

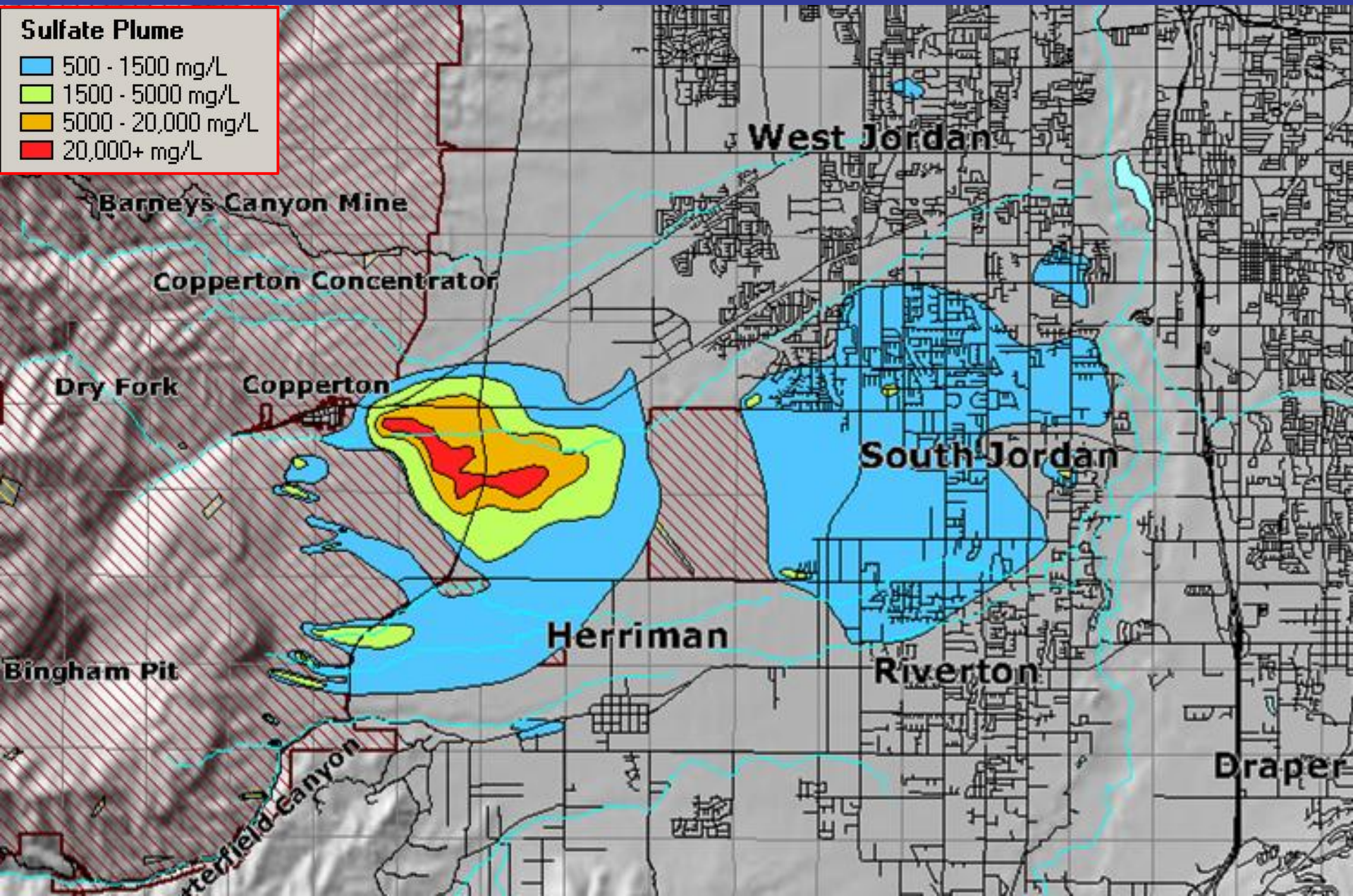
Jordan Valley Water Conservancy District

Southwest Groundwater Treatment Project

Recommendation to Modify Joint Proposal

April 28, 2004

ZONE A AND ZONE B SULFATE PLUMES

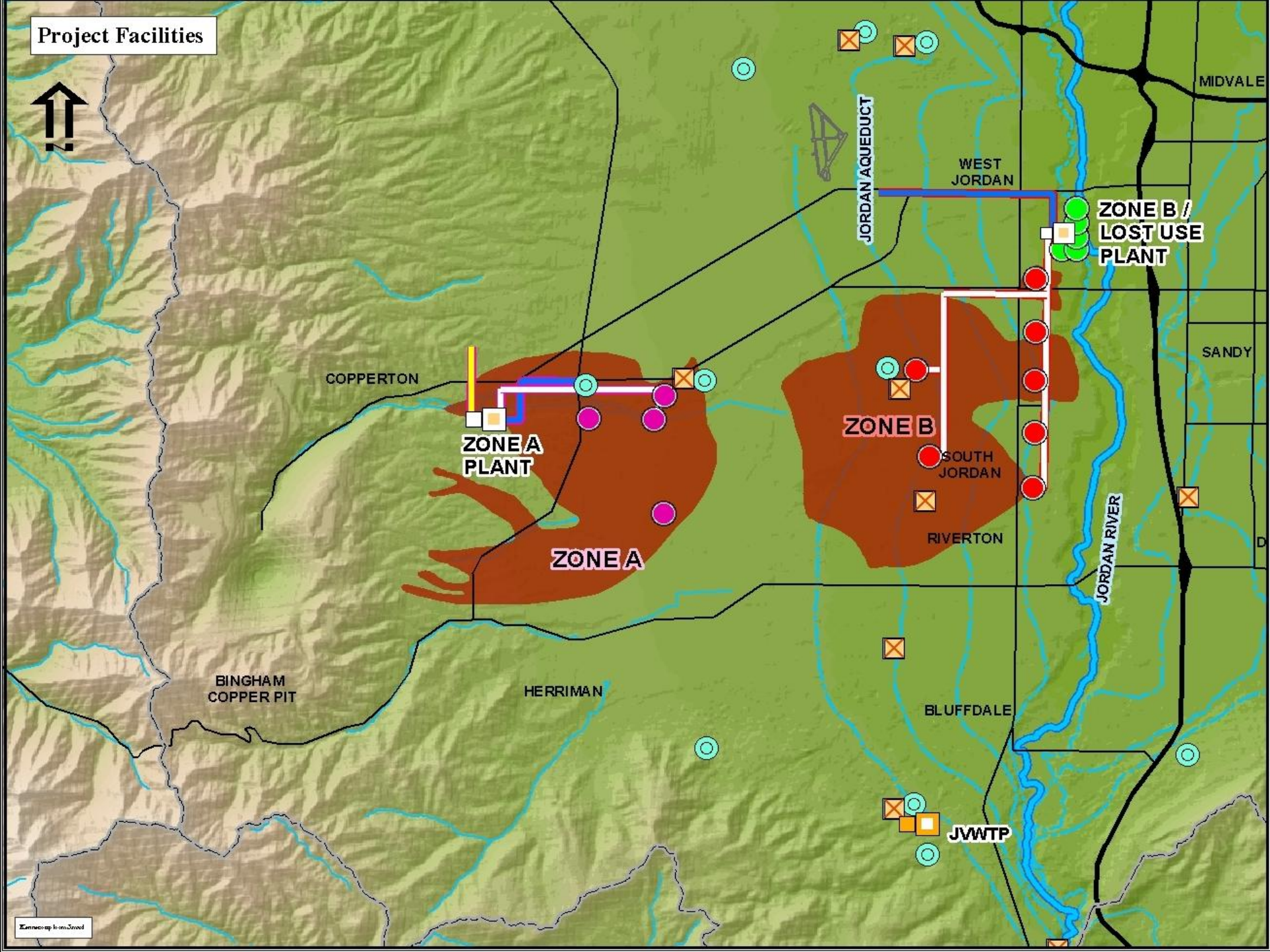


Joint Proposal

- From JWCD and Kennecott Utah Copper Corp (KUCC) to State Natural Resource Damage (NRD) Trustee
- Modified several times during 1999 – 2003
- Zone A (deep groundwater, by KUCC) 3,500 AF
- Zone B (deep groundwater, by JWCD) 3,500 AF
- Lost Use (shallow groundwater, by JWCD) 1235 –
2300 AF

8235 – 9300 AF

Project Facilities



Joint Proposal Funding ^(a) (\$millions)

<u>Project Components</u>	<u>ILC^(b)</u>	<u>Lost Use</u>	<u>KUCC</u>	<u>JVWCD</u>	<u>TOTALS</u>
Zone A	\$24.0	\$0	\$14.8	\$5.9	\$44.7
Zone B	\$24.1	\$0	\$4.5	\$11.1	\$39.7
<u>Lost Use</u>	<u>\$0</u>	<u>\$13.2^(c)</u>	<u>\$0</u>	<u>\$6.3</u>	<u>\$19.5</u>
TOTALS	\$48.1	\$13.2	\$19.3	\$23.3	\$103.9

(a) In October 2002 dollars. Includes both construction and O,M&R cost NPV for 40 years.

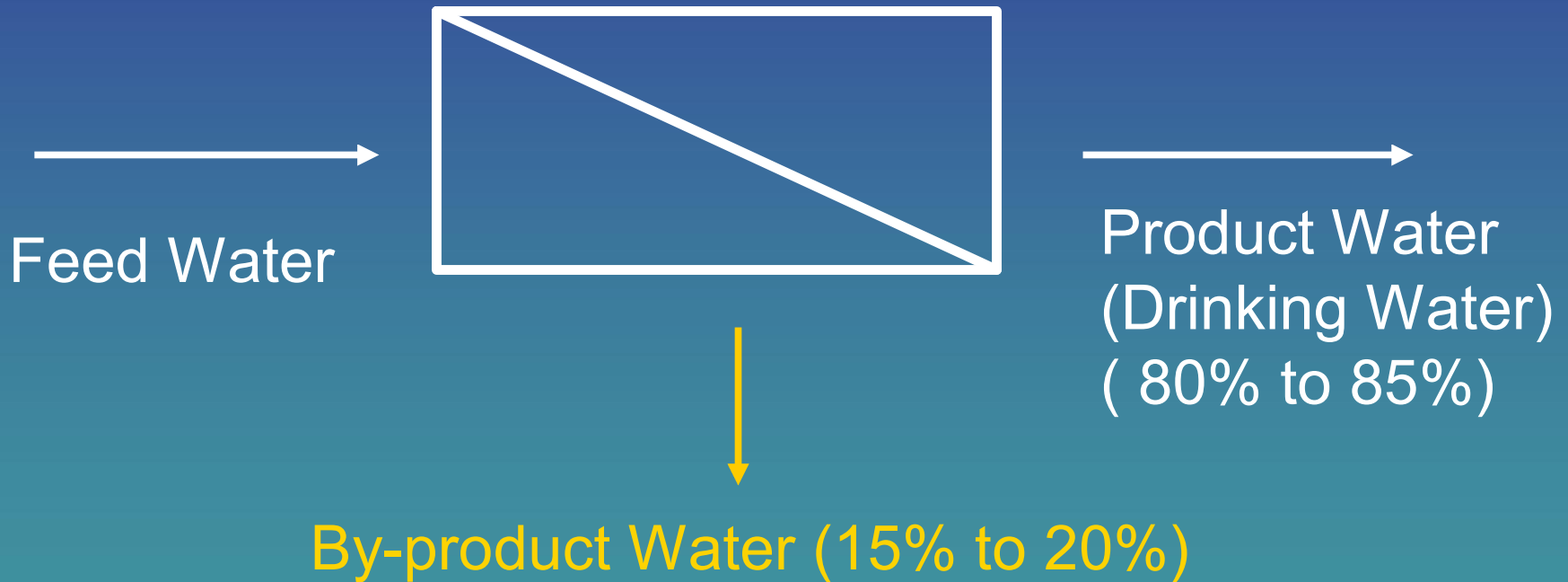
(b) Irrevocable letter of credit (September 2003 value).

(c) \$0.7 million to UDEQ for Trustee expenses.

Joint Proposal 2003-04 Activities

- April-July 2003: JWCD received permit for reverse osmosis (RO) by-product water discharge to Jordan River
- Aug–Nov 2003: Trustee held public information and comment meetings
- Jan 2004: JWCD withdrew its Jordan River discharge permit
- JWCD Board asked staff to seek public input in RO by-product water discharge alternatives

Zone B and Lost Use Reverse Osmosis By-Product



Southwest Groundwater Stakeholder Forum

- Convened by Trustee (see Attachment 1)
- Membership:
 - Well owners (2)
 - Environmental representatives (2)
 - Duck clubs (1)
 - Municipalities (6)
 - Federal agencies (3)
 - State agencies (3)
 - Project proponents (2)

Forum Meeting No. 1

Established Project Objectives:

- Joint Proposal Project:
Select an alternative for disposal of Zone B and Lost Use RO by-product water
- JWCD Future (Phase 2) Project:
Select an alternative for disposal of RO by-product from a shallow groundwater treatment project

Forum Meeting No. 1 (cont'd)

By-product water:

	Flow Rate (cfs)	AF/yr
Zone B	1.24	810
Lost Use	0.51	333
Phase 2	1.95	1274
TOTALS	3.70	2417

Forum Meeting No. 1

Established Criteria for selecting Alternative(s):

1. Meets project objectives
2. Keeps within budget
3. Meets project time constraints
4. Environmentally sound
5. Technically feasible
6. Allows all organizations to meet their objectives
7. Allows public water delivery after 40 years
8. Compatible with JWCD Phase 2 project (additional shallow groundwater)
9. Legal/permittable

(See Attachment 2)

Forum Meeting No. 2

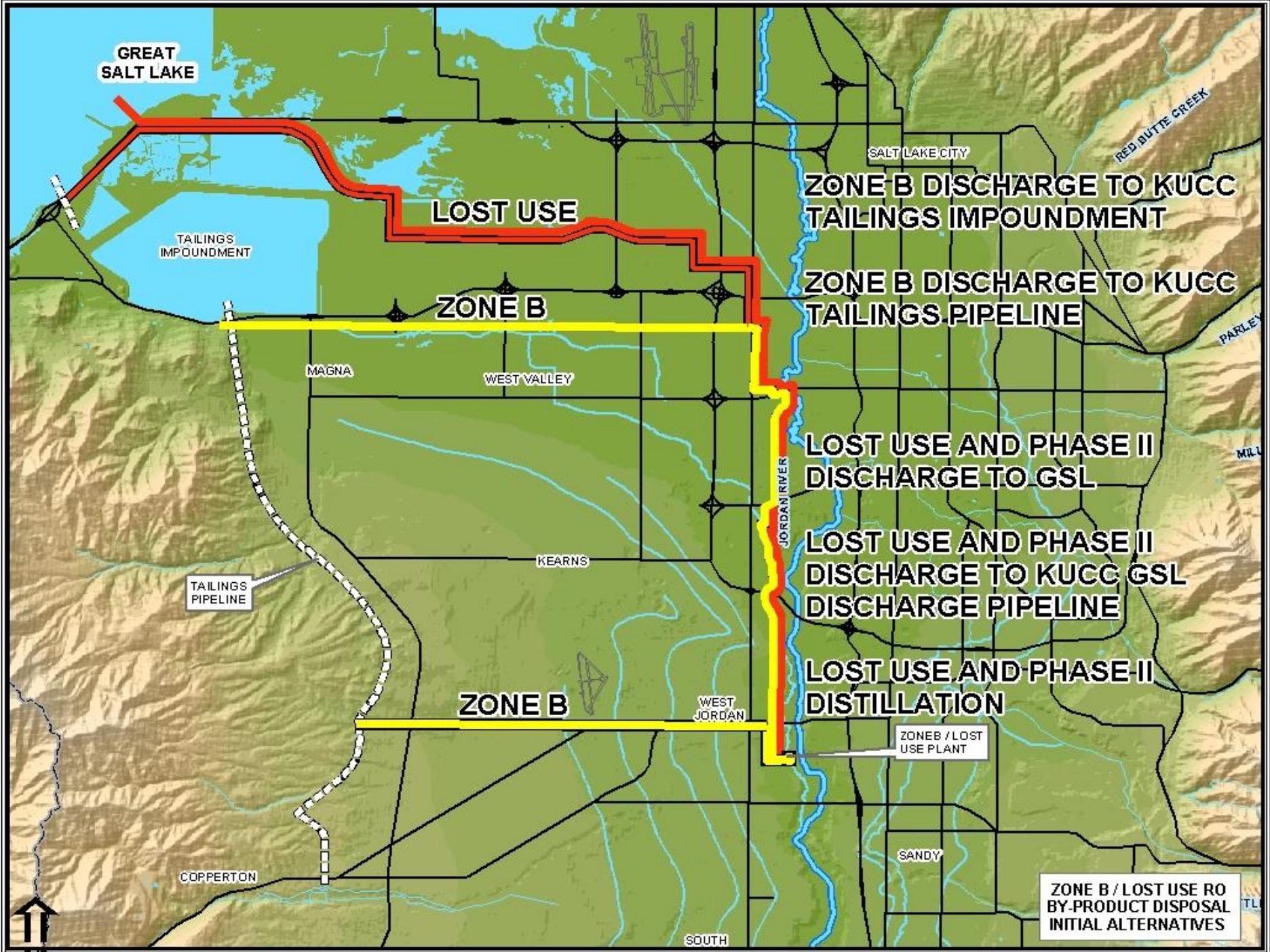
Developed discharge/disposal alternatives:

- A. No action
- B. To Jordan River (withdrawn)
- C. Deep well injection
- D. To Great Salt Lake
- E. To KUCC GSL outfall pipe
- F. To KUCC Tailings Impoundment (Zone B only)
- G. Evaporation
- H. Distillation
- I. To KUCC Tailings Pipeline (Zone B only)

Forum Meeting No. 2

Alternatives (cont'd):

- F.1 Zone B to Tailings Impoundment; Lost Use to GSL
- F.2 Zone B to Tailings Impoundment; Lost Use to KUCC GSL outfall
- F.3 Zone B to Tailings Impoundment; Lost Use to distillation
- I.1 Zone B to Tailings Pipeline; Lost Use to GSL
- I.2. Zone B to Tailings Pipeline; Lost Use to KUCC GSL Outfall
- I.3 Zone B to Tailings Pipeline; Lost Use to distillation



ZONE B / LOST USE RO BY-PRODUCT DISPOSAL INITIAL ALTERNATIVES

Forum Meeting No. 2 (cont'd)

- Concluded Alternative A (no action) does not meet project objectives, but is uniquely the JVWCD Board's decision
- Alternatives B and G were eliminated

Forum Meeting No 3

- Eliminated Alternative C (Deep Well injection)
- Cost estimates were presented
- JVWCD presented cost participation limits
- Many technical studies were presented

Important Factors for Additional Funding

1. Reasonable unit cost (not adversely impact water rates)
2. Additional capital not adversely impact District's 10-year financial plan
3. Additional capital not displace Zone A water rate discount

Cost Limit Conclusions

- Not exceed \$210/AF
- Additional capital not exceed \$3 million

(see Attachment 3)

Zone A Water Rate Discount

FY 03-04

- \$288 per AF
- Comparable pumped rate
(Pressure Zone D): \$349 per AF
- 17% discount in FY 03-04. Will be updated by formula each year.
- Each additional \$1.0 million in capital requirement reduces discount by \$9.40 per AF

Cost Summary

ALTERNATIVE	To Jordan River (B)	To GSL (D)	To KUCC GSL Outfall (E)	Zone B to Tailings Impoundment (F) ZONE B ONLY	Distillation (H)	Zone B to Tailings Pipeline (I) ZONE B ONLY
Capital Cost (\$million)	\$4.6	\$9.3	\$9.9	\$7.7	\$22.1	\$5.6
Operating Cost (\$/year)	\$0	\$20,000	\$25,000	\$25,000	\$3,200,000	\$72,000
NPV Cost (\$million)	\$4.6	\$9.7	\$10.4	\$8.2	\$93.9	\$7.0
Additional Capital Cost (\$million) (a)	\$0	\$2.9	\$3.5	\$1.3	\$15.7	(\$.8)
Unit Cost (\$/acre feet)	\$157	\$201	\$207	\$209	\$928	\$195

(a) Additional capital cost is relative to \$6.4 million

Cost Summary

ALTERNATIVE	Zone B to Tailings Impoundment Lost Use to GSL (F.1)	Zone B to Tailings Impoundment Lost Use to KUCC GSL Outfall (F.2)	Zone B to Tailings Impoundment Lost Use Distillation (F.3)	Zone B to Tailings Pipeline Lost Use to GSL (I.1)	Zone B to Tailings Pipeline Lost Use to KUCC GSL Outfall (I.2)	Zone B to Tailings Pipeline Lost Use Distillation (I.3)
Capital Cost (\$million)	\$15.0	\$15.4	\$18.1	\$11.6	\$12.0	\$14.5
Operating Cost (\$/year)	\$33,000	\$34,000	\$1,125,000	\$79,000	\$ 81,000	\$1,172,000
NPV Cost (\$million)	\$15.6	\$16.1	\$40.4	\$13.1	\$13.6	\$37.7
Additional Capital Cost (\$million)	\$8.6	\$9.0	\$35.3	\$5.2	\$5.6	\$31.3
Unit Cost (\$/acre feet)	\$252	\$256	\$466	\$231	\$235	\$443

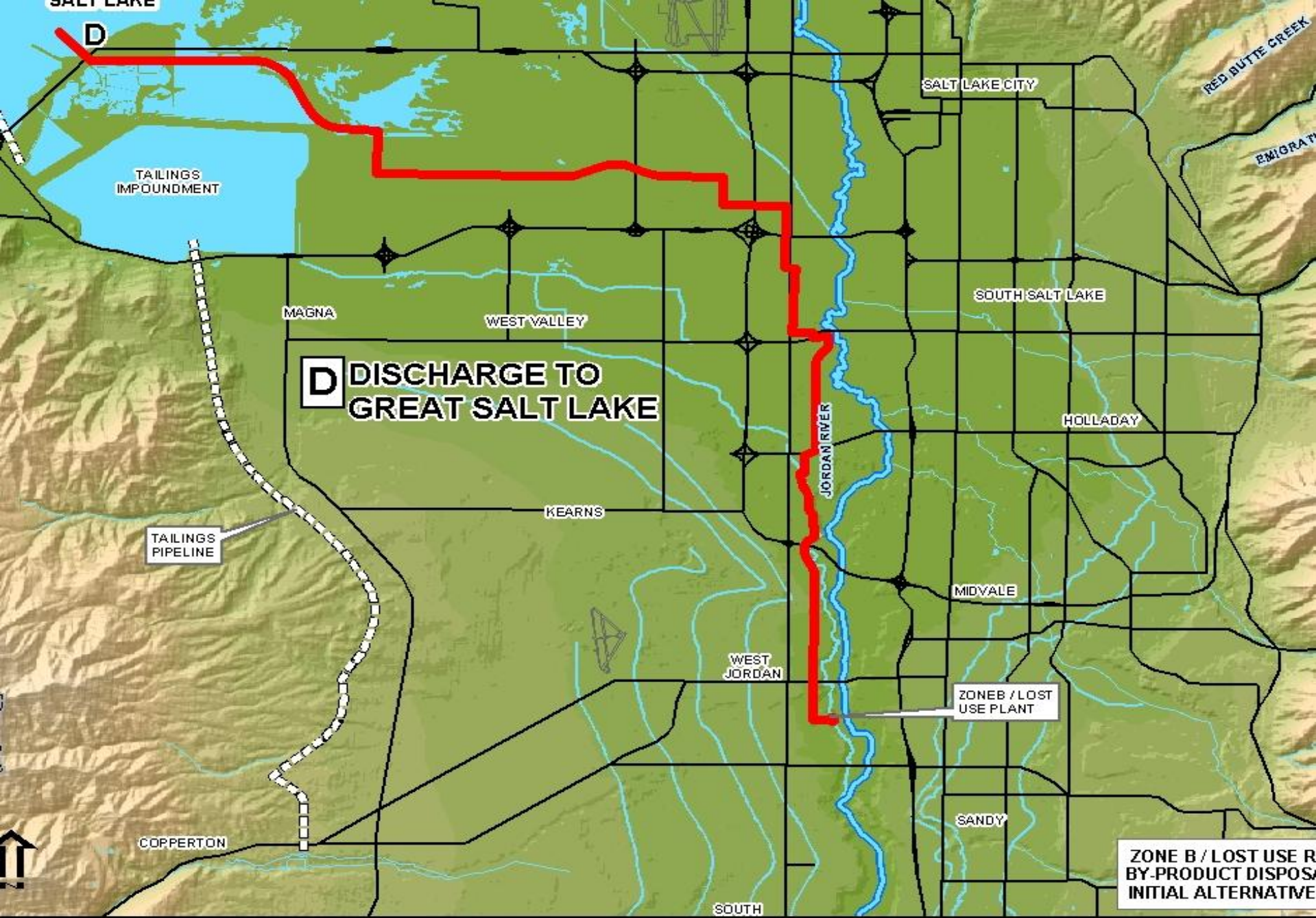
(a) Additional capital cost is relative to \$6.4 million

By-Product Disposal Alternatives Criteria Development

	A	B	C	D	E	F	G	H	I	F.1	F.2	F.3	L1	L2	
	No Action	Discharge to Jumbo Pond (No. 1 Pond)	Dump Disposal/Collection	Discharge to Local Sewer Lines	Discharge to MSWTF (No. 2) Discharge Tunnel	Discharge to MSWTF (No. 2) Discharge Tunnel (Dams & Turb) Treatment	Storage	Discharge	Discharge to MSWTF (No. 2) Discharge Tunnel	Discharge to MSWTF (No. 2) Discharge Tunnel	Discharge to MSWTF (No. 2) Discharge Tunnel	Discharge to MSWTF (No. 2) Discharge Tunnel	Discharge to MSWTF (No. 2) Discharge Tunnel	Discharge to MSWTF (No. 2) Discharge Tunnel	Discharge to MSWTF (No. 2) Discharge Tunnel
1 Meet Project Objectives	X	X	X	Yes	Yes	Yes	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2 Keep Within Budget	X	X	X	Yes	No	Yes	No	No	Yes	No	No	No	No	No	No
3 Time	X	X	X	Yes	Yes	Yes	X	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4 Environmentally Sound	X	X	X		X		X	X		X	X	X	X	X	X
5 Technically Feasible & Successful	X	X	X	Yes	Yes	Yes	X		Yes	Yes	Yes		Yes	Yes	X
6 Allow organization to meet objectives	X	X	X		X		X	Yes		X	X	X	X	X	X
7 Allow public water delivery after 10 yrs.	X	X	X	Yes	No / ?	No	X	Yes	No	No	No	No	No	No	No
8 Compatible with JAWQD Phase II	X	X	X	Yes	No / ?	No	X	Yes	No	No	No	No	No	No	No
9 Legality	X	X	No	?	Yes	?	X	Yes	?	X	X	X	X	X	X

Forum Meeting No. 3 (cont'd)

- Eliminated all but three alternatives (D, F and I remained)



D DISCHARGE TO GREAT SALT LAKE

ZONE B / LOST USE PLANT

ZONE B / LOST USE R
BY-PRODUCT DISPOS
INITIAL ALTERNATIVE

TAILINGS IMPOUNDMENT

TAILINGS PIPELINE

JORDAN RIVER

SALT LAKE CITY

SOUTH SALT LAKE

HOLLADAY

MIDVALE

WEST JORDAN

SANDY

SOUTH

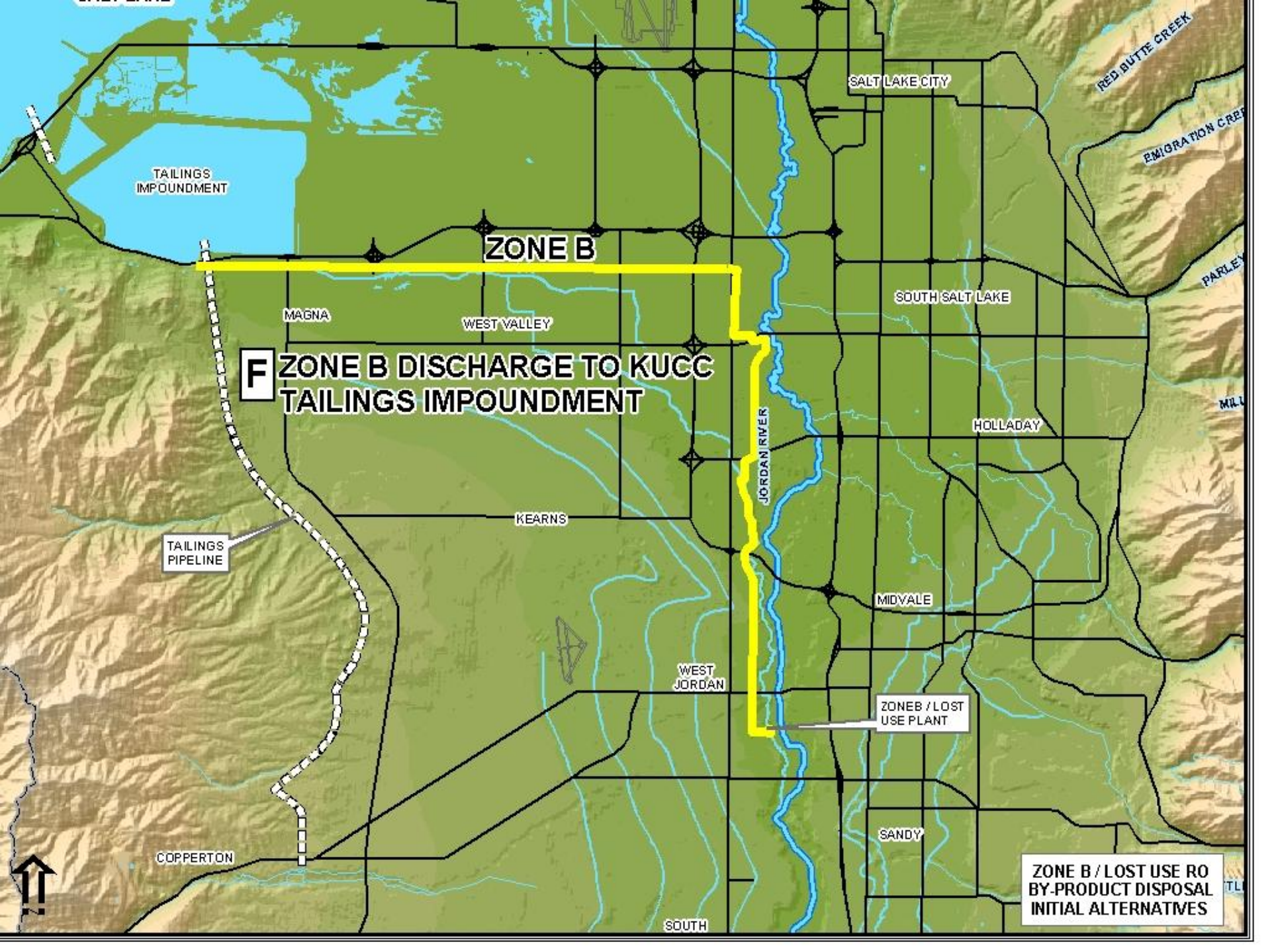
MAGNA

WEST VALLEY

KEARNS

COPPERTON

RED BUTTE CREEK
EMIGRATION CANYON



TAILINGS IMPOUNDMENT

ZONE B

F **ZONE B DISCHARGE TO KUCC TAILINGS IMPOUNDMENT**

TAILINGS PIPELINE

SALT LAKE CITY

RED BUTTE CREEK

EMIGRATION CREEK

PARLEY

MAGNA

WEST VALLEY

SOUTH SALT LAKE

HOLLADAY

KEARNS

MIDVALE

WEST JORDAN

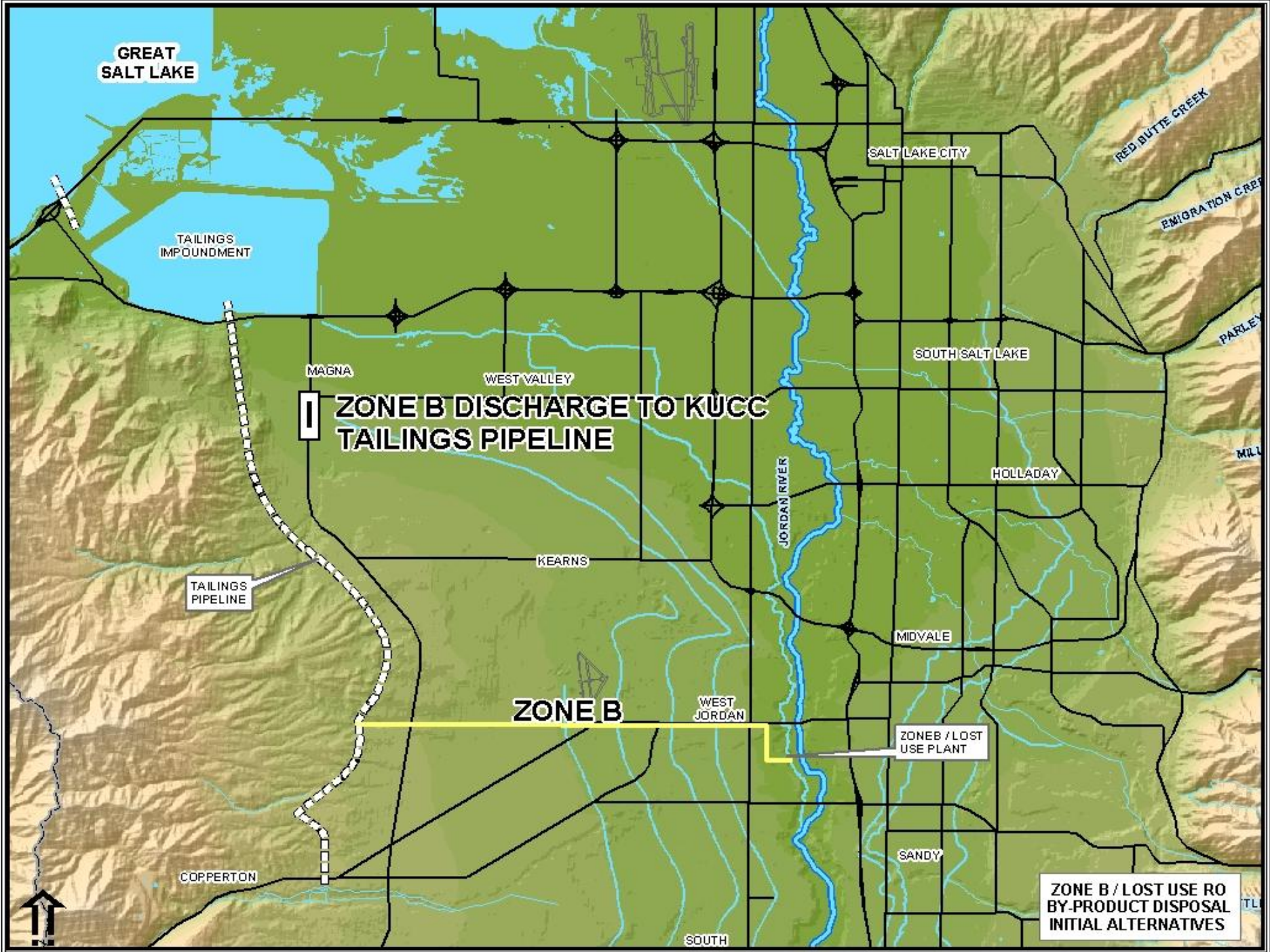
ZONE B / LOST USE PLANT

COPPERTON

SANDY

SOUTH

ZONE B / LOST USE RO BY-PRODUCT DISPOSAL INITIAL ALTERNATIVES



ZONE B / LOST USE RO BY-PRODUCT DISPOSAL INITIAL ALTERNATIVES

Forum Meeting No. 3 (cont'd)

- Discussed environmental soundness. Selenium effects in GSL are dominant issue.
- Four scientific studies about Selenium in GSL were presented; others were submitted.
- Opinions and findings on Selenium differ.

Recommendations

1. Pursue project with Zone B by-product water discharge to Tailings Impoundment
2. Defer Lost Use project components in order to further study by-product discharge effects to the GSL. (Some portions of the Lost Use project that do not produce by-product water can proceed now with the Zone B project.)

Recommendations

3. Assemble and participate in a Selenium studies steering committee
4. Adjust Joint Proposal and project agreements for submission to Trustee