul) Toe slab imperv. Cap	8313	65,000	CY	\$8.00	\$520,000
	40	Proctor 0 5	s mile baul) Shell for Zone 1A	8313	300 000	CV	00.92	\$2 340 000
<u> </u>		Zone 2 - Ex	c haul & place processed SM_GM in 18" lifts	0010	000		ψ0.00	Ψ2,040,000
	50 to 98% Proctor, 0.5 mile		ctor. 0.5 mile haul) Deck foundation	8313	339,000	CY	\$16.00	\$5,424,000
		Zone 3A - E	Exc. haul. & place (processed GP in 18" lifts to			-		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	60	95% Procto	or, 0.5 mile haul) Transition to Shell	8313	339,000	CY	\$15.50	\$5,254,500
		Zone 3B - E	Exc, haul, & place (rockfill, 18" max in 3' lifts,		, i i i i i i i i i i i i i i i i i i i			
	70	blasting op	eration 0.5 mile away) Upstream Shell	8313	13,600,000	CY	\$7.50	\$102,000,000
		Zone 3C - E	Exc, haul, & place (rockfill, 4' max in 4' lifts,					
	80	blasting op	eration 0.5 mile away) Downstream Shell	8313	13,880,000	CY	\$7.25	\$100,630,000
	90	Concrete d	eck (3,000 psi strength, 0.4% reinforcing)	8313	166,250	CY	\$190.00	\$31,587,500
	100	Concrete to	e slab (3,000 psi strength, 0.3% reinforcing	8313	5,000	CY	\$190.00	\$950,000
	110	Anchor bar	s for toe slab (4' deep grouted into granite)	8313	24,990	anchors	\$40.00	\$999,600
<u> </u>	120	Parapet Wa	all (3,000 psi, 0.4% reinforcing)	8313	4,620	UY LE	\$385.00	\$1,778,700
	130	Drilling for (	grout program (setup, drill, test), setups=1165	8313	71,500	LF	\$31.00 \$32.00	\$2,210,500
	140	Grouting (g	(accurace 20 month construction)	0313	53,050	Days		\$1,100,300
	150	Unwatering	Subtotal CERE Dam	0313	1	10		\$2,400,000 \$260 821 100
								φ200,021,100
		SUMMATI	ON OF COSTS					
		Diversion a	and Care of River					\$121.000.000
		Spillway						\$18,000,000
		Outlet Wor	ks					\$11,000,000
		Powerplan	t					\$115,000,000
		CFRF Dan	1					\$261,000,000
		Mobilizatio	n - 5%					\$26,300,000
		Subtotal						\$552,300,000
		Unlisted Ite	ems - 15%					\$87,700,000
		Contract 0	Cost					\$640,000,000
		Contingen	cies - 25%					\$160,000,000
		Field Cost						\$800,000,000
			QUANTITIES			PRICES		
BY			CHECKED	BY		CHECKED		
	Mark	Pabst	Mark Pabst		R. Baumgarten			
DATE F	PREPA	RED	APPROVED	DATE		PRICE LEV	EL	
	7/1/03				09/09/03		Appraisal 03	

CODE:D-8	3170	ESTIMATE WORKSHEET				SHEET_1_ OF3				
<b>FEA</b>	<b>FURE</b> :			PROJ	PROJECT:					
					USJRBSI					
	RM279	9 Dam Sif	te							
	Elov (	200			ONI-					
	Conor	oto Ecco	Beelfill Dem (CEDD)	DIVISIO	JN.					
	Concr	ete race	Rockilli Dam (CFRD)							
				FILE:	FILE: P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_Sar					
					_1\Documents\Surfa sheets\IMP279 CFR	ace Storage Opt F 2003.xls1MP2	tion TMs\TM Terr 79 900	perance\Pilorin cost		
PLANT	PAY					UNIT				
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
	<u> </u>	<u> </u>								
	1	Diversion	and care of river		4 0 4 4 7 2 0	07	¢15.00	¢45 070 000		
		Upstream	Cofferdam (Crest @ El. 635)		1,044,720		\$15.00	\$15,670,800		
		Excavation	i for Left Abutment Diversion Tunnel		89,120		\$140.00	\$12,476,800		
		Concrete L	Liner for Left Abutment Diversion Tunnel		19,730	CY	\$245.00	\$4,833,850		
		ROCK BOITS	- Left Abt. Div. Tunnel		2,070	BOILS	\$500.00	\$1,035,000		
			ng - Left Abt. Div. Tunnel		37,260		\$20.00	\$745,200		
		Excavation	for Right Abutment Diversion Tunnel		247,870	CY	\$140.00	\$34,701,800		
		Concrete L	Iner for Right Abutment Diversion Tunnel		43,030	CY	\$245.00	\$10,542,350		
		ROCK BOIts	- Right Abt. Div. Tunnel		2,690	Bolts	\$600.00	\$1,614,000		
			ng - Right Abt. Div. Tunnel		61,870		\$20.00	\$1,237,400		
		Furnisning	and Handling Cement		17,700	TONS	\$100.00	\$1,770,000		
		Furnisning	and Handling Reinforcement		9,414,000	LB2	\$0.60	\$5,648,400		
			Diversion and Care of River Subtotal					\$90,275,600		
		Spillwov								
		Spillway	for Spillwov		2 012 200	CV	00.92	¢16,000,120		
		Conoroto i	n apillway croat		2,012,390		φ0.00 ¢190.00	\$10,099,120		
		Concrete i	n spillway crest		0,200		\$180.00	\$1,125,000		
		Eurniching	and Handling Comont		2,750		\$220.00	\$005,000		
		Furnishing	and Handling Deinforcomont		1 250 000		\$110.00 \$0.65	\$279,100 \$977,500		
		Furnishing			1,350,000	LDO	φ <b>0.0</b> 5	¢19 095 900		
			Spinway Subtotal					\$10,905,000		
<u> </u>				_						
<u> </u>				_						
<u> </u>										
<u> </u>										
<u> </u>										
		0	UANTITIES		PR	ICES				
BY			CHECKED	BY CHECKED						
<u> </u>	S. Higinb	otham		-	R. Baumgarten					
DATE P	REPARED	)	APPROVED	DATE	-	PRICE LEVE	L			
						Appraisal 03				

CODE:D-8	170		ESTIMATE WORKSHEET	SHEET_2 OF _3					
FEA1	URE:			PROJECT:					
					USJRBSI				
	RM27	9 Dam Sit	te						
	Elov (	000							
	Concr	oto Eaco	Rockfill Dom (CEPD)	DIVISI	JN.				
	Conci	ele race							
				FILE: P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_PI					
					sheets\[MP279 CFRF 2003.xls]MP279 900				
PLANT	PAY						UNIT		
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT	
		0.41.414.4							
		Concrete i	rks n Outlet Works Intake Structure		3 110	CΥ	\$265.00	\$824 150	
		Excavation	on of Outlet Shaft and Gate Structure	_	12 170	CY	\$280.00	\$3 407 600	
		Rock Bolt	Supports		264	Bolts	\$380.00	\$100 320	
		Total Drillin	ng for Rock Bolts		6,080	LF	\$20.00	\$121,600	
		Concrete i	n Outlet Shaft and Gate Structure		5,270	CY	\$435.00	\$2,292,450	
		Furnishing	and Handling Cement		2,360	TONS	\$120.00	\$283,200	
		Furnishing	and Handling Reinforcement		1,257,000	LBS	\$0.65	\$817,050	
		Outlet Wor	rks Trashracks		495,000	LBS	\$2.50	\$1,237,500	
			Outlet Works subtotal					\$9,083,870	
	Dowernlant		_						
		Steel Pine	IL		11 735 310	I BS	\$1.50	\$17 602 965	
		Valves all	Sizes and Types		4 460 000	LBS	\$5.00	\$22,300,000	
		Hvdraulic (	Control System		120.000	LBS	\$10.00	\$1,200.000	
		Concrete i	n Powerplant		42,350	CY	\$350.00	\$14,822,500	
		Excavation	n for Powerplant		154,900	CY	\$15.00	\$2,323,500	
		Furnishing	and Handling Cement		11,945	TONS	\$100.00	\$1,194,500	
		Furnishing	and Handling Reinforcement		6,352,500	LBS	\$0.60	\$3,811,500	
		Turbines			1,956,000	LBS	\$6.50	\$12,714,000	
		Generators	S Matara ata		1,500,000		\$8.00	\$12,000,000	
		Governors	, Motors, etc.	_	3-Units	15		\$3,600,000	
								<b>491,000,900</b>	
				_		1050			
		Q	UANTITIES		PR	ICES			
ВΥ	0.111-11-1		CHECKED	BY	D. Dever	CHECKED			
DATE D	5. Higinb	ounam		DATE	к. Baumgarten		=1		
DATEP	REFARE		AFFROVED	DATE PRICE LEVEL 09/09/03 Appraisal 03					
				1	22.25/00				

CODE:D-8	E:D-8170 ESTIMATE WORKSHEET				SHEET3 OF3					
FEA1	URE:			PROJ	ECT:					
/										
	DM270	D 140/1			USJKBSI					
	KW12791	Dam - 440' I	ngn							
	Elevation	n = 900'		DIVISIO	DN:					
	Apprais	al Design St	age							
				FILE:	P:\US Bureau Recl	amation\IDIQ	01CS20210B\Uppe	er San Joaquin Phase		
					_1\Documents\Surface Storage Option TMs\TM Temperance\Pilo					
PI ANT	ΡΔΥ				sheets\IMP279 CFR	F 2003.XISIMP2	179 900			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
						-	-			
151		CFRF Dan	1							
		Excavation	- common (removal of alluvium, rock slope							
	20	cleaning by	dozer to sound rock, minimal ripping.)	8313	103,000	CY	\$7.00	\$721,000		
		Zone 1A - E	Exc, haul, & place (CL, SM, GM in 6" lifts to 98%							
	30	Proctor, 2 n	nile haul) Toe slab imperv. Cap	8313	21,000	CY	\$10.00	\$210,000		
		Zone 1B - E	Exc, haul, & place (random in 18" lifts to 95%							
	40	Proctor, 0.5	i mile haul) Shell for Zone 1A	8313	35,000	CY	\$7.50	\$262,500		
		Zone 2 - Ex	c, haul, & place processed SM, GM in 18" lifts to			<b></b>		** *** ***		
	50	98% Procto	or, 0.5 mile haul) Deck foundation	8313	115,000	CY	\$20.00	\$2,300,000		
		Zone 3A - E	Exc, haul, & place (processed GP in 18" lifts to		445 000	<b>0</b> Y	¢40.50	<b>*</b> 0.040.500		
	60	95% Procto	or, 0.5 mile haul) Transition to Shell	8313	115,000	CY	\$19.50	\$2,242,500		
	70	Zone 3B - E	Exc, haul, & place (rockfill, 18" max in 3' lifts,	0040	2 250 000	CV	¢9.50	¢07 605 000		
<u> </u>	70	Zono 2C	Eration 0.5 mile away) Upstream Shell	8313	3,250,000	C Y	\$8.5U	\$27,625,000		
	90	ZONE SC - E	EXC, Haul, & place (lockill, 4 maxim 4 mills,	9313	3 450 000	cv	\$8.25	\$28 462 500		
	90	Concrete d	eck (3 000 psi strength 0 4% reinforcing)	8313	42 500	CY	\$230.00	\$9 775 000		
	100	Concrete to	be slab (3,000 psi strength, 0,3% reinforcing	8313	3 350	CY	\$230.00	\$770,500		
	110	Anchor bar	s for toe slab (4' deep grouted into granite)	8313	15.000	anchors	\$40.00	\$600,000		
	120	Parapet Wa	all (3.000 psi, 0.4% reinforcing)	8313	2.000	CY	\$460.00	\$920,000		
	130	Drilling for a	arout program (setup, drill, test), setups=698	8313	35,500	LF	\$33.00	\$1,171,500		
	140	Grouting (g	rout injection into competent granite.	8313	26,600	bags	\$26.00	\$691,600		
	150	Unwatering	(assumes 36 month construction duration)	8313	1	LS		\$1,800,000		
			Subtotal, CFRF Dam					\$77,552,100		
		SUMMAR	Y OF COSTS							
		Diversion a	and Care of River					\$90,300,000		
		Spillway					┥───┤	\$19,000,000		
		Outlet Wor	ks				┥───┤	\$9,100,000		
		Powerplan	t				┥───┤	\$91,600,000		
		CFRF Dan	ן ה- 5%				∔∔	\$77,600,000		
		Mobilizatio	n - 5%				<b></b>	\$14,400,000		
		Subtotal	450/				++	\$302,000,000		
		Contract (	ans - 15%				++	\$48,000,000		
		Contingen	25%				╉───┼	<b>3350,000,000</b>		
		Field Coot	JIES - 2070				++	\$00,000,000		
							++	φ <del>4</del> 50,000,000		
<u> </u>							+ +			
			QUANTITIES			PRICES	- <b></b>			
BY				BY						
5.	3Y Mark Pahst		5.	R. Baumgarten	SHEOKED					
DATE P			DATE		PRICE LFV	EL.				
	8/11/2002					Appraisal 03				

CODE:D-8	170		ESTIMATE WORKSHE	ET SHEET_1_ OF _2					
FEAT	URE:			PROJE	CT:				
	_				USIRBSI				
	RM2	79 Dam			00011201				
	Elov	000		DIVICION					
	Ceret.	900 	ity Dam (DCC)	DIVISION	N:				
	Cond	crete Grav	vity Dam (RCC)						
				FILE:	P:\US_Bureau_Reclama	tion\IDIQ_01CS	20210B\Upper_San	_Joaquin_Phase_1\Docu	
					ments/Surface Storage C	Dption TM s\TM	Temperance\USBR	products\Cost Sheets -	
PLANT	PAY				Sept 2003 - Opdated Op		UNIT	05	
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT	
	1	Diversion a	nd care of river						
		Upstream C	offerdam (Crest @ El. 635)		707,430	CY	\$16.00	\$11,318,880	
		Excavation	for Left Abutment Diversion Tunnel		17,350	CY	\$140.00	\$10,829,000	
	<u> </u>	Concrete LI			17,130	CY Bolte	\$245.00	\$4, 196,850	
		Total Drillin	- Left Abt. Div. Tunnel		32,400		\$20.00	\$900,000	
		Excavation	for Right Abutment Diversion Tunnel		143 650	CY	\$140.00	\$20,111,000	
		Concrete Li	ner for Right Abutment Diversion Tunnel		24,940	LBS	\$245.00	\$6,110,300	
		Rock Bolts	- Right Abt. Div. Tunnel		1,560	Bolts	\$600.00	\$936,000	
		Total Drillir	ng - Right Abt. Div. Tunnel		35,880	LF	\$20.00	\$717,600	
		Downstrean	n Cofferdam (Crest @ El. 578)		531,600	CY	\$16.00	\$8,505,600	
	2	Excavation,	all classes, for dam foundation		50,820	CY	\$15.00	\$762,300	
		DOO in dee			4 005 400	01/	<b>#07.00</b>	<b>#00 400 700</b>	
	3	RCC in dan	1 aina domente		1,635,100	CY	\$37.00	\$60,498,700	
	4	Concrete ca	in on ton of dam		51,520 1 600		\$100.00	\$3,152,000	
					1,000		\$2.00.00	φ+00,000	
	6	Levelina co	ncrete in dam foundation		12,700	CY	\$180.00	\$2,286,000	
					,		1.00.00		
	7	Concretein	spillway crest		2,300	CY	\$200.00	\$460,000	
	8	Concretein	spillway training walls		315	CY	\$350.00	\$110,250	
						<b>.</b>		4070.000	
	9	Concretein	Outlet Works Intake Structure		3,110	CY	\$280.00	\$870,800	
	10	Everyntion	of Outlat Shaft and Cate Structure		10.620	CV	\$270.00	¢2 970 100	
		EXCAVALION			10,030		\$270.00	φ2,070,100	
	11	Temp. Supp	oorts - Rock Bolts		410	Bolts	\$380.00	\$155.800	
							100000	<b>*</b> · • • • • • • • •	
	12	Total Drillir	ng for Rock Bolts		4,720	LF	\$20.00	\$94,400	
	13	Concrete in	Outlet Shaft and Gate Structure		4,890	CY	\$430.00	\$2,102,700	
	<u> </u>						+		
	<u> </u>						++		
		Subtotal					+	\$140,036,280	
	I		LIANTITIES		PRI	CES		Ψ1-10,000, <b>2</b> 00	
BV		Q		BY	1 1/10				
ы	S. Hinin	botham	UNEUKEU	ы	R. Baumgarten	UNEUKED			
DATE P	S. Higinbotham		DATE	. a Buuniga ten	PRICE LEV	FI			
	PREPARED APPROVED			09/09/03		Appraisal 03			

CODE:D-81	170		ESTIMA	<b>TE WORKSHEET</b>				SHEET_2OF	_2
FEAT	URE:				PROJE	CT:			
						USJRBSI			
		RM279 D	Dam						
		Elev. 90	) Crowity Dom (D		DIVISION	l:			
		Concret	e Gravity Dam (R	UU)					
					FILE:	P:\US_Bureau_Reclama ments\Surface Storage C	ntion\IDIQ_01CS2 Option TM s\TM 1	20210B\Upper_San Femperance\USBR	_Joaquin_Phase_1\Docu products\Cost Sheets -
	DAV					Sept 2003 - Updated Op	tions\[pdc 900 F\	(03.xls]pdc 900 FY	/03
ACCT.	ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	PRICE	AMOUNT
	14	Excavation	for Powerplant			170,620	CY	\$15.00	\$2,559,300
	15	Concrete in	Powerplant			42,350	CY	\$350.00	\$14,822,500
	16	Furnishinga	and Handling Cement			354,000	TONS	\$90.00	\$31,860,000
	17	Furnishing a	and Handling Reinforce	nent		14,496,000	LBS	\$0.60	\$8,697,600
	18	Grout Hole	Drillilng			22,950	LF	\$35.00	\$803,250
	19	Foundation	Grouting			22,950	Sacks	\$29.00	\$665,550
	20	Set up for D	rain Holes in Gallery			153	Holes	\$200.00	\$30,600
	21	Drilling Dra	ain Holes			20,770	LF	\$55.00	\$1,142,350
	22	Outlet Work	ks Trashracks			495,000	LBS	\$2.50	\$1,237,500
	23	Steel Pipe				11,735,310	LBS	\$1.50	\$17,602,965
	24	Valves, all S	Sizes and Types			4,460,000	LBS	\$5.00	\$22,300,000
	25	Turbines				1,956,000	LBS	\$6.50	\$12,714,000
	26	Generators				1,500,000	LBS	\$8.00	\$12,000,000
	27	Governors,	Motors, etc.			3-Units	LS		\$3,600,000
		Mobilization <b>Subtotal</b>	n (5%)						\$13,500,000 <b>\$283,571,895</b>
		Unlited I	tems (15%)						\$46,428,105
		Contract C	ost						\$330,000,000
		Continge	encies (25%)						\$80,000,000
		Field Cost							\$410,000,000
-		Q				PRIC	JES		
BY	S. Higin	botham	CHECKED		BY	R. Baumgarten	CHECKED		
DATE P	REPARE	D	APPROVED		DATE	09/09/03	PRICE LEVI	EL Appraisal 03	

CODE:D	ESTIMATE WORKSHEET					SHEET_1_OF	3	
FEAT	URE:	9 Dam Site		PROJ	ECT: USJRBSI			
	Elev. 9 Concr	960 (Interpo ete Faced	olated) Rockfill Dam (CFRD)	DIVIS	ON:			
				FILE:	P:\US_Bureau_Re _Phase_1\Docum Temperance\Pilor	eclamation\IE ents\Surface in cost shee	IQ_01CS20210 Storage Option ts\[MP279 CFRF	B\Upper_San_Joaquir TMs\TM 2003.xls]MP279_900
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Diversion	and care of river					
	· ·	Linstream	Cofferdam (Crest @ EL 635)		1 269 045	CY	\$14 55	\$18 464 605
<u> </u>		Excavation	for Left Abutment Diversion Tunnel		106 775	CY	\$140.00	\$14 948 500
<u> </u>		Concrete I	iner for Left Abutment Diversion Tunnel		23 639	CY	\$245.00	\$5 791 555
		Rock Bolts	- Left Abt. Div. Tunnel		2 478	Bolts	\$530.00	\$1,313,340
		Total Drillir	ng - Left Abt. Div. Tunnel		44,604	LF	\$20.00	\$892.080
		Excavation	for Right Abutment Diversion Tunnel		257,164	CY	\$140.00	\$36.002.960
		Concrete L	iner for Right Abutment Diversion Tunnel		44,641	CY	\$245.00	\$10,937,045
		Rock Bolts	- Right Abt. Div. Tunnel		2,786	Bolts	\$600.00	\$1,671,600
		Total Drillir	ng - Right Abt. Div. Tunnel		64,078	LF	\$20.00	\$1,281,560
		Furnishing	and Handling Cement		19,260	TONS	\$100.00	\$1,926,000
		Furnishing	and Handling Reinforcement		10,242,000	LBS	\$0.60	\$6,145,200
			Diversion and Care of River Subtotal					\$99,374,445
		0						
		Spillway		_	4 700 400	01/	<b>00.45</b>	<b>#44 500 444</b>
		Excavation		_	1,790,198	CY	\$8.15	\$14,590,114
		Concrete I	n spillway crest	_	6,250	CY	\$180.00	\$1,125,000
		Concrete II	n spillway training walls and Apron		2,750		\$220.00	\$605,000
		Furnisning	and Handling Cement	_	3,103	TONS	\$110.00	\$341,286
<u> </u>		Furnisning	Spillway subtotal		1,650,150	LBS	\$0.65	\$1,072,598 \$17 733 997
<u> </u>			Spinway Subtotal					φ17,733,997
<u> </u>								
				_				
<u> </u>				_				
		Q	UANTITIES		P	RICES		
ВΥ			CHECKED	BY		CHECKED	)	
	B. Foster S. Osgood			B. Foster		S. Osgood		
DATE	PREPAR	ED	APPROVED	DATE PRICE LEVEL				
		11/10/2003			11/10/03		Appiaisai US	

CODE:D-	DDE:D-8170 ESTIMATE WORKSHEET			SHEET_2 OF3						
FEAT	URE:			PROJ	PROJECT:					
	Prosp	ect (RM279	9) Dam Site	511/101						
	Elev. S	ete Faced	Rockfill Dam (CFRF)	DIVISI	ION:					
				FILE:	P:\US_Bureau_Re _Phase_1\Docum Temperance\Pilor	eclamation\IE ents\Surface in cost shee	DIQ_01CS20210 Storage Option ts\[MP279 CFRI	B\Upper_San_Joaquir n TMs\TM <sup>-</sup> 2003.xls]MP279_900		
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
		OutletWo	'ks							
		Concrete i	n Outlet Works Intake Structure		3.110	CY	\$265.00	\$824,150		
		Excavatio	on of Outlet Shaft and Gate Structure		12.260	CY	\$280.00	\$3,432,800		
		Rock Bolt	Supports		269	Bolts	\$380.00	\$102,144		
		Total Drillir	ng for Rock Bolts		6,188	LF	\$20.00	\$123,760		
		Concrete i	n Outlet Shaft and Gate Structure		5,324	CY	\$435.00	\$2,315,940		
		Furnishing	and Handling Cement		2,360	TONS	\$120.00	\$283,200		
		Furnishing	and Handling Reinforcement		1,265,100	LBS	\$0.65	\$822,315		
		Outlet Wor	ks Trashracks		495,000	LBS	\$2.50	\$1,237,500		
			Outlet Works subtotal					\$9,141,809		
		Powerpla	nt							
		Steel Pipe			13,934,940	LBS	\$1.50	\$20,902,410		
		Valves, all	Sizes and Types		6,438,020	LBS	\$5.00	\$32,190,100		
		Hydraulic (	Control System		129,000	LBS	\$10.00	\$1,290,000		
		Concrete i	n Powerplant		42,350	CY	\$350.00	\$14,822,500		
		Excavation	n for Powerplant		212,500	CY	\$14.89	\$3,164,318		
		Furnishing	and Handling Cement		11,945	TONS	\$100.00	\$1,194,500		
		Furnishing	and Handling Reinforcement		6,352,500	LBS	\$0.60	\$3,811,500		
		Turbines			1,936,200	LBS	\$6.50	\$12,585,300		
		Generators	3		1,752,000	LBS	\$8.00	\$14,016,000		
		Governors	, Motors, etc.		3-Units	LS		\$3,600,000		
			Powerplant subtotal					\$107,576,628		
		Q	UANTITIES		PI	RICES		•		
BY			CHECKED	BY	D. 5	CHECKED	)	44/04/00000		
	B. Foster S. Osgood 11/21/03		B. Foster		S. Osgood 11/21/2003					
DATE I	TE PREPARED APPROVED 11/10/2003		DATE	11/10/03	PRICE LE	EVEL Appraisal 03				

CODE:D-	-8170		ESTIMATE WORKSHEET				SHEET_3O	3	
FEA	TURE	:		PRO.	JECT:				
	RM279	9 Dam - 440'	' high						
	Eleveti	$a_{n} = 0.60!$	CERD	DIVISION					
	Elevation	$on = 960^{\circ}$	CFRD	DIVISI	UN:				
	Apprais	sal Design St	age						
				FILE:	P:\US Bureau Re	clamation\ID	01Q 01CS20210	B∖Upper San Joaquin	
				_Phase_1\Documents\Surface Storage Option TMs\TM					
					Temperance\Pilor	in cost sheet		2003.xls]MP279 900	
			DESCRIPTION	CODE					
ACC1.			Descrit How	CODL	QUANTIT	UNIT	TRICE	AMOUNT	
		CFRF Dan	n						
	20	Excavation	- common (removal of alluvium, rock slope	8313	134 500	CY	\$6 85	\$921 325	
		Zone 1A - E	Exc. haul. & place (CL. SM. GM in 6" lifts to	0010		• •	<i>\\</i>	<i><i><i>vc1</i>,<i>c2c</i></i></i>	
	30	98% Procto	pr. 2 mile haul) Toe slab imperv. Cap	8313	23,700	CY	\$9.70	\$229,890	
		Zone 1B - E	Exc. haul. & place (random in 18" lifts to 95%		,			· · · ·	
	40	Proctor, 0.5	5 mile haul) Shell for Zone 1A	8313	39,500	CY	\$7.35	\$290,325	
		Zone 2 - Ex	c, haul, & place processed SM, GM in 18" lifts						
	50	to 98% Pro	ctor, 0.5 mile haul) Deck foundation	8313	167,500	CY	\$18.80	\$3,149,000	
		Zone 3A - E	Exc, haul, & place (processed GP in 18" lifts to						
	60	95% Procto	or, 0.5 mile haul) Transition to Shell	8313	167,500	CY	\$18.60	\$3,115,500	
		Zone 3B - E	Exc, haul, & place (rockfill, 18" max in 3' lifts,						
	70	70 blasting operation 0.5 mile away) Upstream Shell		8313	5,275,000	CY	\$8.28	\$43,650,625	
		Zone 3C - Exc, haul, & place (rockfill, 4' max in 4' lifts,			E E0E 000	<b>O</b> V	<b>*</b> 0.00	#44.0F0.40F	
	80	blasting op	eration 0.5 mile away) Downstream Shell	8313	5,565,000	CY	\$8.03	\$44,659,125	
	90	Concrete d	eck (3,000 psi strength, 0.4% reinforcing)	8313	59,000	CY	\$222.50	\$13,127,500	
	100	Concrete to	be slab (3,000 psi strength, 0.3% reinforcing	8313	3,995	CY	\$222.50	\$888,888	
	110	Anchor bar	s for toe slab (4' deep grouted into granite)	8313	17,910	anchors	\$40.00	\$716,400	
	120	Parapet Wa	all (3,000 psi, 0.4% feililoicing)	8313	2,013		\$442.00 \$22.40	\$1,100,000 \$1,405,260	
	130	Crouting for g	grout program (setup, dnii, test), setups=698	0212	40,150	LF	\$32.40 \$24.80	\$1,495,200 \$856.006	
	140	Unwatering	(assumes 36 month construction duration)	8313	1	1 9	ψ24.00	\$1,800,000	
	150	Onwatering	Subtotal CERE Dam	0010		20		\$116 055 764	
								\$110,000,70 <del>4</del>	
		SUMMAR	Y OF COSTS						
		Diversion a	and Care of River					\$99,400,000	
		Spillwav						\$17.700.000	
		Outlet Wor	ks					\$9,100,000	
		Powerplan	t					\$107,600,000	
		CFRF Dan	n					\$116,100,000	
		Mobilizatio	n - 5%					\$17,500,000	
		Subtotal						\$367,400,000	
		Unlisted Ite	ems - 15%					\$52,600,000	
		Contract C	Cost					\$420,000,000	
		Contingen	cies - 25%					\$110,000,000	
		Field Cost						\$530,000,000	
			QUANTITIES			PRICE	S		
BY			CHECKED	BY		CHECKEI	D		
	B. Foster S. Osgood 11/21/03			B. Foster		S. Osgood	11/21/2003		
DATE	TE PREPARED		DATE		PRICE LE	VEL			
	11/10/2003				11/10/03		Appraisal 03		

CODE	E:D-8 <sup>,</sup>	170	ESTIMATE WORKSH	IEET				SHEET	1OF2
FEAT	URE:				PROJI	ECT:			
						USJRBSI			
	RM2	79 Dam							
	Elev	. 960 (Interp croto Gravity	olated) ( Dam (RCC)		DIVIS	ION:			
	COIN	ciele Gravity			FII E·				
						C:\Documents and	Settings\smosg	ood\Desktop\My	Briefcase\Interpolated
PI ANT	PAY					0033(111 273 - 100	- 300 1300.X	UNIT	
ACCT.	ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	PRICE	AMOUNT
			d anna af siu an						
<u> </u>	<u> </u>	Diversion and	ffordern (Creat @ EL 625)			707 420	CV	¢16.00	¢11 210 000
<u> </u>		Execution for	r Loft Abutmont Diversion Tunne	J		707,430 80,176		\$10.00 \$140.00	\$11,310,000 \$11,224,640
		Concrete lin	er for Left Abutment Diversion Tullie	nnel		17 754		\$140.00	\$11,224,040
		Rock Bolts	e foi Leit Abduinen Diversion nu Left Abt Div Tunnel			2 037	Bolts	\$530.00	\$1,079,610
<u> </u>		Total Drilling				2,007	I F	\$20.00	\$733 320
		Excavation for	or Right Abutment Diversion Tunn	hel		148 720	CY	\$140.00	\$20,820,800
		Concrete Lin	er for Right Abutment Diversion T	unnel		25 819	LBS	\$245.00	\$6 325 655
		Rock Bolts -	Right Abt Div Tunnel	anna		1 947	Bolts	\$600.00	\$1 168 200
		Total Drilling	1 - Right Abt Div Tunnel			44 781	LE	\$20.00	\$895.620
		Downstream	Cofferdam (Crest @ El. 578)			527.820	CY	\$16.00	\$8,445,120
									<b>4</b> 0, 1 0, 1 0
	2 Excavation, all classes, for dam foundation				69,981	CY	\$14.70	\$1,028,721	
	3	RCC in dam				2,633,281	CY	\$35.50	\$93,481,476
	4	Concrete faci	ng elements			71,098	CY	\$94.00	\$6,683,212
<u> </u>	5	Concrete cap	on top of dam			2,446	CY	\$250.00	\$611,500
	6	Leveling con	crete in dam foundation			17,491	CY	\$180.00	\$3,148,380
	7	Concrete in s	pillway crest			2,300	CY	\$200.00	\$460,000
	8	Concrete in s	pillway training walls			372	CY	\$350.00	\$130,200
						0.1	0.	<i>t</i> ccc.cc	¢.00,200
	9	Concrete in C	Outlet Works Intake Structure			3,110	CY	\$280.00	\$870,800
<u> </u>	10	Excavation o	f Outlet Shaft and Gate Structure			11 230	CY	\$273.00	\$3 065 790
						,	0.	<i><b>4</b></i>	\$0,000,100
	11	Temp. Suppo	rts - Rock Bolts			458	Bolts	\$380.00	\$174,040
	12	Total Drilling	a for Rock Bolts			5 272	IF	\$20.00	\$105 440
		. old Dining				0,212		<i><b>4</b></i> <b>2</b> 0.000	¢.00,1.0
	13 Concrete in Outlet Shaft and Gate Structure			5,058	CY	\$433.00	\$2,190,114		
	Dubénén l								\$470 044 04T
<u> </u>					וסק	CES		\$178,311,247	
DV	QUANTITIES		ΡV	r Ki					
ы	Y CHECKED B. Foster S. Osgood 11/21/03		51	B. Foster	UNEUKED	S. Osgood	11/21/2003		
DATE	ATE PREPARED APPROVED		DATE		PRICE LEV	/EL			
	ATE PREPARED APPROVED 11/10/2003					11/10/03		Appraisal 03	

CODE:	DDE:D-8170 ESTIMATE WORKSHEET							SHEET_2_	_OF2
FEATU	RE:				PROJE	CT:			
	RM279 Elev 9	9 Dam 60 (Interpolate	id) m (BCC)		DIVISIO	DN:			
	Conci				FILE:	muni1\Jobs\US_Bu Phase_1\Document Costs\[M P279 - RC	reau_Reclamati s\Surface Stora C - 900 1300.xl	ion\IDIQ_01CS20 ge Option TM s\T s]Interpolated 12	)210B\Upper_San_Joaquin_ M Temperance\Interpolated 00
PLANT ACCT.	Pay Item		DESCRIPTION		CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	14	Excavation for	or Powerplant			142,924	CY	\$15.00	\$2,143,860
	15	Concrete in P	Powerplant			42,350	CY	\$350.00	\$14,822,500
	16	Furnishing ar	nd Handling Cement			548,891	TONS	\$90.00	\$49,400,226
	17	Furnishing ar	nd Handling Reinforcen	nent		14,881,875	LBS	\$0.60	\$8,929,125
	18	Grout Hole D	Drillilng			41,790	LF	\$33.50	\$1,399,965
	19	Foundation G	Grouting			41,790	Sacks	\$26.90	\$1,124,151
	20	Set up for Dra	ain Holes in Gallery			210	Holes	\$200.00	\$42,000
	21	Drilling Drair	n Holes			37,618	LF	\$54.10	\$2,035,134
	22	Outlet Works	s Trashracks			495,000	LBS	\$2.50	\$1,237,500
	23	Steel Pipe				13,934,940	LBS	\$1.50	\$20,902,410
	24	Valves, all Si	zes and Types			6,438,020	LBS	\$5.00	\$32,190,100
	25	Turbines				1,936,200	LBS	\$6.50	\$12,585,300
	26	Generators				1,752,000	LBS	\$8.00	\$14,016,000
	27	Governors, N	lotors, etc.			3-Units	LS		\$3,600,000
		Subtotal pg 1 Subtotal pg 2							\$178,311,247 \$164,428,271
		Mobilization							\$17,000,000
		Subtotal							\$359,739,518
		Unlited Items (15%)							\$50,260,482
		Contract Cost						\$410,000,000	
	Contingencies (25%)						\$110,000,000		
	Field Cost							\$520,000,000	
		QUA	NTITIES			PRI	CES		
BY	BY CHECKED B. Foster S. Osgood		BY	B. Foster	CHECKED	S. Osgood	11/21/2003		
DATE	ATE PREPARED APPROVED			DATE	11/10/03	PRICE LEV	'EL Appraisal 03		

CODE:D-	DDE:D-8170 ESTIMATE WORKSHEET			SHEET_1OF3					
FEA	TURE:			PROJECT:					
	-				USIRBS				
	DM270	Dom Sit	<b>a</b>						
			e	211// 2101					
	Elev. 1	100		DIVIS	SION:				
	Concr	ete Faced	l Rockfill Dam (CFRD)						
				FILE:	P·\US Bureau Red	amation\IDIO 01	CS20210B\Upper S	an Joaquin Phase 1\Doc	
				umentsiSurface Storage Option TM siTM Temperance/Pilorin cost sheetsi[MF					
					CFRF 2003.xls MP2	79 900			
PLANI	PAY		DECODIDEION	0005		LINUT			
ACCT.	TTEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT	
	1	Diversion	and care of river						
		Upstream C	Cofferdam (Crest @ El. 635)		1,792,470	CY	\$13.50	\$24,198,345	
		Excavation	for Left Abutment Diversion Tunnel		147,970	CY	\$140.00	\$20,715,800	
		Concrete Li	ner for Left Abutment Diversion Tunnel		32,760	CY	\$245.00	\$8,026,200	
		Rock Bolts	- Left Abt. Div. Tunnel		3,430	Bolts	\$600.00	\$2,058,000	
		Total Drillin	ng - Left Abt. Div. Tunnel		61,740	LF	\$20.00	\$1,234,800	
		Excavation	for Right Abutment Diversion Tunnel		278,850	CY	\$140.00	\$39,039,000	
		Concrete Li	ner for Right Abutment Diversion Tunnel		48,400	CY	\$245.00	\$11,858,000	
		Rock Bolts	- Right Abt. Div. Tunnel		3,010	Bolts	\$600.00	\$1,806,000	
	Total Drilling - Right Abt. Div. Tunnel         Furnishing and Handling Cement         Furnishing and Handling Reinforcement		69,230	LF	\$20.00	\$1,384,600			
			22,900	TONS	\$100.00	\$2,290,000			
			12,174,000	LBS	\$0.60	\$7,304,400			
			Diversion and Care of River Subtotal	_				\$119,915,145	
		Spillway							
		Excavatior	n for Spillway		1,271,750	CY	\$8.50	\$10,809,875	
		Concrete i	n spillway crest		6,250	CY	\$180.00	\$1,125,000	
		Concrete i	n spillway training walls and Apron		2,750	CY	\$220.00	\$605,000	
		Furnishing	and Handling Cement		4,420	TONS	\$110.00	\$486,200	
		Furnishing	and Handling Reinforcement		2,350,500	LBS	\$0.65	\$1,527,825	
		Concretein	Gravity Wall	_	6,670	CY	\$250.00	\$1,667,500	
			Spillway subtotal					\$16,221,400	
				_					
		Q	UANTITIES		PF	RICES	·		
BY	o ur : :	- 41	CHECKED	BY	D Davis é	CHECKED			
DATE	S. Higinbo	otnam	APPROVED	DATE	к. Baumgarten		FI		
		-			DATE		Appraisal 03		

CODE:D-	8170		ESTIMATE WORKSHEE	ET SHEET_2_OF_3						
FEA <sup>®</sup>	TURE:			PRO	JECT:					
					USJRBSI					
	RM279	Dam Site	9							
	Flev 1	100								
	Concr	oto Facod	Rockfill Dam (CERD)							
	Concr									
				FILE: P:\US_Bureau_Reclamation\\DIQ_01CS20210B\Upper_San_Joaquin_Phase_1\D						
					CFRF 2003.xls]MP2	age Option Tivis. 79 900	INI I emperance/P	IIOFIN COSt Sneets [IVI P279		
PLANT	PAY						UNIT			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
		OutletMa								
		Concrete i	n Outlet Works Intake Structure		3 110	CΥ	\$265.00	\$824 150		
		Excavation	on of Outlet Shaft and Gate Structure		12 470	CY	\$280.00	\$3 491 600		
		Rock Bolt	Supports		280	Bolts	\$380.00	\$106,400		
		Total Drillir	ng for Rock Bolts		6,440	LF	\$20.00	\$128,800		
		Concrete i	n Outlet Shaft and Gate Structure		5,450	CY	\$435.00	\$2,370,750		
		Furnishing	and Handling Cement		2,360	TONS	\$120.00	\$283,200		
		Furnishing	and Handling Reinforcement		1,284,000	LBS	\$0.65	\$834,600		
		Outlet Wor	ks Trashracks		495,000	LBS	\$2.50	\$1,237,500		
	Outlet Works subtotal						\$9,277,000			
		Powernia	at							
		Steel Pipe			19.067.410	LBS	\$1.50	\$28.601.115		
		Valves, all	Sizes and Types		11,053,400	LBS	\$5.00	\$55,267,000		
		Hydraulic (	Control System		150,000	LBS	\$10.00	\$1,500,000		
		Concrete i	n Powerplant		42,350	CY	\$350.00	\$14,822,500		
		Excavation	n for Powerplant		346,900	CY	\$13.00	\$4,509,700		
		Furnishing	and Handling Cement		11,945	TONS	\$100.00	\$1,194,500		
		Furnishing	and Handling Reinforcement		6,352,500	LBS	\$0.60	\$3,811,500		
		Turbines			1,890,000	LBS	\$6.50	\$12,285,000		
		Generators	S Motora etc		2,340,000	LBS	\$8.00	\$18,720,000		
		Governors	Powerplant subtotal		3-01118	10		\$3,000,000		
								ψ1 <del>4</del> ,511,515		
DV		Q		DV	Pr					
ВΥ	S. Higinb	otham	CHECKED	ВҮ	R. Baumgarten	CHECKED				
DATE F	PREPARFI	)	APPROVED	DATE	Daalinguiteit	PRICE LEV	EL			
	APPROVED				DATE		Appraisal 03			

CODE:D-	DDE:D-8170 ESTIMATE WORKSHEET				SHEET_3OF3					
FEA <sup>®</sup>	TURE:			PRO.	JECT:					
	RM279	Dam Site	9							
	Flev 1	100		פועום						
	Concre	to Eacod	Pockfill Dam (CEPD)	DIVIS	ION.					
	Concre									
				FILE:	P:\US_Bureau_Recla	mation\IDIQ_01	CS20210B\Upper_S	San_Joaquin_Phase_1\Doc		
					CFRF 2003.xlsIM P2	age Option IMIS. 79 900	IM I emperance/Pi	Ior in cost sheets [MP279		
PLANT	PAY						UNIT			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
		CFRF Dan	1 (							
	20	Excavation	- common (removal of alluvium, rock slope	0040	208.000	οv	¢6 50	¢1 252 000		
	20	Zone 1A - F	To sound rock, minimal ripping.)	8313	206,000		\$0.0U	φ1,352,000		
	30 98% Proctor, 2 mile haul) Toe slab imperv. Cap			8313	30.000	CY	\$9.00	\$270.000		
		Zone 1B - E	Exc, haul, & place (random in 18" lifts to 95%					1		
	40	Proctor, 0.5	mile haul) Shell for Zone 1A	8313	50,000	CY	\$7.00	\$350,000		
		Zone 2 - Ex	c, haul, & place processed SM, GM in 18" lifts							
	50	to 98% Pro	ctor, 0.5 mile haul) Deck foundation	8313	290,000	CY	\$16.00	\$4,640,000		
		Zone 3A - E	Exc, haul, & place (processed GP in 18" lifts to		000.000	01/	#40 F0	# 4 <b>7</b> 05 000		
	Zone 3B - Exc. haul & place (rockfill, 18" max in 3' lifts		8313	290,000	CY	\$16.50	\$4,785,000			
	Zone 3B - EXC, naul, & place (rockfill, 18" max in 3" lifts, 70 blasting operation 0.5 mile away) Upstream Shell		0212	10 000 000	cv	¢7 75	\$77 500 000			
	10	Zono 3C	Eration 0.5 mile away) Opsitean Shell	0313	10,000,000		φ1.15	\$77,500,000		
	80	blasting on	eration 0.5 mile away) Downstream Shell	8313	10 500 000	CY	\$7 50	\$78 750 000		
	90	Concrete d	eck (3 000 psi strength 0 4% reinforcing)	8313	97,500	CY	\$205.00	\$19,987,500		
	100	Concrete to	be slab (3.000 psi strength, 0.3% reinforcing	8313	5,500	CY	\$205.00	\$1,127,500		
	110	Anchor bar	s for toe slab (4' deep grouted into granite)	8313	24,700	anchors	\$40.00	\$988,000		
	120	Parapet Wa	all (3,000 psi, 0.4% reinforcing)	8313	4,050	CY	\$400.00	\$1,620,000		
	130	Drilling for	grout program (setup, drill, test), setups=1153	8313	71,000	LF	\$31.00	\$2,201,000		
	140	Grouting (g	rout injection into competent granite.	8313	53,000	bags	\$22.00	\$1,166,000		
	150	Unwatering	(assumes 48 month construction duration)	8313	1	LS		\$2,400,000		
			Subtotal, CFRF Dam					\$197,137,000		
			( 05 000T0							
		SUMMAR						¢440.000.000		
		Diversion a	and Care of River					\$119,900,000		
		Outlet Wor	ke					\$9,200,000		
		Powernlan	t					\$9,300,000		
		CERE Dan						\$197 100 000		
		Mohilizatio	n - 5%					\$24,000,000		
		Subtotal						\$510,800,000		
		Unlisted Ite	ems - 15%					\$79,200,000		
		Contract C	Cost					\$590,000,000		
		Contingend	cies - 25%					\$140.000.000		
		Field Cost						\$730,000,000		
			QUANTITIES			PRICES				
BY				BY		CHECKED				
	Mark Pabs	t			R. Baumgarten					
DATE F	ATE PREPARED		DATE		PRICE LEVE	EL				
	8/11/2002				09/09/03		Appraisal 03			

CODE:D-	8170		ESTIMATE WOR	KSHEET				SHEET_1_OF_	_2
FEA	TURE	:			PROJ	ECT:			
						USJRBSI			
	RM2	79 Dam							
	Elev	. 1100			DIVISIO	ON:			
	Con	crete Gra	vity Dam (RCC)		_				
					FIL F				
						C:\Documents and Set	tings\smosgood\[	Desktop∖MyBriefca	ase\l nter polated
						Costs\[MP279 - RCC -	900 1300.xls]11	00 RCC	•
PLANT ACCT.	PAY ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Diversion a	nd care of river						
		Unstream C	Cofferdam (Crest @ EL 635)			707 430	CY	\$16.00	\$11 318 880
		Excavation	for Left Abutment Diversion Tunne	1		86 770	CY	\$140.00	\$12 147 800
		Concrete Li	ner for Left Abutment Diversion Tu	innel		19.210	CY	\$245.00	\$4,706,450
		Rock Bolts	- Left Abt. Div. Tunnel			2,590	Bolts	\$600.00	\$1,554,000
		Total Drillin	ng - Left Abt. Div. Tunnel			46,620	LF	\$20.00	\$932,400
		Excavation	for Right Abutment Diversion Tunn	el		160,550	CY	\$140.00	\$22,477,000
		Concrete Li	ner for Right Abutment Diversion T	unnel		27,870	LBS	\$245.00	\$6,828,150
		Rock Bolts	- Right Abt. Div. Tunnel			2,850	Bolts	\$600.00	\$1,710,000
		Total Drilli	ng - Right Abt. Div. Tunnel			65,550	LF	\$20.00	\$1,311,000
		Downstream	n Cofferdam (Crest @ El. 578)			519,000	CY	\$16.00	\$8,304,000
	0	European and and				111.000	01	¢44.00	¢4 005 000
	2	Excavation,	all classes, for dam foundation			114,690	CY	\$14.00	\$1,605,660
	3	RCC in dan	า			4,962,370	CY	\$32.00	\$158,795,840
	4	Concrete fa	cing elements			116,780	CY	\$80.00	\$9,342,400
	5	Concrete ca	p on top of dam			4,420	CY	\$250.00	\$1,105,000
		L av selline a a	a susta in deve for undation			00.070	01	¢400.00	¢5 400 000
	6	Leveling co	ncrete in dam foundation			28,670	CY	\$180.00	\$5,160,600
	7	Concretein	spillway crest			2.300	CY	\$200.00	\$460.000
						,			,,
	8	Concretein	spillway training walls			505	CY	\$350.00	\$176,750
	0	Concrete in	Outlat Warks Intaka Structura			2 110	CV	¢290.00	¢970 900
	9	Concrete III	Outlet Works make Structure			3,110	CT	φ <u>∠</u> ου.υυ	φ070,000
	10	Excavation	of Outlet Shaft and Gate Structure			12,630	CY	\$280.00	\$3,536,400
	11	T				570	Dalta	¢000.00	¢040.000
	11	remp. Supp	DOLLS - KOCK BOLLS			570	BOITS	\$380.00	\$216,600
	12	Total Drillin	ng for Rock Bolts			6,560	LF	\$20.00	\$131,200
	40	Conorato in	Outlat Chaft and Cata Otructure			E 450	CV	£440.00	¢2 200 000
	13	Concrete in				5,450	Cr	\$440.00	\$2,398,000
		Subtotal							\$255,088,930
		Q	UANTITIES			PR	ICES		
BY	S. Hiair	botham	CHECKED		BY	R. Baumparten	CHECKED		
DATE	PREPAR	RED	APPROVED			n. Daumgarten		FL	
SALE.	ATE PREPARED APPROVED			2416	09/09/03		Appraisal 03		

CODE:D-	-8170		ESTIMA	TE WORKSHEET	SHEET SHEET_2_OF_2					
FEA	TURE	:			PROJ	ECT:				
	RM2	79 Dam								
	Elev Con	1100 crete Gra	vity Dam (RCC)		DIVISIO	ON:				
			··· <b>·</b> , - ···· (·····,		FILE:					
						C:\Documents and Set	tings\smosgood\D 900_1300_visi110	esktop\MyBriefca	ase\Interpolated	
PLANT ACCT.	PAY ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	UNIT	AMOUNT	
	14	Excavation	for Powerplant			78,300	CY	\$15.00	\$1,174,500	
	15	Concretein	Powerplant			42,350	CY	\$350.00	\$14,822,500	
	16	Furnishing	and Handling Cement			1,003,638	TONS	\$90.00	\$90,327,420	
	17	Furnishing a	and Handling Reinforo	ement		15,782,250	LBS	\$0.60	\$9,469,350	
	18	Grout Hole	Drillilng			85,750	LF	\$30.00	\$2,572,500	
	19	Foundation	Grouting			85,750	Sacks	\$22.00	\$1,886,500	
	20	Set up for D	rain Holes in Gallery			343	Holes	\$200.00	\$68,600	
	21	Drilling Dra	in Holes			76,930	LF	\$52.00	\$4,000,360	
	22	Outlet Work	ks Trashracks			495,000	LBS	\$2.50	\$1,237,500	
	23	Steel Pipe				19,067,410	LBS	\$1.50	\$28,601,115	
	24	Valves, all S	Sizes and Types			11,053,400	LBS	\$5.00	\$55,267,000	
	25	Turbines				1,890,000	LBS	\$6.50	\$12,285,000	
	26	Generators				2,340,000	LBS	\$8.00	\$18,720,000	
	27	Governors,	Motors, etc.			3-Units	LS		\$3,600,000	
		Mobilizatio	n						\$25,000,000	
		Sublola							<b>\$524,121,275</b>	
		Unlited I	tems (15%)						\$75,878,725	
		Contract C	ost						\$600,000,000	
		Continge	ncies (25%)						\$150,000,000	
	Field Cost						\$750,000,000			
		Q	UANTITIES			PR	CES			
BY	S. Higir	botham	CHECKED		BY	R. Baumgarten	CHECKED			
DATE	APPROVED APPROVED			DATE	09/09/03	PRICE LEVE	EL Appraisal 03			

CODE:D-8170 ESTIMATE WORKSHEET				Г			SHEET_1_0	F2		
FEAT	URE:			PROJ	PROJECT:					
	RM27	9 Dam Site			USJRBSI					
	Elev. Conci	1200 (Inter rete Faced	polated) Rockfill Dam (CFRD)	DIVIS	ION:					
					P:\US_Bureau_Rec e_1\Documents\Sur sheets\[M P279 CFR	lamation\IDIC face Storage C RF 2003.xls]M I	Q_01CS20210B Option TM s\TM P279 1100	Upper_San_Joaquin_Phas Temperance∖Pilorin cost		
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
	1	Diversion	and care of river							
	· ·	Unstream C	cofferdam (Crest @ FL 635)	_	2 229 735	CY	\$13.00	\$28 986 555		
		Excavation	for Left Abutment Diversion Tunnel		180.785	CY	\$140.00	\$25,309,900		
		Concrete Li	ner for Left Abutment Diversion Tunnel		40.030	CY	\$250.00	\$10.007.500		
		Rock Bolts	- Left Abt. Div. Tunnel		4,190	Bolts	\$550.00	\$2,304,500		
		Total Drillin	ng - Left Abt. Div. Tunnel		75,420	LF	\$20.00	\$1,508,400		
		Excavation	for Right Abutment Diversion Tunnel		299,425	CY	\$140.00	\$41,919,500		
		Concrete Li	ner for Right Abutment Diversion Tunnel		52,000	CY	\$250.00	\$13,000,000		
		Rock Bolts	- Right Abt. Div. Tunnel		3,440	Bolts	\$600.00	\$2,064,000		
		Total Drilli	ng - Right Abt. Div. Tunnel		79,120	LF	\$20.00	\$1,582,400		
		Furnishing	and Handling Cement		25,960	TONS	\$100.00	\$2,596,000		
		Furnishing	and Handling Reinforcement		13,804,500	LBS	\$0.60	\$8,282,700		
<u> </u>			Diversion and Care of River Subtotal					\$137,561,455		
		Spillwav								
		Excavation for Spillway Concrete in spillway crest			1.456.875	CY	\$8.50	\$12,383,438		
					6,960	CY	\$180.00	\$1,252,800		
		Concrete i	n spillway training walls and Apron		5,125	CY	\$215.00	\$1,101,875		
		Furnishing	and Handling Cement		4,350	TONS	\$110.00	\$478,500		
		Furnishing	and Handling Reinforcement		2,313,000	LBS	\$0.65	\$1,503,450		
			Spillway subtotal					\$16,720,063		
<u> </u>				_						
-		Q	UANTITIES		Р		<u></u>			
ВҮ	B. Fost	er	CHECKED S. Osaood	ВҮ	B. Foster	CHECKED	) S. Osaood	11/21/2003		
DATE P	REPAR	ED	APPROVED	DATE		PRICE LE	VEL			
11/10/2003			11/10/03		Appraisal 03					

CODE:D-8	170		ESTIMATE WORKSHEET				SHEET_2_OF	3		
<b>FEA</b>	URE	:		PRO.	JECT:					
					USJRBSI					
RM279 Dam Site				UƏJICDƏI						
	Elev. 1200 (Interpolated)									
					ION:					
	Concrete Faced Rockfill Dam (CFRD)		ed Rockfill Dam (CFRD)							
				FILE:	P:\US_Bureau_Rec	lamation\IDIC	_01CS20210B\L	Ipper_San_Joaquin_Phas		
				e_1\Documents\Surface Storage Option TM s\TM Temperance\Pilorin c						
PI ANT	PAY	PAY			sheetsI[M P279 CFRF 2003.xls]M P279 1100					
ACCT	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
//001.	11200			CODE			TRUCE			
		Outlet Wo	rks	_	0.110	0)(	<b>***</b> **	<b>*</b> 224 452		
		Concrete	n Outlet Works Intake Structure	_	3,110	CY	\$265.00	\$824,150		
<u> </u>		Excavation	on of Outlet Shaft and Gate Structure	_	12,600	CY	\$280.00	\$3,528,000		
		Rock Bolt	Supports	_	380	Bolts	\$370.00	\$140,600		
		Total Drillin	ng for Rock Bolts	_	6,100		\$20.00	\$122,000		
<u> </u>		Concrete I	n Outlet Shaft and Gate Structure	_	6,250		\$442.50	\$2,765,625		
<u> </u>		Furnisning	and Handling Cement	_	2,615		\$115.00 ©0.65	\$300,725		
			and Handling Reinforcement	_	1,404,000	LBS	\$0.65 © 50	\$912,600		
		Outlet wo	Outlet Werke aubtetel	_	495,000	LBS	-¥2.00	\$1,237,300		
			Outlet Works Subtotal	-				\$9,631,200		
		Powerpla	nt							
		Steel Pipe			22,651,855	LBS	\$1.50	\$33,977,783		
		Valves, all	Sizes and Types		10,687,900	LBS	\$5.00	\$53,439,500		
		Hydraulic (	Control System		168,500	LBS	\$10.00	\$1,685,000		
		Concrete i	n Powerplant		42,350	CY	\$350.00	\$14,822,500		
		Excavation	n for Powerplant		307,100	CY	\$13.00	\$3,992,300		
		Furnishing	and Handling Cement		11,945	TONS	\$100.00	\$1,194,500		
		Furnishing	and Handling Reinforcement		6,352,500	LBS	\$0.60	\$3,811,500		
		Turbines			1,945,000	LBS	\$6.50	\$12,642,500		
		Generators	8		2,420,000	LBS	\$8.00	\$19,360,000		
		Governors	, Motors, etc.		3-Units	LS		\$3,600,000		
			Powerplant subtotal					\$148,525,583		
				_						
<u> </u>										
				—						
				-						
		Q	UANTITIES		P	RICES	<u> </u>			
BY		~	CHECKED	BY		CHECKED	)			
	B. Fos	ter	S. Osgood 11/21/2003		B. Foster		S. Osgood 1	1/21/2003		
DATE P	REPAR	ED	APPROVED	DATE	,	PRICE LE	VEL			
		11/10/2003			11/10/03		Appraisal 03	5		

CODE:D-8	CODE:D-8170 ESTIMATE WORKSHEET				SHEET_3_ OF _3				
FEATURE: F				PRO.	IECT:				
RM279 Dam Site									
	Elevati	ion = 1200' (	Interpolated)	DIVISI	ON:				
	Emban	kment Dam	(CFRD)						
				FILE:			040 000040 DU	James Ora, Jamesia Dhar	
					e_1\Documents\Surf	face Storage O	ption TM s\TM	Temperance\Pilorin cost	
	DAY				sheets\[MP279 CFR	F 2003.xls]M F	279 1100		
PLANI	PAY		DESCRIPTION	CODE					
ACCI.				CODE	QUANTIT	UNIT	FRICE	AMOUNT	
		CFRF Dam	1						
		Excavation	- common (removal of alluvium, rock slope			<b></b>	<b>AF FO</b>	<b>*•</b> • • <b>•</b> • • • •	
<u> </u>	20	cleaning by	dozer to sound rock, minimal ripping.)	8313	634,000	CY	\$5.50	\$3,487,000	
	30	Proctor 2 n	nile haul) Toe slab imperv Cap	8313	80 000	CY	\$8 25	\$660,000	
	00	Zone 1B - E	Exc, haul, & place (random in 18" lifts to 95%		00,000	01	φ0. <b>2</b> 0	\$000,000	
	40	Proctor, 0.5	mile haul) Shell for Zone 1A	8313	425,000	CY	\$6.25	\$2,656,250	
		Zone 2 - Ex	c, haul, & place processed SM, GM in 18" lifts to	)		<b></b>			
<u> </u>	50	98% Procto	or, 0.5 mile haul) Deck foundation	8313	495,500	CY	\$15.50	\$7,680,250	
	60	2011e 3A - E 95% Procto	r. 0.5 mile haul) Transition to Shell	8313	495 500	CY	\$15.50	\$7 680 250	
	00	Zone 3B - E	Exc. haul. & place (rockfill, 18" max in 3' lifts.	0010	100,000	01	φ10.00	\$7,000,200	
	70	blasting ope	eration 0.5 mile away) Upstream Shell	8313	19,012,500	CY	\$7.38	\$140,217,188	
		Zone 3C - E	Exc, haul, & place (rockfill, 4' max in 4' lifts,						
	80	blasting ope	eration 0.5 mile away) Downstream Shell	8313	19,550,000	CY	\$7.13	\$139,293,750	
<u> </u>	90	Concrete de	eck (3,000 psi strength, 0.4% reinforcing)	8313	168,825	CY	\$187.50 \$187.50	\$31,654,688	
<u> </u>	100	Concrete to	e slab (3,000 psi strength, 0.3% reinforcing	8313	5,930 26,650	anchore	00.001¢	\$1,111,875 \$1,066,000	
<u> </u>	120	Paranet Wa	all (3 000 psi, 0.4% reinforcing)	8313	20,030	CY	\$40.00	\$1,000,000	
	130	Drilling for a	arout program (setup, drill, test)	8313	81.175	LF	\$30.00	\$2,435,250	
	140	Grouting (g	rout injection into competent granite.	8313	60,750	bags	\$22.00	\$1,336,500	
	150	0 Unwatering		8313	1	LS		\$3,150,000	
		Subtotal, CFRF Dam						\$344,589,800	
<u> </u>		RCC DIKE			4 660	CY	\$8.50	\$39.610	
		RCC in Dik			42.330	CY	\$48.00	\$2.031.840	
		Concrete fa	acing elements in Dike		4,760	CY	\$180.00	\$856,800	
		Concrete c	ap on top of Dike		560	CY	\$250.00	\$140,000	
		Leveling co	oncrete in Dike Foundation		935	CY	\$200.00	\$187,000	
			Subtotal, RCC Dike					\$3,255,250	
			( OF COSTS						
<u> </u>		Diversion a	and Care of River					\$137 600 000	
		Spillway						\$16,700,000	
		Outlet Wor	ks					\$9,800,000	
		Powerplant	t					\$148,500,000	
		CFRF Dam	1					\$344,600,000	
		RCC Dike						\$3,300,000	
	Mobilization - 5%						\$33,000,000		
		Unlisted Ite	ems - 15%					\$106,500,000	
Contract Cost		Cost					\$800,000.000		
		Contingend	cies - 25%					\$200,000,000	
		Field Cost						\$1,000,000,000	
			QUANTITIES			PRICE	S		
BY				BY	<b>B F</b>	CHECKEI	) 	4 4 10 4 10 0 0 0	
	B. Fost	er ED	5. US9000 11/21/2003		b. Foster		S. Usgood	11/21/2003	
DATE PREPARED APPROVED 11/10/03		DAIE	11/10/03	Appraisal 03					

CODE:	D-8170	ESTIMATE WORKSHEET	SHEET_1_OF_2								
FEAT	URE:		PROJE	ECT:							
				USJRBSI							
	RM27			0.11							
	Elev.	1200 (Interpolated)	DIVISI	ON:							
	Conc	rete Gravity Dam (RCC)	EU E.								
			FILE.	P:\US_Bureau_I	Reclamation\IDI	Q_01CS20210B\U	pper_San_Joaquin_Phase_1\Do				
				Sheets - Sept 200	e Storage Option 03 - Updated Opt	IMIs\IM Iemper ions\[pdc 900 FY	ance/USBR products/Cost 03.xlslpdc 900 FY03				
PLANT	PAY					UNIT					
ACCT.	ITEM	DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT				
<u> </u>	1	Diversion and care of river		707 405	CV	¢40.00	¢11.040.440				
		Upstream Correctam (Crest @ El. 635)		707,405		\$10.00 \$140.00	\$11,319,440				
		Concrete Liner for Left Abutment Diversion Tunnel		19,203	CY	\$140.00 \$245.00	\$4 843 650				
		Rock Bolts - Left Abt. Div. Tunnel		2,360	Bolts	\$550.00	\$1,298,000				
		Total Drilling - Left Abt. Div. Tunnel		42,480	LF	\$20.00	\$849,600				
		Excavation for Right Abutment Diversion Tunnel		161,425	CY	\$140.00	\$22,599,500				
		Concrete Liner for Right Abutment Diversion Tunnel		28,015	CY	\$245.00	\$6,863,675				
		Rock Bolts - Right Abt. Div. Tunnel		2,300	Bolts	\$600.00	\$1,380,000				
		Total Drilling - Right Abt. Div. Tunnel		52,900	LF	\$20.00	\$1,058,000				
		Downstream Cofferdam (Crest @ El. 578)		529,000	CY	\$16.00	\$8,464,000				
<u> </u>	2	Excavation all classes for dam foundation		207 465	CY	\$10.00	\$2 074 650				
	3	Excavation, all classes, for DIKE foundation		4.660	CY	\$8.50	\$39.610				
				,	-						
	4	RCC in Dam		8,728,205	CY	\$31.00	\$270,574,355				
	5	Concrete facing elements in Dam		189,090	CY	\$70.00	\$13,236,300				
	6	Concrete cap on top of Dam		5,155	CY	\$250.00	\$1,288,750				
	7	RCC in Dike		42,330	CY	\$48.00	\$2,031,840				
	8	Concrete facing elements in Dike		4,760	CY	\$180.00 \$250.00	\$856,800				
	9			000	Ur	\$250.00	\$140,000				
	10	Leveling concrete in dam foundation		44.360	CY	\$180.00	\$7,984,800				
	11	Leveling concrete in Dike foundation		935	CY	\$200.00	\$187,000				
	12	Concrete in spillway crest		2,300	CY	\$200.00	\$460,000				
	13	Concrete in spillway training walls		598	CY	\$350.00	\$209,125				
<u> </u>	14	Congrate in Outlat Warks Intoks Structure		2 110	CV	\$272 EO	¢047.475				
<u> </u>	14			3,110	UT	φ272.5U	φ047,475				
	15	Excavation of Outlet Shaft and Gate Structure		12.330	CY	\$280.00	\$3,452,400				
				,							
	16	Temp. Supports - Rock Bolts		510	Bolts	\$380.00	\$193,800				
<u> </u>	17	Total Drilling for Rock Bolts		5,980	LF	\$20.00	\$119,600				
					<b>2</b> 14						
<u> </u>	18	Concrete in Outliet Shart and Gate Structure	<u> </u>	6,245	CΥ	\$465.00	\$2,903,925				
<u> </u>											
		Subtotal					\$377,776,195				
		QUANTITIES		PRI	CES						
BY		CHECKED	BY		CHECKED						
		B. Foster S. Osgood 11/21/2003		B. Foster		S. Osgood	11/21/2003				
DATE F	REPAR	ED APPROVED	DATE		PRICE LEVI	EL					
		11/10/2003		11/10/03		Appraisal 03					

CODE:D-8170			ESTIMATE WORKS	SHEET_2 OF _2									
FEATU	RE:	RM279 Dam		PI	PROJECT: USJRBSI								
		Elev. 1200 (Interpolated) Concrete Gravity Dam (RCC)				DIVISION:							
					ILE:	P:\US_Bureau_F cuments\Surface Sheets - Sept 20(	Reclamation\IDIC Storage Option 3 - Updated Opt	⊋_01CS20210B\U TMs\TM Temper ions\[pdc 900 FY	pper_San_Joaquin_Phase_1\Dc ance\USBR products\Cost 03.xls]pdc 900 FY03				
PLANT ACCT.	PAY ITEM	1 DESCRIPTION CODE QUANTITY UNIT PRICE				UNIT PRICE	AMOUNT						
	19	Excavation for	Powerplant			195,815	CY	\$14.00	\$2,741,410				
	20	Concrete in Po	werplant			42,350	CY	\$350.00	\$14,822,500				
	21	Furnishing and	Handling Cement			1,746,799	TONS	\$90.00	\$157,211,910				
	22	Furnishing and	Handling Reinforcement			41,178,375	LBS	\$0.60	\$24,707,025				
	23	Grout Hole Dri				109,175	LF	\$28.50	\$3,111,488				
	27	Set up for Drai	n Holes in Gallery			392	Holes	\$20.00	\$78,300				
	26	Drilling Drain	Holes			109,465	LF	\$51.00	\$5,582,715				
	27	Outlet Works T	「rashracks			495,000	LBS	\$2.50	\$1,237,500				
	28	Steel Pipe				22,651,855	LBS	\$1.50	\$33,977,783				
	29	Valves, all Size	s and Types			10,826,400	LBS	\$5.00	\$54,132,000				
	30	Turbines				1,945,000		\$6.50 \$8.00	\$12,642,500				
	32	Governors, Mc	otors, etc.			3- <u>Units</u>	LS	ψυ.υυ	\$3,600,000				
		Subtotal pg 1							\$377,776,195				
		Subtotal pg z							\$335,388,630 \$36,000,000				
		Subtotal							\$749,164,825				
		Unlited Iten	ns (15%)						\$110,835,175				
		Contract Cost	ies (25%)						\$240,000,000				
		Field Cost							\$1,100,000,000				
BY		QUAN	TITIES CHECKED	B	Y	PRIC	CHECKED	S Ostood	11/21/2003				
DATE PREPARED APPROVE 11/10/2003		APPROVED	ים	ATE	11/10/03	PRICE LEVE	EL Appraisal 03	11/2 1/2000					

FEATURE:         PROJECT:           RM279 Dam Site Elev. 1300 Concrete Faced Rockfill Dam (CFRD)         PROJECT:           FILE: Puts Burea, PedamidrolD Q, DICS20109 Upper, Sen, Jongtal, Phase, 10 metaSPrice Sorae Option 1M 311M Temperand/Plicetine of absets[MP27 CFRF 2003.digHt P27 110           PLANT         PV         DESCRIPTION         CODE         QUANTITY         UNIT         PROJECT:           ITEM         DESCRIPTION         CODE         QUANTITY         UNIT         PROJECT         AMOUNT           ITEM         DESCRIPTION         CODE         QUANTITY         UNIT         PROJECT         STATUTY         STATUTY         <	CODE:D-8170			ESTIMATE WORKSHEET SHEET_1_OF_2					_2	
RM279 Dam Site Elev. 1300 Concrete Faced Rockfill Dam (CFRD)           FILE: Puts_Bureau, Redamation IDIO, 01C S02108Upper_Sen_Jougin_Phase, 10 metaBarface Strage Query 1100           FILE: Puts_Bureau, Redamation IDIO, 01C S02108Upper_Sen_Jougin_Phase, 10 metaBarface Strage Query 1100           ILANT PAY ACCT. ITEM         DESCRIPTION           CODE         QUANTITY         UNIT         UNIT           INTER Strage St	FEAT	URE:			PROJECT:					
NRL? J Store         DIVISION:           Elev. 1300         FILE: Putg.Break Addamation D0.0053201080000000000000000000000000000000000										
Diricial of the second			9 Dam Sile		סועוס					
FILE: PUS_Bures_Redenation(DIQ_0FCS022108/Upprr_Sm_docapin_Phase_IL meth/Safetics Stars g0(point IV STM Temperature)Photin cost sheet(IV P279 CFR 2003.cd)MP279 1100       PLANT ACCT. ITEM     DESCRIPTION     CODE     QUANTITY     UNIT     WIT       1     Diversion and care of river     0     0       1     Diversion and care of river     0     0       2     Upstream Criferdam (Crest @ El. 635)     2.667,000     CY     \$12.50       2     Concrete Liner for Left Abutment Diversion Tunnel     47.300     CY     \$2255.00     \$12.061.50       2     Concrete Liner for Left Abutment Diversion Tunnel     47.300     CY     \$2255.00     \$12.061.50       2     Total Drilling- Left Abt. Div. Tunnel     89.100     LF     \$20.00     \$14.782.00       2     Rock Bolts- Left Abt. Div. Tunnel     3870     Bolts     \$300.00     \$2.475.00       2     Rock Bolts- Right Abt. Div. Tunnel     3870     LF     \$20.00     \$14.782.00       2     Rock Bolts- Right Abt. Div. Tunnel     15.430.00     \$2.92.00     \$14.782.00       2     Rock Bolts- Right Abt. Div. Tunnel     15.435.00     LBS     \$100.00     \$2.322.00       3     Rock Bolts- Right Abt. Div. Tunnel     15.435.00     LBS     \$16.40.00       4     Diversion and Care of River Subtotal <t< th=""><th></th><th>Conc</th><th>rete Faced Rockfill</th><th>Dam (CFRD)</th><th>DIVIS</th><th>ion.</th><th></th><th></th><th></th></t<>		Conc	rete Faced Rockfill	Dam (CFRD)	DIVIS	ion.				
PART         PAY         DESCRIPTION         CODE         QUANTITY         UNIT         UNIT         AMOUNT           1         Diversion and care of river         0 <td></td> <td></td> <td></td> <td></td> <td>FILE:</td> <td></td> <td></td> <td>S20240B\Llanor</td> <td>on looguin Phase 1) Dog</td>					FILE:			S20240B\Llanor	on looguin Phase 1) Dog	
PANT         PAY ACCT.         DESCRIPTION         CODE         QUANTITY         UNIT         MOUNT           ACCT.         ITEM         DESCRIPTION         CODE         QUANTITY         UNIT         PRICE         AMOUNT           Image: Construction of the construction of						ments/Surface Storage	Option TM s\TM	Temperance/Pilo	rin cost sheets\[MP279	
PLANT         PACT.         ITEM         DESCRIPTION         CODE         QUANTITY         UNIT         PRICE         AMOUNT           ACCT.         ITEM         Diversion and care of river         Image: Control of Control of Crest (QEI, 635)         2,667,000         CY         \$12.50         \$33,337,57           Excavation for Left Abutment Diversion Tunnel         213,600         CY         \$12.60         \$33,337,57           Rock Bolts - Left Ab. Div. Tunnel         4,950         Bolts         \$50,000         \$2,475,000         \$2,475,000         \$2,475,000         \$12,401,000         \$2,475,000         \$2,475,000         \$3,178,200           Rock Bolts - Left Ab. Div. Tunnel         4,950         Bolts         \$50,000         \$2,475,000         \$14,178,000         \$2,475,000         \$14,178,000         \$2,475,000         \$14,178,000         \$2,475,000         \$14,178,000         \$2,425,000         \$14,178,000         \$2,425,000         \$14,178,000         \$2,425,000         \$14,178,000         \$2,425,000         \$14,178,000         \$2,425,000         \$14,178,000         \$2,425,000         \$14,178,000         \$2,425,000         \$14,178,000         \$2,422,000         \$14,178,000         \$2,422,000         \$1,178,20         \$14,178,000         \$14,178,000         \$14,178,000         \$14,178,000         \$14,178,000		DAV				CFRF 2003.xls]M P279	1100	LINUT		
Image: Notice of the second	ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT	
Upstream Cofferdam (Crest @ El. 635)         2.667,000         CY         \$12.50         \$33,337,50           Excavation for Left Abutment Diversion Tunnel         213,600         CY         \$140,000         \$29,904,00           Concrete Liner for Left Abutment Diversion Tunnel         47,300         CY         \$140,000         \$2255.00         \$12,061,51           Rock Bolts - Left Abt. Div. Tunnel         4,950         Bolts         \$500,00         \$2,475,00           Total Drilling - Left Abt. Div. Tunnel         89,100         LF         \$20,000         \$17,82,00           Excavation for Right Abutment Diversion Tunnel         320,000         CY         \$2455.00         \$144,000,00           Concrete Liner for Right Abutment Diversion Tunnel         320,000         CY         \$2250,00         \$24,350,00           Concrete Liner for Right Abutment Diversion Tunnel         32,870         Bolts         \$200,00         \$22,320,00           Total Drilling - Right Abt. Div. Tunnel         89,010         LF         \$20,000         \$2,322,00           Furnishing and Handling Reinforcement         15,435,000         LBS         \$0,60         \$39,261,00           Excavation for Spillway training walls and Apron         7,670         CY         \$88,50         \$13,380,61           Concrete in spillway training walls an		1	Diversion and car	e of river						
Excaration for Left Abutment Diversion Tunnel         213,600         CY         \$140.00         \$29,904.00           Concrete Liner for Left Abutment Diversion Tunnel         47,300         CY         \$225.00         \$12,061,51           Rock Bolts - Left Abt. Div. Tunnel         49,900         LF         \$20,000         \$2,2475.00           Total Drilling - Left Abt. Div. Tunnel         89,100         LF         \$20,000         \$17,82.00           Excavation for Right Abutment Diversion Tunnel         38,000         CY         \$255.00         \$14,178.00           Concrete Liner for Right Abutment Diversion Tunnel         38,070         Bolts         \$600.00         \$2,322.00           Rock Bolts - Right Abt. Div. Tunnel         89,010         LF         \$20,000         \$2,322.00           Furnishing and Handling Cement         29,02.00         Toxts \$100.00         \$2,992.00           Furnishing and Handling Cement         15,435,000         LBS         \$0.60         \$9,9261.00           Excavation for Spillway         1,642.000         CY         \$8.50         \$13,957.00           Concrete in spillway crest         7,670         CY         \$180.00         \$13,980.60           Concrete in spillway crest         7,570         CY         \$180.00         \$13,957.00		<u> </u>	Upstream Cofferdam	(Crest @ El. 635)		2.667.000	CY	\$12.50	\$33.337.500	
Concrete Liner for Left Abutment Diversion Tunnel         47,300         CY         \$255.00         \$12,061,50           Rock Bolts         Left Abt. Div. Tunnel         4,950         Bolts         \$500.00         \$2,475,00           Total Drilling - Left Abt. Div. Tunnel         89,100         LF         \$20,000         \$2,475,00           Rock Bolts         Rock Rolts - Right Abutment Diversion Tunnel         320,000         CY         \$14,000         \$44,800,00           Concrete Liner for Right Abutment Diversion Tunnel         320,000         CY         \$255.00         \$14,718,00           Rock Bolts - Right Abt. Div. Tunnel         3,870         Bolts         \$600.00         \$2,322.00           Total Drilling - Right Abt. Div. Tunnel         29,020         TONS         \$100.00         \$2,922.00           Furnishing and Handling Cement         29,020         TONS         \$100.00         \$2,920.00           Excavation for Spillway         1,642,000         CY         \$8.50         \$13,867.01           Excavation for Spillway         1,642,000         CY         \$8.50         \$13,867.01           Excavation for Spillway training walls and Apron         7,670         CY         \$14,780.01         \$1,479.01           Furnishing and Handling Cement         2,275,500         LBS			Excavation for Left A	Abutment Diversion Tunnel		213,600	CY	\$140.00	\$29,904,000	
Rock Bolts - Left Abt. Div. Tunnel         4,950         Bolts         \$500.00         \$2,475.00           Total Drilling - Left Abt. Div. Tunnel         89,100         LF         \$20.00         \$1,782.00           Excavation for Right Abutment Diversion Tunnel         32000         CY         \$255.00         \$14,178.00           Rock Bolts - Right Abt. Div. Tunnel         3,870         Bolts         \$600.00         \$2,322.00           Total Drilling - Right Abt. Div. Tunnel         89,010         LF         \$20.00         \$2,322.00           Total Drilling - Right Abt. Div. Tunnel         89,010         LF         \$20.00         \$1,780.20           Furnishing and Handling Cement         29,020         TONS         \$100.00         \$2,922.00           Furnishing and Handling Reinforcement         15,435.000         LBS         \$0.60         \$9,281.00           Diversion and Care of River Subtotal          \$154,803.20         \$13.957.00         \$13.967.00           Concrete in spillway         1,642.000         CY         \$8.50         \$13.967.00         \$13.980.60         \$13.987.00         \$13.980.60         \$13.987.00         \$13.980.60         \$1.975.00         \$13.980.60         \$1.975.00         \$13.980.60         \$1.975.00         \$10.00         \$1.975.00         \$10.00			Concrete Liner for L	eft Abutment Diversion Tunnel		47,300	CY	\$255.00	\$12,061,500	
Total Drilling - Left Abt. Div. Tunnel         89,100         L.F         \$20.00         \$17,82.00           Excavation for Right Abutment Diversion Tunnel         320,000         CY         \$140.00         \$44,80.00           Concrete Liner for Right Abutment Diversion Tunnel         55,600         CY         \$225.00         \$114,178.00           Rock Bolts - Right Abt. Div. Tunnel         3,870         Bolts         \$600.00         \$2,322.00           Total Drilling - Right Abt. Div. Tunnel         89,010         L.F         \$20.00         \$1,780.00           Furnishing and Handling Cement         29,020         TONS         \$100.00         \$2,322.01           Excavation for Sight Abt. Div. Tunnel         89,010         L.F         \$20.00         \$1,780.27           Excavation for Sight Abt. Div. Tunnel         29,020         TONS         \$100.00         \$2,922.01           Excavation for Sight Abt. Div. Tunnel         15,4350.00         L.ES         \$0.60         \$9,281.00           Excavation for Sight Abt. Div. Tunnel         15,4360.00         CY         \$8.60         \$13,987.00           Concrete in spillway training walls and Apron         7,670         CY         \$210.00         \$1,380.61           Concrete in spillway training walls and Apron         7,500         CY         \$18.00 </td <td></td> <td></td> <td>Rock Bolts - Left Ab</td> <td>t. Div. Tunnel</td> <td></td> <td>4,950</td> <td>Bolts</td> <td>\$500.00</td> <td>\$2,475,000</td>			Rock Bolts - Left Ab	t. Div. Tunnel		4,950	Bolts	\$500.00	\$2,475,000	
Excavation for Right Abutment Diversion Tunnel         320,000         CY         \$140,000         \$44,800,00           Concrete Liner for Right Abutment Diversion Tunnel         55,600         CY         \$255,00         \$14,178,00           Rock Bolts - Right Abt. Div. Tunnel         3,870         Bolts         \$600,00         \$2,322,00           Total Drilling-Right Abt. Div. Tunnel         89,010         LF         \$20,000         \$1,780,21           Furnishing and Handling Cement         29,020         TONIS         \$100,00         \$2,922,00           V         Purishing and Handling Reinforcement         15,435,000         LBS         \$0,600         \$9,261,00           Spillway         1,642,000         CY         \$8,50         \$13,957,00           Concrete in spillway trest         7,670         CY         \$140,000         \$1,380,60           Concrete in spillway trest         7,670         CY         \$100,00         \$1,380,60           Concrete in spillway trest         7,670         CY         \$140,00         \$470,80           Furnishing and Handling Cement         4,280         TONIS         \$100,00         \$470,80           Furnishing and Handling Reinforcement         2,275,500         LBS         \$0,65         \$1,479,07           QUANTITI			Total Drilling - Left	Abt. Div. Tunnel		89,100	LF	\$20.00	\$1,782,000	
Concrete Liner for Right Abt. Div. Tunnel         55,600         CY         \$255.00         \$14,178.00           Rock Bolts - Right Abt. Div. Tunnel         3,870         Bolts         \$600.00         \$2,322.00           Total Drilling - Right Abt. Div. Tunnel         89,010         L F         \$200.00         \$1,780.20           Furnishing and Handling Cement         29,020         TONS         \$100.00         \$2,922.00           Furnishing and Handling Reinforcement         15,435,000         LBS         \$0.60         \$92,81.00           Diversion and Care of River Subtotal          \$154,803,200         \$154,803,200         \$154,803,200           Excavation for Spillway         1,642,000         CY         \$8.50         \$13,957.00           Concrete in spillway crest         7,670         CY         \$180.00         \$1,380.60           Concrete in spillway training walls and Apron         7,670         CY         \$10.00         \$470.88           Furnishing and Handling Reinforcement         2,275,500         LBS         \$0.65         \$1,479.01           Furnishing and Handling Reinforcement         2,275,500         LBS         \$0.65         \$1,479.01           Spillway subtotal			Excavation for Right	Abutment Diversion Tunnel		320,000	CY	\$140.00	\$44,800,000	
Rock Bolts - Right Abt. Div. Tunnel         3,870         Bolts         \$600.00         \$2,322.00           Total Drilling - Right Abt. Div. Tunnel         89,010         LF         \$200.00         \$1,780.20           Furnishing and Handling Cement         29,020         TONS         \$100.00         \$2,922.01           Furnishing and Handling Cement         15,435,000         LBS         \$0.60         \$9,261.00           Diversion and Care of River Subtotal          \$154,803.20         \$154,803.20           Excavation for Spillway         1,642,000         CY         \$8.50         \$13,967.00           Concrete in spillway crest         7,670         CY         \$100.00         \$1,380.60           Concrete in spillway training walls and Apron         7,670         CY         \$100.00         \$1,470.00           Furnishing and Handling Cement         4,280         TONS         \$110.00         \$470.80           Furnishing and Handling Reinforcement         2,275,500         LBS         \$0.65         \$1,479.01           Spillway subtotal              \$18,862,47           Spillway subtotal                 QUANTITIES         PRICES			Concrete Liner for R	ight Abutment Diversion Tunnel		55,600	CY	\$255.00	\$14,178,000	
Total Drilling - Right Abt. Div. Tunnel       89,010       LF       \$20.00       \$1,780,22         Furnishing and Handling Cement       29,020       TONS       \$100.00       \$2,902,00         Diversion and Care of River Subtotal       15,435,000       LBS       \$0.60       \$9,261,00         Spillway       15,435,000       LBS       \$0.60       \$9,261,00         Spillway       1642,000       CY       \$8.50       \$13,957,00         Concrete in spillway crest       7,670       CY       \$88.50       \$13,957,00         Concrete in spillway training walls and Apron       7,670       CY       \$210.00       \$1,380,60         Furnishing and Handling Cement       4,280       TONS       \$110.00       \$470,80         Furnishing and Handling Cement       2,275,500       LBS       \$0.65       \$14,470,00         Furnishing and Handling Reinforcement       2,275,500       LBS       \$0.65       \$14,790,00         Spillway subtotal       Image: Spill			Rock Bolts - Right Abt. Div. Tunnel			3,870	Bolts	\$600.00	\$2,322,000	
Furnishing and Handling Cement         29,020         TONS         \$100.00         \$2,902.00           Furnishing and Handling Reinforcement         15,435,000         LBS         \$0.60         \$9,261,00           Diversion and Care of River Subtotal          \$15,435,000         LBS         \$0.60         \$9,261,00           Spillway            \$15,435,000         LBS         \$0.60         \$9,261,00           Excavation for Spillway         1,642,000         CY         \$8.50         \$13,957,00           Concrete in spillway training walls and Apron         7,670         CY         \$18,000         \$1,380,60           Concrete in spillway training walls and Apron         7,500         CY         \$210.00         \$1,375,00           Furnishing and Handling Cement         4,280         TONS         \$110.00         \$470,80           Furnishing and Handling Reinforcement         2,275,500         LBS         \$0.65         \$1,479,07           Spillway subtotal             \$18,862,47           CHECKED                 QUANTITIES         PRICES		Total Drilling - Right Abt. Div. Tunnel		t Abt. Div. Tunnel		89,010	LF	\$20.00	\$1,780,200	
Furnishing and Handling Reinforcement       15,435,000       LBS       \$0.60       \$9,261,00         Diversion and Care of River Subtotal       \$154,803,20       \$154,803,20       \$154,803,20         Spillway       1,642,000       CY       \$8.50       \$13,957,00         Excavation for Spillway crest       7,670       CY       \$180,00       \$1,390,60         Concrete in spillway training walls and Apron       7,670       CY       \$10,00       \$470,80         Furnishing and Handling Cement       4,280       TONS       \$11,000       \$470,80         Furnishing and Handling Cement       2,275,500       LBS       \$0.65       \$1479,00         Spillway subtotal			Furnishing and Hand	ling Cement		29,020	TONS	\$100.00	\$2,902,000	
Diversion and Care of River Subtotal         \$154,803,20           Spillway         Image: Constraint of Spillway         Spillway         Image: Constraint of Spillway         Spillwa		Furnishing and Handling Reinforcement		ling Reinforcement		15,435,000	LBS	\$0.60	\$9,261,000	
Spillway       Image: Constraint of a spillway of the				Diversion and Care of River Subtotal					\$154,803,200	
Spillway         1,642,00         CY         \$8.50         \$13,957,00           Concrete in spillway crest         7,670         CY         \$180,00         \$1,380,60           Concrete in spillway training walls and Apron         7,500         CY         \$210,00         \$1,380,60           Furnishing and Handling Cement         4,280         TONS         \$110,00         \$470,80           Furnishing and Handling Reinforcement         2,275,500         LBS         \$0.65         \$14,479,07           Spillway subtotal            \$18,862,47           Spillway subtotal           \$18,862,47           Spillway subtotal            \$18,862,47           Spillway subtotal                Spillway subtotal                Spillway subtotal                 Spillway subtotal			0.111							
Excavation for Spillway crest       1,642,000       CY       \$8.50       \$13,957,00         Concrete in spillway training walls and Apron       7,670       CY       \$180.00       \$1,380,60         Concrete in spillway training walls and Apron       7,670       CY       \$210.00       \$1,575,00         Furnishing and Handling Cement       4,280       TONS       \$110.00       \$470,88         Furnishing and Handling Reinforcement       2,275,500       LBS       \$0.65       \$1,479,00         Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       Image: Spillway			Spillway			1.0.40.000	0)(	<b>00 50</b>	\$40.0F7.000	
Concrete in spillway training walls and Apron       7,500       CY       \$18000       \$1,380,00         Furnishing and Handling Cement       4,280       TONS       \$110.00       \$470,80         Furnishing and Handling Reinforcement       2,275,500       LBS       \$0.65       \$1,380,01         Spillway subtotal       Image: Spillway subtotal         Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal         Image: Spillway subtotal	<u> </u>		Excavation for Spill	lway		1,642,000	CY	\$8.50	\$13,957,000	
Concrete in spillway training walls and Apron       7,300       CY       \$210.00       \$1,375,00         Furnishing and Handling Cement       4,280       TONS       \$110.00       \$470,80         Furnishing and Handling Reinforcement       2,275,500       LBS       \$0.65       \$1,479,00         Spillway subtotal       2,275,500       LBS       \$0.65       \$1,479,00         Spillway subtotal       1       1       \$18,862,47         Image: Spillway subtotal       Image: Spillway subtotal       1       \$18,862,47         Image: Spillway subtotal       Image: Spillway subtotal       1       1         Image: Spillway subtotal       Image: Spillway subtotal       1       1       1         Image: Spillway subtotal       Image: Spillway subtotal       1       1       1       1         Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       1			Concrete in spiliwa	y crest		7,670	CY	\$180.00	\$1,380,600	
Furnishing and Handling Cement       4,280       10NS       \$110.00       \$470,80         Furnishing and Handling Reinforcement       2,275,500       LBS       \$0.65       \$1,479,00         Spillway subtotal       2,275,500       LBS       \$0.65       \$11,479,00         Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       Image: Spillway subtota			Concrete in spiliwa	y training walls and Apron		7,500		\$210.00	\$1,575,000	
Purnishing and Handling Reinforcement       2,2/5,300       LBS       \$0.05       \$1,4/9,0         Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       \$18,862,47         Image: Spillway subtotal       Image: Spillway subtotal <td><u> </u></td> <td><u> </u></td> <td>Furnishing and Hai</td> <td>naling Cement</td> <td></td> <td>4,280</td> <td>TONS</td> <td>\$110.00</td> <td>\$470,800</td>	<u> </u>	<u> </u>	Furnishing and Hai	naling Cement		4,280	TONS	\$110.00	\$470,800	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			Furnishing and Har			2,275,500	LB2	CO.U¢	\$1,479,075	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				Spillway subtotal					\$18,862,475	
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QUANTITIES     PRICES       BY     CHECKED       S. Higinbotham     CHECKED       DATE PREPARED     APPROVED   DATE PRICE LEVEL										
BY     CHECKED     BY     CHECKED       S. Higinbotham     APPROVED     DATE     PRICE LEVEL	<u> </u>		ΟΠΑΝΤΙ	TIES		PRI	CES			
S. Higinbotham     APPROVED     DATE     PRICE LEVEL       DATE     PRICE LEVEL     Approved     Approved	BY		30/111		BY	1 1 1	CHECKED			
DATE PREPARED DATE PRICE LEVEL	5.	S. Higi	nbotham		5.	R. Baumgarten				
	DATE F	PREPAR	ED	APPROVED	DATE		PRICE LEVE	L Appraisal 03		

CODE:D-8170			ESTIMATE WORKSHEET SHEET_2_OF_3							
FEATURE:				PROJ	ECT:					
	RM279 I Elev. 13	Dam Site 00	~ (CERD)	DIVIS	DIVISION:					
				FILE: P:\US_Bureau_Redamation\IDIQ_01CS20210B\Upper_San_Joaquin_Phas mentsSurface Storage Option TM sTM Temperance\Pilorin cost sheets[M CFEF 2003 vielbw270 1100						
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
		OutletWorks								
		Concrete in Outlet	Works Intake Structure		3,110	CY	\$265.00	\$824,150		
		Excavatioon of Out	let Shaft and Gate Structure		12,730	CY	\$280.00	\$3,564,400		
		Rock Bolt Supports	3		480	Bolts	\$360.00	\$172,800		
		Total Drilling for Ro	ock Bolts		5,760	LF	\$20.00	\$115,200		
		Concrete in Outlet	Shaft and Gate Structure		7,050	CY	\$450.00	\$3,172,500		
		Furnishing and Har	ndling Cement		2,870	TONS	\$110.00	\$315,700		
		Furnishing and Har	ndling Reinforcement		1,524,000	LBS	\$0.65	\$990,600		
	Outlet Works Trashracks		nracks		495,000	LBS	\$2.50	\$1,237,500		
			Outlet Works subtotal					\$10,392,850		
		Powerplant								
		Steel Pipe			26,236,300	LBS	\$1.50	\$39,354,450		
		Valves, all Sizes ar	nd Types		10,322,400	LBS	\$5.00	\$51,612,000		
		Hydraulic Control S	System		187,000	LBS	\$10.00	\$1,870,000		
		Concrete in Power	olant		42,350	CY	\$350.00	\$14,822,500		
		Excavation for Pow	verplant		267,300	CY	\$13.00	\$3,474,900		
		Furnishing and Har	ndling Cement		11,945	TONS	\$100.00	\$1,194,500		
		Furnishing and Har	ndling Reinforcement		6,352,500	LBS	\$0.60	\$3,811,500		
		Turbines			2,000,000	LBS	\$6.50	\$13,000,000		
		Generators			2,500,000	LBS	\$8.00	\$20,000,000		
		Governors, Motors	, etc.		3-Units	LS		\$3,600,000		
			Powerplant subtotal					\$152,739,850		
		QUANTI	TIES		PR	CES				
ВΥ			CHECKED	BY	P. Baumgarten	CHECKED				
				DATE	N. Daumyarten		=1			
DATEP	REFARED			DATE		FRICE LEVI	_∟ Appraisal 03			

CODE:D-8170 ESTIMATE WORKSHEI					ET SHEET_3_ OF _3						
<b>FEA</b>	FEATURE:				PROJECT:						
RM279 Dam Site											
	Elevation	= 1300'		DIVIS	ION:						
	Embankm	ent Dam (CFRD)									
	Linounin	(erreb)		EIL E-			0000405111	0			
					ments/Surface Storage	Option TM s\TN	S20210B\Opper_3	san_joaquin_Phase_1\Docu or in cost sheets\[M P279			
	DAY				CFRF 2003.xls]M P279	79 1100					
PLANI			DESCRIPTION	CODE							
AUUT.			DESCRIPTION	CODL	QUANTIT	UNIT	FRICE	AMOUNT			
		CFRF Dam									
		Excavation - commo	n (removal of alluvium, rock slope		4 000 000	<b></b>	<b>0</b> 4 <b>5</b> 0	<i>* / ==</i> 0.000			
	20	cleaning by dozer to	sound rock, minimal ripping.)	8313	1,060,000	CY	\$4.50	\$4,770,000			
	30	Proctor 2 mile haul	Toe slab imperv. Can	8313	130 000	CY	\$7 50	\$975 000			
		Zone 1B - Exc, haul	& place (random in 18" lifts to 95%		,						
	40	Proctor, 0.5 mile hau	I) Shell for Zone 1A	8313	800,000	CY	\$5.50	\$4,400,000			
		Zone 2 - Exc, haul, &	& place processed SM, GM in 18" lifts to								
	50	98% Proctor, 0.5 mil	e haul) Deck foundation	8313	701,000	CY	\$15.00	\$10,515,000			
	60	Zone 3A - Exc, haul	& place (processed GP in 18" lifts to	8313	701 000	CY	\$14 50	\$10 164 500			
	00	Zone 3B - Exc. haul	& place (rockfill, 18" max in 3' lifts.	0313	701,000		ψ1 <del>4</del> .00	ψ10,10 <del>4</del> ,000			
	70	blasting operation 0.	5 mile away) Upstream Shell	8313	28,025,000	CY	\$7.00	\$196,175,000			
		Zone 3C - Exc, haul	, & place (rockfill, 4' max in 4' lifts,								
	80	blasting operation 0.	5 mile away) Downstream Shell	8313	28,600,000	CY	\$6.75	\$193,050,000			
	90 Concrete deck (3,000 psi strength, 0.4% rein		0 psi strength, 0.4% reinforcing)	8313	240,150	CY	\$170.00 \$170.00	\$40,825,500			
	100 Concrete toe slab (3,000 psi strength, 0.3% reinford		,000 psi strength, 0.3% reinforcing	8313	28 600	anchors	\$170.00	\$1,061,200 \$1,144,000			
	110	Parapet Wall (3.000	psi, 0.4% reinforcing)	8313	7.630	CY	\$340.00	\$2,594,200			
	130 Drilling for grout program (setup, drill, test), setups=1334		gram (setup, drill, test), setups=1334	8313	91,350	LF	\$29.00	\$2,649,150			
	140	Grouting (grout injec	tion into competent granite.	8313	68,500	bags	\$22.00	\$1,507,000			
	150	Unwatering (assume	es 36 month construction duration)	8313	1	LS		\$3,900,000			
			Subtotal, CFRF Dam					\$473,750,550			
		RCC Dike									
		Excavation, all clas	ses. for Dike Foundation		9.320	CY	\$8.50	\$79.220			
		RCC in Dike			84,660	CY	\$48.00	\$4,063,680			
		Concrete facing ele	ments in Dike		9,520	CY	\$180.00	\$1,713,600			
		Concrete cap on to	p of Dike		1,120	CY	\$250.00	\$280,000			
		Leveling concrete in	Dike Foundation		1,870	CY	\$200.00	\$374,000			
			Subtotal, RCC Dike					\$0,510,500			
		SUMMARY OF CO	STS								
		Diversion and Care	of River					\$154,800,000			
		Spillway						\$18,900,000			
		Outlet Works						\$10,400,000			
		Powerplant						\$152,700,000			
		CFRF Dam Saddle Dam - RCC	Dike					\$6,500,000			
		Mobilization - 5%	Dike					\$41,000,000			
		Subtotal						\$858,100,000			
	Contract Cost Contingencies - 25%						\$131,900,000				
							\$990,000,000				
							\$210,000,000				
		riela Cost						¢1,200,000,000			
			OLIANTITIES			PRICES					
BY			CHECKED	BY							
Mark Pa	abst, Steve	Higinbotham	Mark Pabst		R Baumgarten	SHEORED					
DATE P	REPARED	-	APPROVED	DATE	J · · · ·	PRICE LEVI	EL				
1		7/1/2003					Annraisal 03				
CODE:D-8	3170		ESTIMATE WORKSH	IEET	T SHEET_1_OF_2						
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FEATU	RE:			PROJ	ECT:						
					USJRBSI						
	RM279	Dam		50///0							
	Elev. 1 Concre	300 ete Gravity Da	am (RCC)	DIVIS							
				FILE:	FILE: P:\US Bureau Reclamation\IDIQ 01CS20210B\Upper San Joaquin Phase 1\Docu						
					ments/Surface Storage	Option TM s\TM	Temperance\USB	IR products/Cost Sheets -			
PI ANT	PAY				Sept 2003 - Updated O	ptions\[pdc 900	FY03.xls]pdc 900 F	FY03			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT			
	1	Diversion a	and care of river								
		Upstream C	Cofferdam (Crest @ El. 635)		707,500	CY	\$16.00	\$11,320,000			
		Excavation	for Left Abutment Diversion Tunnel		91,800	CY	\$140.00	\$12,852,00			
		Concrete Li	ner for Left Abutment Diversion Tunnel		20,330	CY	\$245.00	\$4,980,850			
		Rock Bolts	- Left Abt. Div. Tunnel		2,130	Bolts	\$500.00	\$1,065,000			
		Total Drillir	ng - Left Abt. Div. Tunnel		38,340	LF	\$20.00	\$766,800			
		Excavation	for Right Abutment Diversion Tunnel		162,300	CY	\$140.00	\$22,722,000			
		Concrete Li	ner for Right Abutment Diversion Tunne	<u>k</u>	28,160	CY	\$245.00	\$6,899,200			
		Rock Bolts	- Right Abt. Div. Tunnel		1,750	Bolts	\$600.00	\$1,050,000			
			ng - Right Abt. Div. I unner		40,250		\$20.00	\$805,000			
		Downstream	n Cofferdam (Crest @ EL 578)		539,000	CY	\$16.00	\$8,624,000			
<b></b>	2	Evenuation	all classes for dam foundation		300 240	ΩY	98 00	¢1 801 440			
	<u></u> 3	Excavation			9 320	CY	\$8.50	\$79,220			
		EAGavairon,	di Gases, foi Dire roundation		3,040		ψ0.00	ψι υ,Ζευ			
	4	RCC in Dar	m		12 494.040	CY	\$30.00	\$374,821,200			
	5	Concrete fa	cina elements in Dam		261.400	CY	\$60.00	\$15.684.000			
<u> </u>	6	Concrete ca	an on top of Dam		5,890	CY	\$250.00	\$1,472,500			
	7	RCC in Dik	vike		84,660	) CY ) CY	\$48.00	\$4,063,680			
	8	Concrete fa	cina elements in Dike		9,520		\$180.00	\$1,713,600			
	9	Concrete ca	ap on top of Dike		1,120	CY	\$250.00	\$280,000			
		-									
	10	Leveling co	ncrete in dam foundation		60,050	CY	\$180.00	\$10,809,000			
	11	Leveling co	ncrete in Dike foundation		1,870	CY	\$200.00	\$374,000			
<u> </u>	12	Concretein	spillway crest		2,300	CY	\$200.00	\$460,000			
	13	Concrete in	soillwav training walls		690	CY	\$350.00	\$241,500			
						-					
	14	Concrete in	Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150			
	15	Excavation	of Outlet Shaft and Gate Structure		12,030	CY	\$280.00	\$3,368,400			
	16	Temp. Supp	ports - Rock Bolts		450	Bolts	\$380.00	\$171,000			
<u> </u>	17	Total Drillin	ng for Rock Bolts		5,400	LF	\$20.00	\$108,000			
		<b>.</b>			= 0.10			<u> </u>			
	18	Concretein	Outlet Shaft and Gate Structure		7,040	CY	\$490.00	\$3,449,600			
		Subtotal						\$490,806,140			
DV/		Q	UANTITIES	DV/	PRI						
ы	S. Higir	nbotham	CHECKED	БТ	R. Baumgarten	CHECKED					
DATE F	ATE PREPARED APPROVED			DATE		PRICE LEVI	EL				

CODE:D-8170 ESTIMATE WORKSHEET											
FEATU	RE:	RM279 Dam			PROJE	ict: USJRBSI					
		Elev. 1300 Concrete Gra	avity Dam (RCC)		division:						
					FILE:	P:\US_Bureau_Reclan ments\Surface Storage Sept 2003 - Updated O	nation\IDIQ_01C Option TMs\TM ptions\[pdc 900	S20210B\Upper_S I Temperance\USE FY03.xls]pdc 900	an_Joaquin_Phase_1\Docu 3R products\Cost Sheets - FY03		
PLANT ACCT.	PAY ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
	19	Excavation	for Powerplant			313,330	CY	\$13.00	\$4,073,290		
	20	Concrete in	Powerplant			42,350	CY	\$350.00	\$14,822,500		
	21	Furnishing	and Handling Cement			2,489,960	TONS	\$90.00	\$224,096,400		
	22	Furnishing	and Handling Reinforcement			66,574,500	LBS	\$0.60	\$39,944,700		
	23	Grout Hole	Drillilng			132,600	LF	\$27.00	\$3,580,200		
	24	Foundation	Grouting			132,600	Sacks	\$18.00	\$2,386,800		
	25 Set u		rain Holes in Gallery			440	Holes	\$200.00	\$88,000		
	26	Drilling Dra	ain Holes			142,000	LF	\$50.00	\$7,100,000		
	27	Outlet Works Trashracks			495,000	LBS	\$2.50	\$1,237,500			
	28	Steel Pipe				26,236,300	LBS	\$1.50	\$39,354,450		
	29	Valves, all S	bizes and Types			10,599,400	LBS	\$5.00	\$52,997,000		
	30	Turbines				2,000,000	LBS	\$6.50	\$13,000,000		
	31	Generators				2,500,000	LBS	\$8.00	\$20,000,000		
	32	Governors,	Motors, etc.			3-Units	LS		\$3,600,000		
		Subtotal po Subtotal po	11 12						\$490,806,140 \$426,280,840		
		Mobilizatio Subtotal	n (5%)						\$46,000,000 \$963.086.980		
		Unlited I	tems (15%)						\$136,913,020		
		Contract C	ost						\$1,100,000,000		
		Continge	encies (25%)						\$300,000,000		
		Field Cost							\$1,400,000,000		
		Q	UANTITIES			PR	CES				
ВҮ	S. Higir	nbotham	CHECKED		BY	R. Baumgarten	CHECKED				
DATE	PREPAR	ΕĎ	APPROVED		DATE	09/09/03	PRICE LEV	EL Appraisal 03			

CODE:D-8170			ESTIMATE WORKSHEET				SHEET_1_OF_	_3		
FEATUR	RE:			PROJE	CT:					
					USJRBSI					
	PM286	Dam Sito			00011201					
	Elev. 14	200		DIVISION	1:					
	Concre	te Faced F	Rockfill Dam (CFRD)							
				FILE:	FILE: P:\US_Bureau_Reclamation\UDIQ_01CS20210B\Upper_San_Joaquin_Phase_1 ocuments\Surface Storage Option TMs\TM Temperance\Pilorin cost sheets\UMP286 CFER vis\UP286 6 1400					
PLANT	PAY						UNIT			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
		1 Diversion	and care of river							
		Upstream	Cofferdam (Crest @ El. 635)		159,100	CY	\$21.00	\$3,341,100		
		Excavation	n for Left Abutment Diversion Tunnel		207,870	CY	\$140.00	\$29,101,800		
		Concrete L	iner for Left Abutment Diversion Tunnel		36,080	CY	\$240.00	\$8,659,200		
		Rock Bolts	- Left Abt. Div. Tunnel		2,250	Bolts	\$600.00	\$1,350,000		
		Total Drillir	ng - Left Abt. Div. Tunnel		51,750	LF	\$20.00	\$1,035,000		
		Excavation	n for Right Abutment Diversion Tunnel		93,830	CY	\$140.00	\$13,136,200		
		Concrete L	iner for Right Abutment Diversion Tunnel		20,770	CY	\$240.00	\$4,984,800		
		Rock Bolts	- Right Abt. Div. Tunnel		2,170	Bolts	\$600.00	\$1,302,000		
		Total Drillir	ng - Right Abt. Div. Tunnel		39,060	LF	\$20.00	\$781,200		
		Furnishing	and Handling Cement		16,030	TONS	\$100.00	\$1,603,000		
		Furnishing	and Handling Reinforcement		8,527,500	LBS	\$0.60	\$5,116,500		
			Diversion and Care of River Subtotal					\$70,410,800		
		0								
		Spillway	for Crilling		7 474 700	CV/	¢7.00	¢50 000 000		
		Excavation	i for Spillway		7,474,700		\$7.00	\$52,322,900		
		Concrete l	n spillway crest		7,070		\$180.00	\$1,380,600		
		Eurniching	and Handling Compart	_	7,500		\$210.00 \$110.00	\$1,575,000		
		Furnishing	and Handling Deinforcement		2 125 500		\$110.00	\$440,000 \$1 381 575		
		1 urnsning	Spillway subtotal		2,123,300	LDO	ψ0.05	\$57 100 075		
			Spinway Subiotal					<i>431</i> ,100,073		
							<b>├</b> ──┼			
QUANTITIES					PRIC	ES				
BY	BY CHECKED		BY CHECKED							
	S. Higinbotham		D 477	к. Baumgarten						
DATE PREF	ATE PREPARED APPROVED			DATE PRICE LEVEL 09/09/03 Appraisal 03						

CODE:D-8170			ESTIMATE WORKSHEET				SHEET_2OF_	_3		
FEATUF	RE:			PROJE	CT:					
_					USJRBSI					
	RM286	Dam Site			00011201					
	Elev. 12	200		DIVISION	:					
	Concre	te Faced I	Rockfill Dam (CFRD)							
				FILE:	P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_Phase_1\					
					ocuments\Surface Storage Option TMs\TM Temperance\Pilorin cost					
PLANT	PAY						UNIT			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
		OutletWo	rks							
		Concrete i	n Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150		
		Excavation	on of Outlet Shaft and Gate Structure		11,180	CY	\$280.00	\$3,130,400		
		Rock Bolt	Supports		400	Bolts	\$380.00	\$152,000		
			ng for Rock Bolts		4,800		\$20.00	\$96,000		
		Concrete I	n Outlet Shall and Gale Structure		5,440		\$440.00	\$2,393,000		
		Furnishing			916,000		\$120.00 \$0.65	\$104,000 \$530,400		
		Outlet Wo	rks Trashracks		495,000	LBS	\$2.50	\$1,237,500		
		Outlet WO	Outlet Works subtotal		+35,000	LDO	φ2.50	\$8,548,850		
		-						\$0,040,000		
	Powerplant									
		Steel Pipe			11,735,310	LBS	\$1.50	\$17,602,965		
		Valves, all	Sizes and Types		2,666,000	LBS	\$5.00	\$13,330,000		
		Hydraulic (	Control System		120,000	LBS	\$10.00	\$1,200,000		
		Concrete i	n Control House & Powerplant		45,700	CY	\$350.00	\$15,995,000		
		Excavation	n for Powerplant		504,000	CY	\$12.00	\$6,048,000		
		Furnishing	and Handling Cement		12,890	TONS	\$90.00	\$1,160,100		
		Furnishing	and Handling Reinforcement		6,855,000	LBS	\$0.60	\$4,113,000		
		Turbines			1,956,000	LBS	\$6.50	\$12,714,000		
		Generator	S		1,500,000	LBS	\$8.00	\$12,000,000		
		Governors	, Motors, etc.		3-Units	LS		\$3,600,000		
			Powerplant subtotal					\$87,763,065		
							<u> </u>			
QUANTITIES				PRIC	ES	· · · · ·				
BY		~	CHECKED	BY CHECKED						
	S. Higinbotham			R. Baumgarten						
DATE PREP	DATE PREPARED APPROVED		DATE	-	PRICE LEV	EL				
			09/09/03 Appraisa		Appraisal 03					

CODE:D-8170			ESTIMATE WORKSHEET				SHEET_3OF_	_3		
FEATU	RE:			PROJEC	T:					
	RM286 Da	m Site								
	Elevation =	1200'		DIVISION:						
	Embankmer	1200								
	Linoankine	n		EU E.			CC20240B\Ummer	en lesquin Phase 4)D		
				FILE:	ocuments\Surface Sto	rage Option T	Ms\TM Temperance	an_Joaquin_Phase_1\D		
					sheets\[MP286 CFRF.x	Is]MP286 140				
PLANT	PAY		DECODIDION	0005	OUANTITY			AMOUNT		
ACCT.	IIEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
		CFRF Dan	n							
		Excavation	- common (removal of alluvium, rock slope							
	20	cleaning by	/ dozer to sound rock, minimal ripping.)	8313	137,200	CY	\$6.50	\$891,800		
		Zone 1A - E	Exc, haul, & place (CL, SM, GM in 6" lifts to 98%							
	30	Proctor, 2 r	nile haul) Toe slab imperv. Cap	8313	12,000	CY	\$11.00	\$132,000		
		Zone 1B - E	Exc, haul, & place (random in 18" lifts to 95%							
	40	Proctor, 0.5	5 mile haul) Shell for Zone 1A	8313	68,000	CY	\$6.50	\$442,000		
	50	Zone 2 - Ex	kc, haul, & place processed SM, GM in 18" lifts to	0010	00 700	CV	¢00.00	¢4 c74 000		
	50	7 ano 24	Dr. U.5 mile haul) Deck foundation	8313	83,700	Сĭ	\$20.00	\$1,674,000		
	60	Zone 3A - t	Exc, naul, & place (processed GP in 18" lifts to	8313	83 700	CY	\$19.50	\$1 632 150		
	00	7000 2P	Exe haul & place (reckfill 19" max in 2' lifte	0010	00,700	01	φ10.00	ψ1,002,100		
	70	blasting on	eration 0.5 mile away) Unstream Shell	8313	2 340 000	CY	\$9.00	\$21,060,000		
	10	Zone 3C - I	Exc. haul. & place (rockfill, 4' max in 4' lifts	0010	2,010,000	01	<b>\$0.00</b>	φ <b>2</b> 1,000,000		
	80	blasting op	eration 0.5 mile away) Downstream Shell	8313	2.400.000	СҮ	\$8.75	\$21.000.000		
	90	Concrete d	eck (3,000 psi strength, 0.4% reinforcing)	8313	28,400	CY	\$240.00	\$6,816,000		
	100	Concrete to	be slab (3,000 psi strength, 0.3% reinforcing	8313	1,500	CY	\$240.00	\$360,000		
	110	Anchor bar	s for toe slab (4' deep grouted into granite)	8313	6,760	anchors	\$40.00	\$270,400		
	120	Parapet Wa	all (3,000 psi, 0.4% reinforcing)	8313	1,400	CY	\$490.00	\$686,000		
	130	Drilling for	grout program (setup, drill, test), setups= 315	8313	19,350	LF	\$34.00	\$657,900		
	140	Grouting (g	rout injection into competent granite.	8313	14,500	bags	\$32.00	\$464,000		
	150	Unwatering	(assumes 48 month duration)	8313	1	LS		\$2,400,000		
			Subtotal, CFRF Dam				+ +	\$58,486,250		
		CUMMAD	V OF COSTS							
		Diversion	and Care of River					\$70,400,000		
		Snillway						\$57 100 000		
		Outlet Wor	rks					\$8,550,000		
		Powerplan	t				+ +	\$87,800,000		
		CFRF Dan	n	-				\$58,500,000		
		Mobilizatio	n - 5%					\$14,000,000		
		Subtotal						\$296,350,000		
		Unlisted Ite	ems - 15%					\$43,650,000		
		Contract (	Cost					\$340,000,000		
		Contingen	cies - 25%					\$90,000,000		
		Field Cost	t					\$430,000,000		
		Q	UANTITIES		PRIC	ES				
BY			CHECKED	BY		CHECKED				
	Mark Pabst				R. Baumgarten					
DATE PREF	PARED		APPROVED	DATE		PRICE LEV	VEL			
					09/09/03		Appraisal 03			

CODE:D-8	B170		ESTIMATE WOR	KSHEET				SHEET_1_OF_	2			
FEA <sup>-</sup>	TURI	:		P	RO.	JECT:						
					1	USJRBSI						
	RM	286 Dam										
	Flov	/ 1200			IVI 9							
	Con	croto Gr	avity Dam (PCC)									
	001					PILIS Burgau Rock	amation	01CS20210B\U	nor San Joaquin Phase			
				FI	LE:	_1\Documents\Surfa	ce Storage Opt	tion TM s\TM Te	mperance\Interpolated			
						Costs\[Arch 1200-14	00.xls]ARCH I	nterpolation				
PLANT	PAY							UNIT				
ACC1.	TIEM		DESCRIPTION		ODE	QUANTITY	UNIT	PRICE	AMOUNT			
	1	Diversion a	nd care of river									
		Upstream C	offerdam (Crest @ El. 850)			197,100	CY	\$20.00	\$3,942,000			
		Excavation	for Left Abutment Diversion Tunne	k		147,600	CY	\$140.00	\$20,664,000			
		Concrete Li	ner for Left Abutment Diversion To	unnel		25,620	CY	\$245.00	\$6,276,900			
		Rock Bolts	- Left Abt. Div. Tunnel			1,600	Bolts	\$600.00	\$960,000			
		Total Drillin	ng - Left Abt. DIV. Tunnel for Dight Abutmont Diversion Tun			36,800		\$20.00	\$736,000			
		Concrete Li	per for Pight Abutment Diversion Tuni			17,700		\$140.00	\$10,878,000			
<u> </u>		Rock Bolts	- Right Abt. Div. Tunnel			1 800	Bolts	\$500.00	\$900.000			
		Total Drillir	ng - Right Abt Div Tunnel			32 400	I F	\$20.00	\$648,000			
		Downstream	n Cofferdam (Crest @ El. 770)			13,000	CY	\$22.00	\$286,000			
						,			. ,			
	2	Excavation,	all classes, for dam foundation (50%	%rock)		49,960	CY	\$8.50	\$424,660			
	3	RCC in dam	1			1,129,200	CY	\$38.00	\$42,909,600			
	4	Concrete fa	cing elements			41,220	CY	\$110.00	\$4,534,200			
	5	Concrete ca	p on top of dam			860	CY	\$250.00	\$215,000			
	6		porato in dam foundation			0.000	CV	\$100.00	¢1 909 100			
	0	Levering co	ncrete in dam roundation			9,990	Cr	φ190.00	φ1,090,100			
	7	Concretein	spillway crest			2 300	CY	\$200.00	\$460,000			
	<u> </u>	001101010101				_,000	<u> </u>	+_00100	\$ 100,000			
	8	Concrete in	spillway training walls			300	CY	\$350.00	\$105,000			
	9	Concrete in	Outlet Works Intake Structure			3,110	CY	\$265.00	\$824,150			
							<u> </u>	0000.00	<u> </u>			
	10	Excavation	of Outlet Shaft and Gate Structure			11,010	CY	\$280.00	\$3,082,800			
	11	Tomp Supr	orte Book Bolte			200	Polto	00.0969	¢149.200			
		Temp. Supp	OILS- ROCK BUILS		_	390	DUILS	φ300.00	φ140,200			
	12	Total Drillir	ng for Rock Bolts			4.680	LF	\$20.00	\$93.600			
						.,		1-0.00	+,			
	13	Concrete in	Outlet Shaft and Gate Structure			5,390	CY	\$440.00	\$2,371,600			
Subtotal									\$106.571.810			
QUANTITIES						PRI	CES	I				
BY					(							
	S. Hig	inbotham			I	R. Baumgarten						
DATE F	REPA	REPARED APPROVED				-	PRICE LEVE	EL				
	E PREPARED APPROVED				10/17/03 Appraisal 03							

CODE:D-8	B170		ESTIMAT	E WORKSHEET	SHEET_2 OF _2						
FEA <sup>-</sup>	TURI	E:			PRO	JECT:					
						USJRBSI					
		RM286 D	am		<b>D</b> 11/10						
		Elev. 120	JU Gravity Dam (PC	<b>`</b> C)	DIVISION:						
		Concrete		,0,	FILE. P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_Phase						
						_1\Documents\Surfa	ce Storage Opt 00.xlsIARCH I	tion TM s\TM To	emperance\Interpolated		
PLANT	PAY							UNIT			
ACCT.	ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	PRICE	AMOUNT		
	14	Excavation	for Powerplant			502,200	CY	\$12.00	\$6,026,400		
	15	Concrete in	Powerplant			45,700	CY	\$350.00	\$15,995,000		
	40	<b></b>				055.000	TONO	<b>#00.00</b>	000.055.070		
	16	Furnishing a	and Handling Cement			255,063	TONS	\$90.00	\$22,955,670		
	17	Furnishing a	and Handling Reinforcem	ient		21,253,500	LBS	\$0.60	\$12,752,100		
	18	Grout Hole	Drilling			10,300	LF	\$36.00	\$370,800		
			- "			10.000			0000 000		
	19 Foundation Grouting					10,300	Sacks	\$32.00	\$329,600		
	20	Set up for D	rain Holes in Gallery			100	Holes	\$200.00	\$20,000		
	21	Drilling Drain Holes				19.000	LF	\$55.00	\$1.045.000		
						(05.000	1.50	00.50			
	22	Outlet Work	s Trashracks			495,000	LBS	\$2.50	\$1,237,500		
	23	Steel Pipe				11,735,310	LBS	\$1.50	\$17,602,965		
	24	Valves, all §	Dizes and Types			2.786.000	LBS	\$5.00	\$13.930.000		
	05	<b>T</b> 11	<i>,</i> ,			1 050 000	1.50	00.50	<b>010 711 000</b>		
	25	Turbines				1,956,000	LBS	\$6.50	\$12,714,000		
	26	Generators				1,500,000	LBS	\$8.00	\$12,000,000		
	27	Governors. I	Motors. etc.			3-Units	LS		\$3.600.000		
		Subtotal pg	1  2						\$106,571,810 \$120,579.035		
		P3							+ ·==,= · · · · · · · ·		
		Mobilization Subtotal	1						\$11,500,000 \$238 650 845		
		Gubtotui							¥200,000,010		
		Unlited Items (15%)						\$31,349,155			
		Contract Cost						\$270,000,000			
	Contingencies (25%)						\$70 000 000				
								\$10,000,000			
<u> </u>					ווסס	250 250		\$340,000,000			
BY	QUANITIES BY CHECKED			BY	רולוי						
	S. Higinbotham				R. Baumgarten						
DATE F	ATE PREPARED APPROVED			DATE PRICE LEVEL 09/09/03 Appraisal 03							

CODE:D-	-8170		ESTIMATE WORKSHEET	SHEET_1_ OF _2					
FEAT	URE:			PROJ	ECT:				
					USJRBSI				
	RM286	5 Dam							
	Elev. 1	200 Arab		DIVIS	ION:				
	Concr	ete Arch		ELL E.					
				FILE.		•••••	d Deelsten Mrs Brief	feren) I where elected	
					Costs/[M P286 - AR	CH - 1200 1400.)	ds]1200 ARCH	rcase interpolated	
PLANT	PAY						UNIT		
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT	
	1	Diversion a	nd care of river						
		Upstream C	cofferdam (Crest @ El. 850)		159,910	CY	\$21.00	\$3,358,110	
		Excavation	for Left Abutment Diversion Tunnel		112,670	CY	\$140.00	\$15,773,800	
		Concrete Li	ner for Left Abutment Diversion Tunnel		19,560	CY	\$245.00	\$4,792,200	
		Rock Bolts	- Left Abt. Div. Tunnel		1,220	Bolts	\$600.00	\$732,000	
		Total Drillin	ng - Left Abt. Div. Tunnel		26,840	LF	\$20.00	\$536,800	
		Excavation	for Right Abutment Diversion Tunnel		80,039	CY	\$140.00	\$11,205,460	
		Concrete Li	ner for Right Abutment Diversion Tunnel		17,720	LBS	\$245.00	\$4,341,400	
		ROCK BOILS	- Right Abt. Div. Tunnel		1,000	BOILS	\$00.00 \$20.00	\$927,500	
		Downstream	n Cofferdam (Crest @ EL 770)		0,800		\$20.00 \$22.00	\$007,000 \$217,580	
		DOWNSUCAN			9,090	01	ψ22.00	φ217,500	
	2	2 Excavation, all classes, for dam foundation			38.040	CY	\$19.00	\$722.760	
						-	,	, ,	
	3	3 Mass Concrete in dam			384,540	CY	\$140.00	\$53,835,600	
	4	4 Temperature control of concrete			384,540	CY	\$11.00	\$4,229,940	
	5	Leveling co	ncrete in dam foundation		3,800	CY	\$200.00	\$760,000	
	6	Concrete in	millurer		11.670	CV	¢190.00	¢2 100 600	
	0	Concrete m	spinway crest		11,070	CT	\$100.00	φ2, 100,000	
	7	Concrete in	spillway training walls		660	CY	\$350.00	\$231 000	
			annay saming naid			0.	<i><i><i></i></i></i>	4201,000	
	8	Concrete in	Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150	
	9	Excavation	of Outlet Shaft and Gate Structure		11,010	CY	\$280.00	\$3,082,800	
	10	<b>T</b> 0				5.4		<u> </u>	
	10	Temp. Supp	oorts - Rock Bolts		390	Bolts	\$380.00	\$148,200	
	11	Total Drillin	a for Dock Polto		4 690	15	\$20.00	¢03 600	
					4,000	L1	φ20.00	φ95,000	
	12	Concretein	Outlet Shaft and Gate Structure		5.390	CY	\$440.00	\$2.371.600	
					-,			<i>+_,,</i>	
	13	Excavation	for Powerplant		504,000	CY	\$12.00	\$6,048,000	
	14 Concrete in Powerplant			45,700	CY	\$350.00	\$15,995,000		
Subtotal								\$132 995 900	
<u> </u>				-		RICES		÷:==,000,000	
BY			BV						
BY CHECKED B			5,	R. Baumoarten	SHEOKED				
DATE	S. Higinbotham DATE PREPARED APPROVED		DATE		PRICE LEV	EL			
					09/09/03		Appraisal 03		

CODE:D-	DE:D-8170 ESTIMATE WORKSHEET				SHEET_2 OF _2						
FEAT	URE:			PROJ	PROJECT:						
		RM286 Da	m								
		Elev. 1200 Concrete	Arch	DIVIS	ION:						
				FILE:	C:\Documents and S	ettings\smosgoo	d\Desktop∖MyBrie	fcase\I nter polated			
					Costs\[MP286 - ARC	H - 1200 1400.x	IS1200 ARCH	-			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT			
	15	Top of Dam	Concrete		2,500	CY	\$225.00	\$562,500			
	16	Furnishinga	and Handling Cement		103,334	TONS	\$90.00	\$9,300,060			
	17	Furnishing	and Handling Reinforcement		15,945,000	LBS	\$0.60	\$9,567,000			
	18	Grout Hole	Drillilng		18,000	LF	\$35.00	\$630,000			
	19	Foundation	Grouting		18,000	Sacks	\$31.00	\$558,000			
	20	Set up for D	rain Holes in Gallery		92	Holes	\$200.00	\$18,400			
	21	Drilling Dra	in Holes		11,430	LF	\$60.00	\$685,800			
	22	Outlet Worl	ks Trashracks		495,000	LBS	\$2.50	\$1,237,500			
	23	Steel Pipe			11,735,310	LBS	\$1.50	\$17,602,965			
	24	Valves, all \$	Sizes and Types		2,786,000	LBS	\$5.00	\$13,930,000			
	25	Turbines			1,956,000	LBS	\$6.50	\$12,714,000			
	26	Generators			1,500,000	LBS	\$8.00	\$12,000,000			
	27	Governors,	Motors, etc.		3-Units	LS		\$3,600,000			
		Subtotal pg	1					\$132,995,900			
		Subtotal pg	2					\$82,406,225			
		Mobilizatio	1			\$11,000					
		Sudtotai						\$226,402,125			
		Unlited Items (15%)					\$33,597,875				
		Contract Cost						\$260,000,000			
	Contingencies (25%)						\$70,000,000				
		Field Cost						\$330,000,000			
QUANTITIES				PRICES							
BY CHECKED F S. Higinbotham		BY	R. Baumgarten	CHECKED							
DATE	PREPAR	ED	APPROVED	DATE	09/09/03	PRICE LEV	EL Appraisal 03				

CODE:D-81	70		ESTIMATE WORKSHEET	SHEET_1_OF_3						
FEAT	URE:			PROJE	CT:					
	<b>DM28</b>	S Dam Sit	9		CONCECT					
	Elev. 1	1300 (Inte	rpolated)	DIVISION	:					
	Concr	ete Faced	l Rockfill Dam (CFRD)							
				FILE:	LE: P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joa quin_Phase_1\Documents\Surface Storage Option TMs\TM					
PI ANT	ΡΑΥ				Temperance/Pilo	rin cost sne		-RF.XISJWP200 1400		
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT		
	1	Diversion	and care of river		150.000	0)(	<b>*•</b> • • • •	******		
		Upstream (	Cofferdam (Crest @ El. 635)		152,800	CY	\$21.00	\$3,208,800		
		Excavation	for Left Abutment Diversion Tunnel		205,900	CY	\$140.00	\$28,826,000		
		Concrete L	Iner for Left Abutment Diversion Tunnel		35,740		\$240.00	\$8,577,600		
		ROCK BOIts	- Left Abt. Div. Tunnel	_	2,230	BOItS	\$600.00	\$1,338,000		
		Frequention	for Pight Abutmont Diversion Tunnel	_	51,290		\$20.00 \$140.00	\$1,025,800 \$15,306,500		
		Concrete	iper for Pight Abutment Diversion Tunnel		109,975		\$140.00 \$240.00	\$15,390,500		
		Concrete L	- Pight Abt. Div. Tunnel	_	24,343	Bolte	\$240.00 \$550.00	\$3,842,800		
	Total Drilling - Right Abt. Div. Tunnel Furnishing and Handling Cement	_	45 810		\$20.00	\$016 200				
			16 945	TONS	\$100.00	\$1 694 500				
		_	9 012 750	LBS	\$0.60	\$5 407 650				
		r arnornig	Diversion and Care of River Subtotal		0,012,700	200	φ0.00	\$73,633,600		
								,		
		Spillway								
		Excavation	for Spillway		7,232,550	CY	\$7.00	\$50,627,847		
		Concrete in	n spillway crest		7,670	CY	\$180.00	\$1,380,600		
		Concrete in	spillway training walls and Apron		7,500	CY	\$210.00	\$1,575,000		
		Furnishing	and Handling Cement		4,140	TONS	\$110.00	\$455,400		
		Furnishing	and Handling Reinforcement		2,200,500	LBS	\$0.65	\$1,430,325		
			Spillway subtotal					\$55,469,172		
				_						
		Q	JANTHES		P	RICES				
BY	B Fostor		CHECKED	BY CHECKED			11/23/2003			
DATE PF	B. Foster S. Osgood 11/23/2003		DATE	D. I USLEI	PRICE I	EVEL	11/23/2003			
	PREPARED APPROVED 11/10/2003				11/10/03		Appraisal 03	3		

CODE:D-81	70		ESTIMATE WORKSHE	ET			SHEET_2C	DF3			
FEAT	URE:			PROJE	CT:						
	RM28	S Dam Sit	0								
	Elev.	1300 (Inte	rpolated)	DIVISION	DIVISION:						
	Concr	ete Faced	l Rockfill Dam (CFRD)								
				FILE:	P·IIS Bureau R	oclamation	0105203	210B\Linner San Joa			
					quin_Phase_1\Do	ocuments\S	urface Storage	e Option TMs\TM			
	5414				Temperance\Pilo	rin cost she	ets\[MP286 C	FRF.xls]MP286 1400			
PLANI	PAY		DECODIDITION	0005							
ACC1.	TIEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT			
		OutletWor	ks								
		Concrete in	Outlet Works Intake Structure		3 110	CY	\$265.00	\$824 150			
		Excavation	n of Outlet Shaft and Gate Structure		11 180	CY	\$280.00	\$3 130 400			
		Rock Bolt S	Supports		400	Bolts	\$380.00	\$152.000			
		Total Drillin	a for Rock Bolts		4.800	LF	\$20.00	\$96,000			
		Concrete in	Outlet Shaft and Gate Structure		5,955	CY	\$445.00	\$2.649.975			
		Furnishing	and Handling Cement		2,120	TONS	\$120.00	\$254,400			
		Furnishing	and Handling Reinforcement		1,126,500	LBS	\$0.65	\$732,225			
	Outlet Works Trashracks				495,000	LBS	\$2.50	\$1,237,500			
			Outlet Works subtotal					\$9,076,650			
		Powerplan	it								
		Steel Pipe			15,401,360	LBS	\$1.50	\$23,102,040			
		Valves, all	Sizes and Types		3,886,700	LBS	\$5.00	\$19,433,500			
		Hydraulic C	Control System		135,000	LBS	\$10.00	\$1,350,000			
		Concrete in	Control House & Powerplant		45,700	CY	\$350.00	\$15,995,000			
		Excavation	for Powerplant		504,000		\$12.00	\$6,048,000			
		Furnishing			12,890		\$95.00 ¢0.60	\$1,224,000			
		Furnisning	and Handling Reinforcement		6,855,000	LBS	\$0.60 \$6.50	\$4,113,000			
<u> </u>		Concretere			1,923,000		\$0.00 ¢0.00	\$12,499,500			
		Generators	Motors etc		1,920,000 3-Linite		φ0.00	\$15,500,000			
		Governors,	Powerplant subtotal		5-01113	_L0		\$3,000,000			
								φ102,720,000			
		Q	JANTITIES		Р	RICES					
BY			CHECKED	BY		CHECKE	D				
	B. Foster S. Osgood 11/23/2003			B. Foster		S. Osgood	11/23/2003				
DATE PF	E PREPARED APPROVED		DATE		PRICE L	EVEL					
		11/10/2003		11/10/03 Appraisal 03			3				

CODE:D-81	70		ESTIMATE WORKSHEET	SHEET_3OF_3				
FEAT	URE:			PROJEC	T:			
1					USJRBSI			
	RM2861	Dam Site			COURDSI			
	Elevation	h = 1300' (Inte	ernolated)					
	Embankr	nent Dam (CI	(FPD)	211101011				
	Linoanki	nent Dani (Ci	ND)	<b>FU F</b> .				
l .				FILE:	P:\US_Bureau_R	eclamation	IDIQ_01CS202	210B\Upper_San_Joa
					quin_Phase_1\Do	ocuments\S rin cost she	ets\IMP286 C	e Option TMs\TM FRF.xls1MP286 1400
PLANT	PAY						UNIT	
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT
	20	Excavation -	- common (removal of alluvium, rock slope	0040	219 250	cv	00 A2	¢1 210 100
	20	Zone 1A - F	xc haul & place (CL_SM_GM in 6" lifts to	0313	210,330	01	φ0.00	φ1,310,100
	30	98% Proctor	r. 2 mile haul) Toe slab imperv. Cap	8313	23.500	CY	\$10.00	\$235.000
		Zone 1B - E	xc, haul, & place (random in 18" lifts to 95%			-		,,
	40	Proctor, 0.5	mile haul) Shell for Zone 1A	8313	129,000	CY	\$6.25	\$806,250
		Zone 2 - Ex	c, haul, & place processed SM, GM in 18" lifts	1				
	50	to 98% Proc	tor, 0.5 mile haul) Deck foundation	8313	124,925	CY	\$19.00	\$2,373,575
	Zone 3A 60 95% Proc		xc, haul, & place (processed GP in 18" lifts to	0040	404.005	ov	¢40.50	¢0.044.440
			r, 0.5 mile haul) I ransition to Shell	8313	124,925	CY	\$18.50	\$2,311,113
	70	ZONE 3B - E	xc, naul, & place (rockfill, 18" max in 3' lifts,	8313	4 556 000	CY	\$8.50	\$38 726 000
	10	Zone 3C - F	factor 0.5 mile away) opsite an onen	0010	4,000,000	01	ψ0.00	φ00,720,000
	80	blasting ope	ration 0.5 mile away) Downstream Shell	8313	4.655.000	CY	\$8.25	\$38.403.750
	90	Concrete de	ck (3,000 psi strength, 0.4% reinforcing)	8313	42,800	CY	\$227.50	\$9,737,000
	100	Concrete to	e slab (3,000 psi strength, 0.3% reinforcing	8313	1,925	CY	\$227.50	\$437,938
	110	Anchor bars	for toe slab (4' deep grouted into granite)	8313	9,230	anchors	\$40.00	\$369,200
	120	Parapet Wa	ll (3,000 psi, 0.4% reinforcing)	8313	1,780	CY	\$470.00	\$836,600
	130	Drilling for g	rout program (setup, drill, test), setups	8313	24,740	LF	\$33.50	\$828,790
	140	Grouting (gr	out injection into competent granite.	8313	18,550	bags	\$29.50	\$547,225
	150	Unwatering	(assumes 48 month duration)	8313	1	LS		\$2,400,000
			Subtotal, CFRF Dam					\$99,322,540
		SUMMARY	OF COSTS					
		Diversion a	nd Care of River					\$73.600.000
		Spillway						\$55,500,000
		Outlet Worl	۲S					\$9,100,000
		Powerplant						\$102,700,000
		CFRF Dam						\$99,300,000
		Mobilizatior	า - 5%					\$17,000,000
		Subtotal						\$357,200,000
		Unlisted Ite	ms - 15%					\$52,800,000
	Contract Cost		lost					\$410,000,000
		Contingenc	les - 25%					\$100,000,000
<u> </u>		Field Cost						\$510,000,000
		ເດ	JANTITIES		Р	RICES		
BY			CHECKED	BY		CHECKE	D	
	B. Foster S. Osgood 11/23/2003			B. Foster		S. Osgood	11/23/2003	
DATE PR	TE PREPARED APPROVED		DATE PRICE LEVEL					
	2 PREPARED APPROVED 11/10/2003			11/10/03 Appraisal 03				3

CODE:	D-8170		ESTIMATE WORKSHEET				SHEET_1_	OF2
FEATU	RE:			PROJEC	:Т:			
	DMOOC	Dam			USJRBSI			
	Flev 1	Dam 300 (Internola	ited)		N			
	Concre	ete Gravity Da	m (RCC)	DIVISIO				
				FILE:	P:\US_Bureau_Rec ocuments\Surface S Costs\[Arch 1200-14	lamation\IDIQ_0 torageOption TM 400.xls]1400 RCC	1CS20210B\Upper //s\TM Temperan	r_San_Joaquin_Phase_1\D ce\l nterpolated
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT
	1	Diversion and	eare of river					
	'	Upstream Coff	erdam (Crest @ FL 850)		197 100	CY	\$20.00	\$3 942 000
		Excavation for	Left Abutment Diversion Tunnel		147 600	CY	\$140.00	\$20,664,000
		Concrete Liner	for Left Abutment Diversion Tunnel		25.620	CY	\$245.00	\$6,276,900
		Rock Bolts - Lo	eft Abt. Div. Tunnel		1.600	Bolts	\$600.00	\$960.000
		Total Drilling -	Left Abt. Div. Tunnel		36,800	LF	\$20.00	\$736,000
		Excavation for	Right Abutment Diversion Tunnel		77,700	CY	\$140.00	\$10,878,000
		Concrete Liner	for Right Abutment Diversion Tunnel		17,200	CY	\$245.00	\$4,214,000
		Rock Bolts - R	ight Abt. Div. Tunnel		1,800	Bolts	\$500.00	\$900,000
		Total Drilling -	- Right Abt. Div. Tunnel		32,400	LF	\$20.00	\$648,000
		Downstream C	offerdam (Crest @ El. 770)		14,460	CY	\$22.00	\$318,120
	2	Excavation all	classes for dam foundation(50%rock)	_	76 955	CY	\$8.00	\$615 640
					10,000	0.	<i><b>Q</b></i>	<i>\$</i> 010,010
	3	RCC in dam			2,196,855	CY	\$35.50	\$77,988,353
	4	Concrete facing	g elements		55,400	CY	\$97.50	\$5,401,500
	5	Concrete cap o	n top of dam	_	1,320	CY	\$250.00	\$330,000
	6	Leveling concr	ete in dam foundation		15,390	CY	\$185.00	\$2,847,150
	7	Concrete in spi	llway crest	_	2,300	CY	\$200.00	\$460,000
	8	Concrete in spi	Ilway training walls	_	375	CY	\$350.00	\$131,250
	9	Concrete in Ou	itlet Works Intake Structure	_	3,110	CY	\$265.00	\$824,150
	10	Excavation of (	Outlet Shaft and Gate Structure		11,010	CY	\$280.00	\$3,082,800
	11	Temp. Support	s - Rock Bolts		390	Bolts	\$380.00	\$148,200
	12	Total Drilling f	for Rock Bolts		4,680	LF	\$20.00	\$93,600
	13	Concrete in Ou	itlet Shaft and Gate Structure	_	5,905	CY	\$460.00	\$2,716,300
		Subtotal						\$144,175,963
		QUAN	TITIES		PRICE	S		
BY			CHECKED	BY		CHECKED		
B. Foster S. Osgood 11/23/2003			B. Foster		S. Osgood 11/2	3/2003		
DATE P	REPAR	ED	APPROVED	DATE		PRICE LEVE	L	
		11/10/2003			11/10/03		Appraisal 03	

CODE:D-8170			ESTIMATE WORKSHEET		SHEET_2 OF _2						
FEATU	RE:	RMM86 Dam		PROJECT	PROJECT: USJRBSI						
		Elev. 1300 (In Concrete Gra	iterpolated) avity Dam (RCC)	DIVISION	l:						
				FILE:	P:\US_Bureau_Rec ocuments\Surface S Costs\[Arch 1200-14	amation\IDIQ_0 torageOptionTI 400.xls11400 RC0	1CS20210B\Uppe Ms\TM Temperar	er_San_Joaquin_Phase_1\D nce\I nterpolated			
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT			
	14	Excavation for	Powernl ant		502 200	CY	\$12.00	\$6 026 400			
			Torropan		002,200		¢12.00	\$0,020,100			
	15	Concrete in Pov	werplant		45,700	CY	\$350.00	\$15,995,000			
1		Furnishing and	Handling Cement		461,602	TONS	\$90.00	\$41,544,135			
	17	Furnishing and	Handling Reinforcement		23,538,750	LBS	\$0.60	\$14,123,250			
	18	Grout Hole Dri	llilng		21,750	LF	\$34.50	\$750,375			
	19	Foundation Gro	outing		21,750	Sacks	\$28.50	\$619,875			
	20	Set up for Drai	n Holes in Gallery		133	Holes	\$200.00	\$26,500			
	21	Drilling Drain I	Holes		35.975	LF	\$53.50	\$1.924.663			
	_	0:			405.000		¢0.50	¢4 007 500			
	22	Outlet works i	rashracks		495,000	LR2	\$2.5U	\$1,237,500			
	23	Steel Pipe			15,401,360	LBS	\$1.50	\$23,102,040			
	24	Valves, all Size	s and Types		4,021,700	LBS	\$5.00	\$20,108,500			
	25	Turbines			1,923,000	LBS	\$6.50	\$12,499,500			
	26	Generators			1,920,000	LBS	\$8.00	\$15,360,000			
	27	Governors, Mo	itors, etc.		3-Units	LS		\$3,600,000			
		Subtotal pg 1						\$144 175 963			
		Subtotal pg 2						\$156,917,738			
		Mobilization						\$15,000,000			
		Subtotal						\$316,093,700			
		Unlited Item	าร (15%)					\$43,906,300			
		Contract Cost						\$360,000,000			
		Contingenci	ies (25%)					\$90,000,000			
		Field Cost						\$450,000,000			
		QUAN	TITIES		PRICES	S					
BY CHECKED B. Foster S. Osgood 11/23/2003		BY	B. Foster	CHECKED	S. Osgood	11/23/2003					
DATE P	REPAR	ED 11/10/2003	APPROVED	DATE	11/10/03	PRICE LEVI	EL Appraisal 03				

CODE:D-	8170	ESTIMATE WORKSHEET SHEET_1_OF_2						2
FEATUR	E: RM286	Dam		PROJE	ect: Usjrbsi			
	Elev. 13 Concre	300 (Interpolate	ed)	DIVISI	ON:			
				FILE:	\\Ussac1s- muni1\Jobs\US aquin Phase 1	5_Bureau_Red	amation\IDIQ_010	S20210B\Upper_San_Jo
PLANT	PAY						UNIT	
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT
	1	Diversion and c						
		Unstream Coffe	erdam (Crest @ FL 850)		159 910	CY	\$21.00	\$3 358 110
		Excavation for	Left Abutment Diversion Tunnel		112 670	CY	\$140.00	\$15,773,800
		Concrete Liner	for Left Abutment Diversion Tunnel		19 560	CY	\$245.00	\$4 792 200
		Rock Bolts - Le	aft Abt Div Tunnel		1 220	Bolts	\$600.00	\$732,000
		Total Drilling -	Left Abt Div Tunnel		26 840	LE	\$20.00	\$536,800
		Excavation for	Right Abutment Diversion Tunnel		85 420	CY	\$140.00	\$11 958 730
		Concrete Liner	for Right Abutment Diversion Tunnel		18 910	LBS	\$245.00	\$4 632 950
		Bock Bolte - Pi			1 078	Bolte	\$500.00	\$088.750
		Total Drilling	Right Abt. Div. Tunnel		35 505		\$20.00	\$900,700
		Downstroom Co	offordom (Crost @ EL 770)		0,090		\$20.00 \$22.00	\$711,500 \$217,590
		Downstream Co	Jina dam (Clest @ El. 170)		9,090		φ22.00	\$217,360
	2	Excavation, all	classes, for dam foundation		67,570	CY	\$16.50	\$1,114,905
	3	Mass Concrete	in dam		1,058,720	CY	\$122.50	\$129,693,200
	4	Temperature co	introl of concrete		1,058,720	CY	\$10.50	\$11,116,560
	5	Leveling concrete in dam foundation			6,755	CY	\$195.00	\$1,317,225
	6	Concrete in spil	lway crest	_	11,670	CY	\$180.00	\$2,100,600
	7	Concrete in spil	lway training walls		730	CY	\$350.00	\$255,500
	8	Concrete in Out	tlet Works Intake Structure		3,110	CY	\$272.50	\$847,475
	g	Excavation of C	Jutlet Shaft and Gate Structure	_	12,690	CY	\$275.00	\$3,489,750
	10	Temp. Supports	s - Rock Bolts		490	Bolts	\$380.00	\$186,200
	11	Total Drilling fo	or Rock Bolts		5,880	LF	\$20.00	\$117,600
	12	Concrete in Out	tlet Shaft and Cate Structure	_	5 905	CY	\$445.00	\$2,627,725
	12				3,303		φ113.00	ψ2,021,123
	13	Excavation for	Powerplant		504,000	CY	\$12.00	\$6,048,000
	14	Concrete in Pov	werplant		45,700	CY	\$350.00	\$15,995,000
		Subtotal						\$218,612,560
		QUAN	iiies		PRIC	ES		
ВĂ	BY CHECKED B. Foster S. Osgood 11/23/2003			ВҮ	B. Foster	CHECKED	S. Osgood	11/23/2003
DATE PR	DATE PREPARED APPROVED			DATE		PRICE LEV	EL	
		11/10/2003			10/10/03		Appraisal 03	

CODE:D-	DE:D-8170 ESTIMATE WORKSHEET			ET	SHEET_20F_2						
FEATUR	URE:				CT:						
		PM286 Dam			USJRBSI						
		Elev. 1300 (In	terpolated)	DIVISI	DIVISION:						
	#DEEL	Concrete Arc		FILE:	C:\Documents and	d Settings\smosg	ood\Desktop\MyBrie	fcase\Interpolated			
ΡΙΔΝΤ	#REF!				Costs\[MP286 - A	RCH - 1200 140	0.xls]ARCH Interpola	ation			
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT			
	15	Top of Dam Co	ncrete		4,865	CY	\$212.50	\$1,033,813			
	16	Furnishing and	Handling Cement		232,085	TONS	\$90.00	\$20,887,605			
	17	Furnishing and	Handling Reinforcement		16,566,000	LBS	\$0.60	\$9,939,600			
	18	Grout Hole Dril	lilng		34,000	LF	\$33.50	\$1,139,000			
	19	Foundation Gro	puting		34,000	Sacks	\$27.50	\$935,000			
	20	Set up for Drair	n Holes in Gallery		126	Holes	\$200.00	\$25,200			
	21	Drilling Drain H	Holes		23,615	LF	\$57.00	\$1,346,055			
	22	Outlet Works T	rashracks		495,000	LBS	\$2.50	\$1,237,500			
	23	Steel Pipe			15,401,355	LBS	\$1.50	\$23,102,033			
	24	Valves, all Size	s and Types		4,021,700	LBS	\$5.00	\$20,108,500			
	25	Turbines			1 923 000	LBS	\$6.50	\$12 499 500			
		T GIDING			1,020,000	200	ψ0.00	φ12, 100,000			
	26	Generators			1,920,000	LBS	\$8.00	\$15,360,000			
	27	Governors, Mo	tors, etc.		3-Units	LS		\$3,600,000			
		Subtotal pa 1						\$219,612,560			
		Subtotal pg 2						\$111,213,805			
		Mobilization Subtotal						\$16,500,000 \$346 326 365			
		Sublotai						\$340,320,303			
		Unlited Item	ns (15%)					\$53,673,635			
		Contract Cost						\$400,000,000			
		Contingenci	es (25%)					\$100.000.000			
		Contriguid						÷100,000,000			
		Field Cost						\$500,000,000			
BY		QUAN	CHECKED	RY	PRIC						
	Y CHECKED B. Foster S. Osgood 11/23/2003			B. Foster		S. Osgood	11/23/2003				
DATE PR	EPARE	) 11/10/2003	APPROVED	DATE	11/10/03	PRICE LEV	EL Appraisal 03				

CODE:D-	8170		ESTIMATE WORKSHEET	SHEET_1_OF_3				
FEA <sup>.</sup>	TURE:			PROJ	ECT:			
					USJRBSI			
	<b>RM28</b>	6 Dam Si	te					
	Elev.	1400		DIVISI	ON:			
	Concr	ete Face	d Rockfill Dam (CFRD)					
				EIL E-				
					P:\US_Bureau_Rec 1\Documents\Surfac	lamation\IDIQ_ ce Storage Optio	01CS20210B\Upp on TMs\TM Temp	er_San_Joaquin_Phase_ perance\Pilorin cost
					sheets\[M P286 CFR	F.xis M P286 1	400 LINIT	
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT
	1	Diversion	and care of river					
		Upstream C	offerdam (Crest @ El. 635)		146,500	CY	\$21.00	\$3,076,500
		Excavation	for Left Abutment Diversion Tunnel		203,930	CY	\$140.00	\$28,550,200
		Concrete Li	ner for Left Abutment Diversion Tunnel		35,400	CY	\$240.00	\$8,496,000
		Rock Bolts	- Left Abt. Div. Tunnel		2,210	Bolts	\$600.00	\$1,326,000
		Total Drillir	ng - Left Abt. Div. Tunnel		50,830	LF	\$20.00	\$1,016,600
		Excavation	for Right Abutment Diversion Tunnel		126,120	CY	\$140.00	\$17,656,800
		Concrete Li	ner for Right Abutment Diversion Tunnel		27,920	CY	\$240.00	\$6,700,800
		Rock Bolts	- Right Abt. Div. Tunnel		2,920	Bolts	\$500.00	\$1,460,000
		Total Drillir	ng - Right Abt. Div. Tunnel		52,560	LF	\$20.00	\$1,051,200
		Furnishinga	and Handling Cement		17,860	TONS	\$100.00	\$1,786,000
		Furnishinga	and Handling Reinforcement		9,498,000	LBS	\$0.60	\$5,698,800
			Diversion and Care of River Subtotal					\$76,818,900
		<b>.</b>						
		Spillway	(	_		<u> </u>	<b>AT</b> 00	A 10 000 TO0
		Excavation	i for Spillway	_	6,990,399	CY	\$7.00	\$48,932,793
		Concrete II	n spillway crest		7,670	CY	\$180.00	\$1,380,600
		Concrete II	n spillway training walls and Apron	_	7,500		\$210.00	\$1,575,000
		Furnishing	and Handling Cement		4,280		\$110.00	\$470,800
		Furnishing			2,275,500	LBS	CO.U¢	\$1,479,075
			Spillway Subtotai	_				<b>\$</b> 53,636,200
				-				
				_				
	QUANTITIES			PI	RICES			
BY	S Higiph	otham	CHECKED	BY	R Baumgarton	CHECKED		
		D		R. Baumgarten			/=1	
DATE	INLI'ARE	<u>ل</u>		DATE	09/09/03	PRICE LEVEL Appraisal 03		

CODE:D-	8170		ESTIMATE WORKSHEE	т			SHEET_2_OF	_3			
FEA					PROJECT:						
					USJRBSI						
	<b>RM</b> 28	6 Dam Si	to								
	Elay	0 Dain Oi 4 400		50404							
	Elev.	1400		DIVISIO	DIVISION:						
	Conci	ete Face	d Rockfill Dam (CFRD)								
				FILE:	P:\US_Bureau_Reclamation\IDIQ_01CS20210B\Upper_San_Joaquin_P 1\DocumentsSurface Storage Option TMsTM Temperance\Pilorin cost sheetsIMP286 CFRF.xlsIM P286 1400						
PLANT	PAY						UNIT				
ACCT.	ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	PRICE	AMOUNT			
		OutletWo	rks								
		Concrete i	n Outlet Works Intake Structure		3,110	CY	\$265.00	\$824,150			
		Excavation	on of Outlet Shaft and Gate Structure		11,180	CY	\$280.00	\$3,130,400			
		Rock Bolt	Supports		400	Bolts	\$380.00	\$152,000			
		Total Drillin	ng for Rock Bolts		4,800	LF	\$20.00	\$96,000			
		Concrete II	n Outlet Shaft and Gate Structure		6,470		\$450.00	\$2,911,500			
<u> </u>		Furnishing	and Handling Cement		2,700	TONS	\$120.00	\$324,000			
<u> </u>					1,437,000		30.00 ¢2.50	\$954,050 \$1,227,500			
			Outlet Works subtotal		495,000	LDO	φ2.00	\$1,237,500			
			Outlet Works Subtotal					\$3,003,000			
		Powerpla	nt								
		Steel Pipe			19,067,410	LBS	\$1.50	\$28,601,115			
		Valves, all	Sizes and Types		5,107,400	LBS	\$5.00	\$25,537,000			
		Hydraulic (	Control System		150,000 L 45,700 C	LBS	\$10.00 \$350.00	\$1,500,000 \$15,995,000			
		Concrete i	n Powerplant			CY					
		Excavation	n for Powerplant		504,000	CY	\$12.00	\$6,048,000			
		Furnishing	and Handling Cement		12,890	TONS	\$100.00	\$1,289,000			
		Furnisning	and Handling Reinforcement		6,855,000	LBS	\$0.60 ¢0.50	\$4,113,000			
		Conorator			1,890,000	LBO	00.00 \$2.00	\$12,200,000 \$19,720,000			
<u> </u>		Governors	Motors etc		2,340,000 3-1 Inite		<i>ф</i> 0.00	\$10,720,000			
		0000111013	Powerplant subtotal		5-01113	- 10		\$117.688.115			
								<i>•••••••••••••••••••••••••••••••••••••</i>			
<u> </u>											
<u> </u>											
<u> </u>		Q	UANTITIES		PI	RICES					
BY			CHECKED	BY		CHECKED					
	S. Higint	otham			R. Baumgarten						
DATE	PREPARE	D	APPROVED	DATE	00/00/02	PRICE LEV	/EL				
					09/09/03		Appiaisai Us				

CODE:D-	8170		ESTIMATE WORKSHEET				SHEET_3_OF	_3	
FEA	TURE:			PROJ	ECT:				
	-								
	RM286	Dam Site							
	Elevetie	= 1400!							
	Elevatio	$n = 1400^{\circ}$							
	Embank	ment Dam (C	(FRD)						
				FILE:	P:\US Bureau Red	amation\IDIQ	01CS20210B\Up	oer San Joaquin Phase	
					1\Documents\Surfac	e Storage Opti	on TM s\TM Tem	perance\Pilorin cost	
	DAV				sheets\[MP286 CFR	F.xls]M P286 1	400		
PLANT			DESCRIPTION	CODE					
ACCT.			DESCRIPTION	CODE	QUANTIT	UNIT	FRICE	AMOUNT	
		CFRF Dan	1						
		Excavation	- common (removal of alluvium, rock slope						
	20	cleaning by	dozer to sound rock, minimal ripping.)	8313	299,500	CY	\$5.50	\$1,647,250	
		Zone 1A - E	Exc, haul, & place (CL, SM, GM in 6" lifts to 98%						
	30	Proctor, 2 n	nile haul) Toe slab imperv. Cap	8313	35,000	CY	\$9.00	\$315,000	
		Zone 1B - E	Exc, haul, & place (random in 18" lifts to 95%						
	40	Proctor, 0.5	mile haul) Shell for Zone 1A	8313	190,000	CY	\$6.00	\$1,140,000	
		Zone 2 - Ex	c, haul, & place processed SM, GM in 18" lifts to						
	50	98% Procto	r, 0.5 mile haul) Deck foundation	8313	166,150	CY	\$18.00	\$2,990,700	
		Zone 3A - E	Exc, haul, & place (processed GP in 18" lifts to					** *** ***	
	60	95% Procto	r, 0.5 mile haul) Transition to Shell	8313	166,150	CY	\$17.50	\$2,907,625	
		Zone 3B - E	Exc, haul, & place (rockfill, 18" max in 3' lifts,			<b>O</b> V(	<b>*</b> *****	AF4 470 000	
	70	blasting ope	eration 0.5 mile away) Upstream Shell	8313	6,772,000	CY	\$8.00	\$54,176,000	
	90	Zone 3C - E	EXC, naul, & place (rockfill, 4' max in 4' lifts,	0040	6 010 000	cv	¢7 75	¢52 552 500	
	00 00	Concrete de	ack (3 000 psi strength 0 4% reinforcing)	8313	57 200	CY	ې۲.75 \$215.00	\$12,208,000	
	90 100	Concrete to	eck (3,000 psi strength, 0.3% reinforcing	8313	2 350	CY	\$215.00	\$505,250	
<u> </u>	110	Anchor har	s for toe slab (4' deep grouted into granite)	8313	11 700	anchors	\$40.00	\$468,000	
	110	Parapet Wa	all (3 000 psi 0 4% reinforcing)	8313	2 160	CY	\$450.00	\$972,000	
	130	Drilling for a	arout program (setup, drill test) setups=491	8313	30,130	LF	\$33.00	\$994,290	
	140	Groutina (a	rout injection into competent granite.	8313	22,600	bags	\$27.00	\$610,200	
	150	Unwatering	(assumes 48 month duration)	8313	1	LS		\$2,400,000	
		Ĭ	Subtotal, CFRF Dam					\$134,976,815	
		SUMMAR	( OF COSTS						
		Diversion a	and Care of River					\$76,800,000	
		Spillway						\$53,800,000	
		Outlet Wor	ks					\$9,600,000	
		Powerplant						\$117,700,000	
		CFRF Dam						\$135,000,000	
		Nobilizatio	n - 5%					\$19,600,000	
		Subtotal	2mo 15%					\$412,500,000	
		Contract (	ins - 15%					\$57,500,000	
		Contingen	vies 25%					\$470,000,000	
		Field Cost						\$590 000 000	
								<i>\\</i> 000,000,000	
			QUANTITIES			PRICES	S		
BY			CHECKED	BY		CHECKED	-		
<u> </u>	3Y CHECKED Mark Pabst				R. Baumgarten	5			
DATE	PREPARE	D	APPROVED	DATE		PRICE LE	VEL		
	7/1/2003				09/09/03		Appraisal 03		

CODE:D-8	3170		ESTIMATE WOR	RKSHEET				SHEET_1_OF_	_2		
FEA <sup>.</sup>	TURE	:		P	ROJ	ECT:					
						USJRBSI					
	RM 2	286 Dam									
	Flov	1400									
	Con	. 1400 Groto Grov	ity Dom (BCC)		1113	UN.					
	COI	crete Grav	ity Dalli (RCC)								
				FI	ILE:	Dills Burgau Boda	nation\IDIO (	1C \$20210B\Um	nor San Joaquin Ph		
					ase_1\Documents\Surface Storage Option TM s\TM						
						Temperance\Interpola	ated Costs [Ar	ch 1200-1400.xl	s]1200 RCC		
PLANT	PAY							UNIT			
ACCT.	ITEM		DESCRIPTION	C	ODE	QUANTITY	UNIT	PRICE	AMOUNT		
	1	Diversion and	d care of river								
	· ·	Upstream Cof	ferdam (Crest @ FL 850)			197 100	CY	\$20.00	\$3 942 000		
		Excavation fo	r Left Abutment Diversion Tunnel			147.600	CY	\$140.00	\$20.664.000		
		Concrete Line	er for Left Abutment Diversion Tu	nnel		25,620	ĊY	\$245.00	\$6,276,900		
		Rock Bolts - I	_eft Abt. Div. Tunnel			1,600	Bolts	\$600.00	\$960,000		
		Total Drilling	- Left Abt. Div. Tunnel			36,800	LF	\$20.00	\$736,000		
		Excavation fo	r Right Abutment Diversion Tunn	el		77,700	CY	\$140.00	\$10,878,000		
		ConcreteLine	er for Right Abutment Diversion T	unnel		17,200	CY	\$245.00	\$4,214,000		
		ROCK Bolts - H	Right Abt. Div. Tunnel			1,800	Bolts	\$500.00	\$900,000		
		Total Drilling	- Right Abt. DIV. Tunnel			32,400		\$20.00	\$648,000		
		Downstream				10,920	UI	φΖΖ.00	<i>\$</i> 550,240		
	2	Excavation a	Il classes for dam foundation(50%)	rock)		103 950	CY	\$7 50	\$779 625		
						,	<u> </u>	¢1100	¢0,020		
	3	RCC in dam				3,264,510	CY	\$33.00	\$107,728,830		
	4	Concrete faci	ng elements			69,580	CY	\$85.00	\$5,914,300		
	5	Concrete cap	on top of dam			1,780	CY	\$250.00	\$445,000		
	6	Leveling cond	crete in dam foundation			20,790	CY	\$180.00	\$3,742,200		
	7	Conorata in ar	alluura araat			0.200	<u>ov</u>	¢200.00	¢460.000		
		Concrete in sp	oniway crest			2,300	UT	\$200.00	\$460,000		
	8	Concrete in sr	oillway training walls		-	450	CY	\$350.00	\$157 500		
	Ŭ	Concretering	sinnay adming trails		-	100	01	<del>4000.00</del>	<i>\</i> 101,000		
	9	Concrete in O	outlet Works Intake Structure			3,110	CY	\$265.00	\$824,150		
	10	Excavation of	Outlet Shaft and Gate Structure			11,010	CY	\$280.00	\$3,082,800		
	11	Temp. Suppor	rts - Rock Bolts			390	Bolts	\$380.00	\$148,200		
	40	Total Drilling	for Dook Dolto			4 690		¢00.00	¢02.000		
	12	Total Dritting	TOF ROCK BOILS			4,080	LF	\$20.00	\$93,000		
	13	Concrete in O	utlet Shaft and Gate Structure			6 420	CY	\$480.00	\$3 081 600		
						0,120	01	<b> </b>	\$0,001,000		
		Subtotol							¢176 006 045		
									<b>Φ170,020,945</b>		
DV		QU				PRIC					
ВΥ	с µ:~	hotham	CHECKED	ВҮ	r ,	R Baumgarton	CHECKED				
		PED	APPROVED	<b>D</b> A	K. Baumgarten						
27121						09/09/03	PRICE LEVEL Appraisal 03				

CODE:D-8	3170		ESTIMAT	E WORKSHEET				SHEET_2 OF	_2
FEA <sup>-</sup>	TURE				PRO.	JECT:			
		MP286 Da	ım						
		Elev. 1400	)		DIVIS	ION:			
		Concrete	Gravity Dam (RC	C)					
					FILE:	P:\US_Bureau_Reclar ase_1\Documents\Sur	mation\IDIQ_( face Storage O	)1CS20210B\Up ption TMs\TM	pper_San_Joaquin_Ph
	5414					Temperance\Interpol	ated Costs\[Ar	ch 1200-1400.xl	s]1200 RCC
ACCT.	ITEM		DESCRIPTION		CODE	QUANTITY	UNIT	PRICE	AMOUNT
	14	Excavation fo	r Powerplant			502,200	CY	\$12.00	\$6,026,400
	15	Concrete in P	owerplant			45,700	CY	\$350.00	\$15,995,000
	16	Furnishing an	d Handling Cement			668,140	TONS	\$90.00	\$60,132,600
	17	Furnishing an	d Handling Reinforceme	nt		25,824,000	LBS	\$0.60	\$15,494,400
	18	Grout Hole D	rillilng			33,200	LF	\$33.00	\$1,095,600
	19	Foundation G	routing			33,200	Sacks	\$25.00	\$830,000
	20	Set up for Dra	ain Holes in Gallery			165	Holes	\$200.00	\$33,000
	21	Drilling Drair	1 Holes			52,950	LF	\$52.00	\$2,753,400
	22	Outlet Works	Trashracks			495,000	LBS	\$2.50	\$1,237,500
	23	Steel Pipe				19,067,410	LBS	\$1.50	\$28,601,115
	24	Valves, all Siz	zes and Types			5,257,400	LBS	\$5.00	\$26,287,000
	25	Turbines				1,890,000	LBS	\$6.50	\$12,285,000
	26	Generators				2,340,000	LBS	\$8.00	\$18,720,000
	27	Governors, M	otors, etc.			3-Units	LS		\$3,600,000
		Subtotal pg 1							\$176,026,945
		Subtotal pg 2							\$193,091,015
		Mobilization							\$18,500,000
		Subtotal							\$387,617,960
		Unlited Ite	rms (15%)						\$62,382,040
		Contract Co	ŧ						\$450,000,000
		Contingen	cies (25%)						\$110,000,000
		Field Cost							\$560.000.000
		QU	ANTITIES			PRIC	ES		÷===;••••;•••
BY	S. Hiai	nbotham	CHECKED		BY	R. Baumgarten	CHECKED		
DATE F	PREPAR	ED	APPROVED		DATE	09/09/03	PRICE LEVI	EL Appraisal 03	

CODE:D-	8170		ESTIMATE WORKSHEET				SHEET_1_OF_	_2			
FEAT	URE:			PRO.	JECT:						
					USJRBSI						
	RM28	6 Dam									
	Elev.	1400		DIVISION:							
	Conc	rete Arch									
				FILE	C:\Documents and Setti	ngs\smosgood\De	esktop∖MyBriefcas	e\Interpolated			
				_	Costsl[M P286 - ARCH	1200 1400.xls]1	400 ARCH				
PLANI ACCT	PAY		DESCRIPTION	CODE							
A001.	TTEIVI			OODL	QUANTIT	ONT	TRICE	AMOON			
	1	Diversion	and care of river								
		Upstream (	Cofferdam (Crest @ El. 850)		159,910	CY	\$21.00	\$3,358,110			
		Excavation	for Left Abutment Diversion Tunnel		112,670	CY	\$140.00	\$15,773,800			
		Concrete L	iner for Left Abutment Diversion Tunnel	_	19,560	CY	\$245.00	\$4,792,200			
		Rock Bolts	s - Left Abt. Div. Tunnel		1,220	Bolts	\$600.00	\$732,000			
		Total Drill	ing - Left Abt. Div. Tunnel	_	26,840	LF	\$20.00	\$536,800			
		Excavation	for Right Abutment Diversion Tunnel		90,800	CY	\$140.00	\$12,712,000			
		Concrete L	Iner for Right Abutment Diversion Tunnel	_	20,100	LBS	\$245.00	\$4,924,500			
	<b>—</b>	ROCK BOILS	S- Right Abt. Div. Tunnel	_	2,100	BOITS	\$500.00	\$1,050,000			
		Total Drill	Ing - Right Abt. DIV. Tunnel	_	37,800		\$20.00	\$756,000			
		Downstrea			9,090	CT	φ22.00	φ217,500			
	2	Excavation	all classes for dam foundation	_	97 100	CY	\$14.00	\$1 359 400			
	-			_	07,100	01	φ14.00	φ1,000,400			
	3	Mass Cond	rrete in dam		1 732 900	CY	\$105.00	\$181 954 500			
	4	Temperatu	re control of concrete		1.732.900	CY	\$10.00	\$17.329.000			
					, - ,			, ,,			
	5	Leveling o	oncrete in dam foundation		9,710	CY	\$190.00	\$1,844,900			
	6	Concretei	n spillway crest		11,670	CY	\$180.00	\$2,100,600			
	7	Concreteir	n spillway training walls	_	800	CY	\$350.00	\$280,000			
		O	- Or that Mindre Later Of most me		0.440	01	¢000.00	¢070.000			
	8	Concrete II	1 Outlet Works Intake Structure		3,110	CY	\$280.00	\$870,800			
	0	Excavation	of Outlet Shaft and Gate Structure	_	14 370	CΥ	\$270.00	\$3,870,000			
	3				14,570		φ270.00	ψ3,079,900			
	10	Temp. Sup	ports - Rock Bolts		590	Bolts	\$380.00	\$224,200			
		i onipi odp				20.10	+000.00	<i> </i>			
	11	Total Drill	ing for Rock Bolts		7,080	LF	\$20.00	\$141,600			
	12	Concrete i	n Outlet Shaft and Gate Structure		6,420	CY	\$450.00	\$2,889,000			
				_							
		Subtotal						\$257 726 890			
			UANTITIES		PRI	CES		\$201,120,000			
BY				BY							
	S. Higi	nbotham			R. Baumgarten						
DATE	PREPAR	RED	APPROVED	DATE		PRICE LEV	EL				
					09/09/03		Appraisal 03				

CODE:D-	8170		ESTIMATE WORKSHEET				SHEET_2OF_	_2		
FEAT	URE:			PROJECT:						
		RM286 Da Elev. 140	am D	DIVISION:						
		Concrete	Arch	FILE	C:\Documents and Settin	ngs\smosgood\De	sktop\MyBriefcase	AI nterpolated		
PLANT ACCT.	PAY ITEM		DESCRIPTION	CODE	QUANTITY	UNIT	UNIT PRICE	AMOUNT		
	13	Excavation	for Powerplant		504,000	CY	\$12.00	6,048,000		
	14	Concreteir	Powerplant		45,700	CY	\$350.00	15,995,000		
	15	Top of Dar	n Concrete		7,230	CY	\$200.00	1,446,000		
	16	Furnishing	and Handling Cement		360,835	TONS	\$90.00	32,475,150		
	17	Furnishing	and Handling Reinforcement		17,187,000	LBS	\$0.60	10,312,200		
	18	Grout Hole	Drilling		50,000	LF	\$32.00	1,600,000		
	20	Foundation	Drain Holes in Gallery		160	Holes	\$24.00 \$200.00	32.000		
	21	Drilling Dr	ain Holes		35,800	LF	\$54.00	1,933,200		
	22	Outlet Wo	ks Trashracks		495,000	LBS	\$2.50	1,237,500		
	23	Steel Pipe			19,067,400	LBS	\$1.50	28,601,100		
	24	Valves, all	Sizes and Types		5,257,400	LBS	\$5.00	26,287,000		
	25	Turbines			1,890,000	LBS	\$6.50	12,285,000		
	26	Generators			2,340,000	LBS	\$8.00	18,720,000		
	27	Governors	Motors, etc.		3-Units	LS		257 726 890		
		Subtotal Si	heet #2					161,772,150		
		Mobilization Subtotal	n					21,000,000 <b>440,499,040</b>		
		Unlited	Items (15%)					69,500,960		
		Contract (	Cost					510,000,000		
		Conting	encies (25%)					120,000,000		
		Field Cost			PRIC	CES		630,000,000		
BY	نم ا	nhotham	CHECKED	BY	R Baumgarton	CHECKED				
DATE	S. Higinbotham DATE PREPARED		APPROVED	DATE	09/09/03	PRICE LEV	EL Appraisal 03			