

Report of the Joint Mission

World Bank/UNEP/UNDP

by

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Part I

**Observations of Joint Mission Activities in Aral Basin
(during Joint World Bank/UNEP/UNDP Mission)**

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Sunday, 23 May, in Moscow

I spoke with Renat Perelet (about the final draft of our NATO Advanced Research Workshop report on Regional Organizations and Climate Change, which focuses on water resources and marine fisheries). He liked the report and said that the Human Dimensions of Global Change program directors may allow the development of a working group on issues related to environmental security. I raised the issue of water resource management in Central Asia as a good case study of the development of a regional organization, suggesting that it is a region only in a few aspects, e.g., a feeling of regionalism is not present except for fact of their geographical propinquity. I suggested that he (Perelet), Zonn and I consider working together on developing a project to design an ideal regional organization to cope with transboundary water resources-related problems (conflict and cooperation) in the Aral basin.

In discussions with Igor Zonn, the issue came up about how Russians appear to have been officially excluded from Aral Sea research activities within the region. Zonn says much of the scientific information (however reliable) is in fact outside the Central Asian region (in, for example, Russia). He suggested that it seemed foolish to block Russian scientific involvement in the Aral region's environmental assessments, despite existing political sensitivities and animosities of Central Asian governments toward Moscow.

Zonn and I tried unsuccessfully to contact Leonid Elpiner, who had just that day returned from an environmental health conference in the US. He has contributed to a new multi-authored book on the health aspects of the Aral Crisis (only 500 copies were printed in Russian). Zonn got three copies and gave me one; he will have it translated quickly (by mid-June) for the GIF-Japan. Zonn feels that the Aral problem is mainly a political one and that the interstate competition is over water quantity for each republic. He said that the Tajiks will expand their irrigated acreage and that the Turkmen are trying to quietly and quickly finish the last few hundred kilometers of the Karakum Canal (also called the Lenin Canal, recently renamed the Nyazov Canal after Turkmenistan's president). At present, ~15km³ of water is diverted to Turkmenistan's 1100 km Karakum Canal. He felt that little, if any, attention was being given to the drainage needs of the soils on the plateau in Southwest Turkmenistan toward which the last leg of the Canal was being constructed. He felt that in three to five years or so the plateau's soils will become salinized.

[NB: Moses Sarkisov, whom I would later visit in Turkmenistan, has been involved with earlier development, planning, and construction of parts of the Karakum Canal. When he was with us in the US as a member of the Soviet team for the CARP Project, he felt the Canal had minor (not major) environmental problems and that engineering could solve those problems. He has recently spent time helping Iran develop its water resources.]

The Bank Mission - Some Observations (as of 26 May)
Where Have All the Leaders Gone? (my title)

The joint (UNEP/UNDP/World Bank) mission team (about 20 members) is being coordinated by Jeremy Berkoff, a Bank person based in his hotel room in Tashkent at the Hotel Uzbekistan. He was responsible for greeting and providing some orientation to new mission members as they arrived, in the absence of *all* other project leaders (advisers Rathnam [task leader], Kirmani [mission adviser], Wildeman [mission leader]) who are off visiting other republics. Jeremy is not particularly pleased with the organization of the mission, noting that it is too large and that its members were arriving at different times instead of arriving simultaneously. Jeremy is energetic and appears to have a strong idea of *how* the mission teams should be operating. He has noted to me and to Thornton that the joint mission's objectives come first and foremost (e.g., gather information for the Bank's assessment of Phase 1, identify the high priority emergency responses to the Aral disaster zone). This information, he noted, could be used for other (UNEP) purposes afterward.

The mission, however, is in chaos. I was told it was very atypical of Bank missions. While Berkoff was recruited to manage the project only a few weeks before going into the field, he was the only one (I believe) who had been involved in a project in the region before this mission (this was his fourth visit since last summer). He has been involved in a World Bank "cotton" project in Uzbekistan. Rathnam had been on the first Bank mission to the region in September 1992. It appears that no one else on the mission (all consultants, except me) has had any experience directly or indirectly with this region. Basic background information, to my knowledge, had not been given to consultants in advance of the trip to the region. The historical account of the region's problems has apparently not been provided to them. Jeremy did compile a small library in his room and made a list available, but as of halfway through the mission few requested to see any of the papers. He was willing to xerox any paper requested but apparently few were, as of this time. Thus, it seems to me that many of the discussions are based on what I would consider simple (i.e., naive) questions that have probably been asked a hundred times (e.g., what is the population here? how do you process waste? why don't you put the drainage water directly into the Sea? is it already biological dead?, etc.). Many comments by mission members evolved around analogies related to foreign areas in which they've previously worked. It was difficult to ascertain, for example, the appropriateness or relevance of comparisons of waste treatment in an Indian village to those of an Uzbek one.

Consultants, most of whom are either Bank personnel or long-term Bank consultants, are being sent to talk to government-sanctioned institutes, centers, and ministries. The Chairman of the Committee for Nature Protection in Uzbekistan (Khabibulayev) is responsible for setting up meetings and contacts for the mission members. The Bank goes through this Committee to get to (or to identify) appropriate interviewees. Unsanctioned groups (and

therefore unofficial views) are not to be (officially) heard or sought. People are being sent to ask questions, gather information from these agencies. Assignments are constantly shifting, concerns and objectives are unclear (e.g., emergency issues related to the disaster zone are overshadowed by development issues in other parts of Uzbekistan). For example, I was originally assigned to the joint mission's social group, later in Tashkent I was reassigned to the environmental group, only later to be returned to the social group. I was to go to Almati but when Jeremy learned of my past long-term involvement in Turkmenistan, he shifted me to the group going to Ashgabat.

A considerable amount of time has been wasted (for such a short visit), seeing no one, listening to organizational discussions (who goes where, etc.). In addition, my visas for various site visits have not yet been available, and I have been unable to join any of the teams already in the field. I have suggested (on Tuesday) that if I cannot go to Muynak with the group by Thursday, I should probably return home, as I would have nothing to contribute (except the data collection and analysis I undertook prior to the visit and in Moscow) to the plenary session to be held with all groups next Monday to Wednesday next). I do not understand the Bank's problems in getting visas for me for a few reasons: Jan Post (World Bank) arrived and got all city visas (especially Nukus) at the Tashkent Airport right away. My visas (even for Tashkent) were apparently not arranged in advance. (When I arrived, they did not take me to get the visa at the airport where the Bank *and* the Foreign Ministry said it would be.) Visas, according to Jeremy, must be issued separately and sequentially: Tashkent, Nukus, and then they needed a passport to get the airline tickets to Nukus. It's a nightmare. I do not understand why the Bank did not ask for special assistance to cut red tape for the mission members, in exchange for a serious effort by the Bank to help resolve the Aral Sea crisis.

There has been considerable in-fighting among Bank and ex-Bank officials who were now consultants on the mission. It can only be called a nightmare. Some Bank people (e.g., Post) were more or less ordered to Central Asia, a region which apparently has only recently become a political priority for the Bank. Everywhere, I hear that the *real* level of interest at the Bank in the CAR (Central Asian Republics) is only marginal (Rathnam, I heard, feels as if he has been sent to the end of the earth; others are being pulled off their primary tasks with little advanced information about the region). To me, the Bank is here for the wrong reasons (to appear to be interested in the region), with (I would suggest as of today) for the most part the wrong people.

Priority setting and identification of problem areas in the disaster zone by the 20 or so mission members could probably have been carried out just as well by a couple of people (or a CAR person and another person in the US or Europe) in a couple of months, by assessing existing meeting reports (from different countries and written in different languages) and agreements. This could have been verified by extended site visits to the CAR.

It seems that the Bank appears to be here in order to establish a "negative" sphere of influence. By that, I mean the Bank MUST get involved, albeit reluctantly, so as to minimize the activities of other agencies in the region. The Bank does not want to be here. With this negative goal in mind, the Bank's presence, therefore, should not hinder other agencies from working on development issues in the region. While the joint mission through the World Bank is calling on the independent CAR states to work together, it appears that the World Bank itself cannot work with other groups on any basis of equality (e.g., with UNEP or UNDP).

In my interview sessions thus far, health factors in the Aral Sea disaster zone have not been seriously mentioned. Of primary importance to CAR states appears to be water quantity, followed by water quality (but it is not a close second), and a distant third are human health considerations. Environmental health conditions, however, seem to be mentioned by government officials in order to generate interest and support for projects they really want to undertake. I propose that these Uzbek agencies (like the World Bank) be held to deliver on what they say they want to resolve -- the human health conditions in the disaster zone. By the way, Karakalpakstan is seldom mentioned by name, and it is missing from the Bank's map of the region. I mentioned this *grave* political oversight to Rathnam, who dismissed it by saying the map is correct, as it was supplied by the Bank's legal office!

It is quite clear, after discussions with many Bank people, that morale at the Bank is low; Bank leadership is apparently providing little or no direction and no vision. Some attribute this to the end of the Cold War, in which the Bank was quite partisan. (It portrays itself as having been a hostage to the US/West.) Before, it was easy to give out funds -- go to the allies of your allies. Now, it is even more difficult, because the yardstick is no longer solely political, but depends on a country's or a project's potential for development. This appears to be a new ballgame for Bank people.

The UNEP factor -- the bottom line seems to be as follows: UNEP and UNDP involvement in the joint mission is only tolerated but not actively supported or favored. Rathnam does not like (the way I heard it) either Rast or El-Habr. I heard that he will tend to say the opposite of what those two think. It is clear that little was done for Jeff Thornton and me to carry out any role of any importance in this mission. Our meetings to date have been inconsequential and are just filling our time. I just don't understand the way the Bank operates. There are some good people on this mission, but together the mission appears doomed to anoint a Central Asian government-sponsored "wish list" of projects. The mission's activities are clearly Uzbekistan-oriented, although other republics have been visited by World Bank staff and joint mission staff.

Wednesday, 26 May -- More Observations

It seems that the Bank personnel (and consultants) have already formed strong opinions about what works and what doesn't work in the CARs. For example, Jeremy Berkoff *strongly* believes that the BVOs (the Amudarya and the Syrdarya river basin authorities) are among the best in the world, and that they should be giving lessons to others, not taking them. He does not understand why, for example, Micklin hadn't mentioned them in his articles, and Jeremy, therefore, discounts Micklin's work. [NB: Jeremy's views changed somewhat after he met with Micklin, who in a recent article mentioned in passing the BVOs.] But I've never seen them mentioned either in Micklin's work, until fairly recently. They were created about 1987 and were part of the Soviet bureaucracy only to be set loose after the breakup of the Soviet Union. It was a sink or swim for the BVOs. According to Jeremy, they are swimming. The French participant to the mission, however, wonders if they will survive as they are (with any authority) in a few years. Another Bank mission member, Jeffrey Matthews, has returned from Uzbekistan's Hydromet office, praising it to the hilt (I had never heard such praise about *any* meteorological service). He had not been to Uzbekistan before. His view is based on an impression following discussions with them.

The joint mission appears to be made up of people asking questions of groups that are supported or at least sanctioned by the CAR governments. Even the NGOs we have been sent to talk to are really government created and backed NGOs (e.g., ECOSAN) . The information gathered in these meetings has been very anecdotal, with people basically telling us about their wish lists for projects that serve *their* specific sector or organization's interest. It is quite difficult to get them to take a broader view to get at the priorities of the disaster zone (but it is possible, when they become more personal and less official, but it takes time to develop such a rapport). I also feel that the purpose (objectives, goals) of the joint mission has not been made clear by the Uzbekistan coordinators to the groups we visited. Are we here to develop priorities for the next three years that alleviate some of the most egregious impacts of a deterioration of the basin's ecosystem, or are we here to develop projects with possible development payoffs in the next few years but only in the next few decades? Are funds to be made available for humanitarian purposes, or are they in the form of loans to be paid back? (We need to know this while developing the first phase of the joint mission's plan.) I would propose that these governments (and potential funding agencies) manage the entire Aral Sea basin as though it were an ecosystem (like the Great Lakes).

Also, Jeremy Berkoff absolutely feels that irrigation of cotton in Uzbekistan is not the problem here. He says the system is efficient and cotton/rice are appropriate for this area. He is involved in a Bank study on Uzbek cotton production. Of course, this view goes against the predominant view that cotton production has had major adverse impacts on the social, economic, and ecological systems.

Today I visited another NGO -- a large organization which claims about 4 million members (half adult, half young people, by their definition). This organization has been in existence since the early 1960s and is run hierarchically with local groups reporting within a hierarchical framework to district groups which in turn report to a central body in Tashkent. The organization's congress votes in communist fashion for the organization's leaders. The organization focuses on preserving nature, animals, etc. It has activities "around" the Aral Sea but not specifically about it. Several 10-20 minute 36mm films were produced between the late 1960s and the early 1990s (but now they say there is no more money to produce such films but would like funds to continue to do so). Their films are still shown on TV each month. They focus not on cotton per se but governmental pollution caused by cotton production, OR on the pollution of the Amudarya. Each film costs about 1 million rubles to produce -- ~\$1000 (at May 1993 prices).

The Director of this particular NGO had been the VP of Uzbekistan in the 1960s. He said that his organization does not get any financial support from the government and that the organization lives and operates off payments collected from its members. I asked him to provide me with a set of priorities for the Aral disaster zone. He said that *human health* is the most important, followed by the need for *pure water*, and then by the need for *pure food*. Like others, he suggested that the human gene pool in the region is being destroyed (women and children), and that the number of cases of children born with various kinds of deformities has sharply increased. He said government officials in Uzbekistan have no notion of what to do with the Aral Sea.

Ani (the UNDP representative to the joint mission) said she had read the CAR water agreements and noted that there was no mention in these agreements of sanctions for noncompliance; they were only statements of intent.

Thursday, 27 May -- More Impressions

Ani and I went to Nukus to join up with the mission members already there. We were told we would be met and that the Karakalpak officials knew we were coming to town. However, we were not met by anyone from the joint mission at the airport in Nukus in Karakalpakstan. We had difficulty finding out where we were supposed to stay or where the mission team was staying. A young policeman or airport guard at the Nukus airport was given permission by his superior to accompany us to town to act as an interpreter and to help us find the rest of the members of the Bank mission. An official did show up at the airport (by accident) and he took us to a government building where we met Mr. Reimov. There it was decided to put us up at the Tashkent Hotel. By luck, we met environmentalist Yusup Kamelov who also by coincidence had come to the government building (Aral Vodstroj) when we were with Reimov trying to figure out what to do. I had been given Kamelov's name by Eric Sievers of ISAR as an important environmental NGO contact in Nukus. I had

tried to call him from Tashkent but could not make the telephone connection. He saved the day for me and Ani from being wasted, as we would have had to wait at the hotel for the joint mission to return from their flight to Muynak. He drove us to Kunya Urgench across the Uzbek-Turkmen border in Turkmenistan. We did so without visas and without incident. Yusup drove and Asiya came along with us (she is the Secretary of the Science Institute -- I have her card with her affiliation). At night (≈10:30 pm) I planned to meet with Yusup at the Hotel. Wildeman and his wife showed up in Ani's room. (They were not staying in the hotel. They had been put up with the rest of the team in a government guest house, which was like a zero-star hotel.) We had a brief discussion with them; his wife said they saw no signs of health disaster during the trip to Muynak; they saw problems but no disaster. They said the relationship between Karakalpakstan and Uzbekistan was one of almost independence and equality!! I said NO; no independence and definitely no quality -- Karakalpak political leaders were still afraid of Uzbek decisionmakers in Tashkent. Wildeman's wife said the relationship between Karakalpakstan and Uzbekistan was like that between Quebec and Canada (a clear misreading of the political situation). I was very worried by these and similar comments. The tour (officially arranged, with toasting, dinners and all) was clearly producing some false notions about the Aral region. The Wildemans seemed to be receptive to our (my, Ani's and Yusup's) comments. Yusup then showed up at the hotel to meet me and he joined our group. He listened to the discussions with the Wildemans as Ani and I tried to focus on the disaster zone and Phase 1 of the Bank mission's plan of action. I asked Yusup to give his views as a Karakalpak. Wildeman seemed impressed. Yusup proposed the setting up of an environmental bank, linking credit to local farmers and organizations to environmentally friendly activities. He noted that Yusup's environmental bank idea was a good one that could possibly be supported at a donor's pledging conference.

During our discussions, Wildeman also referred to the mission as a *joint* activity (World Bank, UNDP, UNEP). This is something that Jeremy Berkoff did not do. Wildeman kept saying the mission needed to identify "fundable" projects and that only a few weeks remained to do so. He kept suggesting that we (Anie, Yusup and I) develop a concrete proposal about NGOs, taking as much time in Nukus as needed. He was clearly frustrated ten days or so into the mission. He was very sensitive to the comment by governments of the Central Asian Republics' representatives that although 131 international missions had come to the CARs, not one project of note has been started. (NB: I thought he was overly sensitive to this comment, which was being used by governments to expedite donor responses.) Wildeman wants to have projects on the table in two weeks by the time the joint mission ends. It seems to me that he appears to be receptive to any reasonable suggestions. Yusup, by coincidence of showing up at the hotel to meet with Ani and me, was put in a position to provide some. I told Wildeman that the mission's goal (e.g., disaster zone vs. long-term planning) is not clear and that I chose to focus on the disaster zone and emergency projects that would focus on the highest-priority issues, as suggested in my Terms of Reference (TOR). I proposed that the health of women and children be a high priority to preserve the genetic stock of the

Karakalpak people. Later Yusup said the same about the "gene fund" (e.g., the human genetic base). The next priority would then be to provide pure water and then pure (e.g., untainted) food. We did not get to talk that evening about the importance of stabilizing the exposed Aral seabed.

Friday, 28 May -- More about the Mission

I have been quite *surprised* by how some of the World Bank people (and their consultants) I have met have so quickly formed "instant expertise" and opinions about a region they have never known or seen. (I'm not saying this out of arrogance, having been in CARs several times. I am saying it out of concern.) I don't feel they have the expertise about the uniqueness of this region to make such bold statements based on a few impressions and notions. The Bank, apparently, sent in advance no background history papers to anyone, but they all would have benefitted from such readings. This was a major oversight (or shortcoming) of this Bank mission's organizers. Basic information about the region, the history of the problems, etc., is not available, except in Jeremy's hotel room. He circulated a list of papers he brought with him but said (as of today) very few of them had been requested by team mission members. Some will likely read them after the mission has ended, but it won't help them now. For example, one Dutch Bank member asked: why not just let the sea go (as if this obvious view had not been previously raised; OR, why not just dump drainage water into the sea, since it's dead already!) He raised these issues not knowing what has been proposed in the past and what suggestions had already been made. As another example, Wildeman had quickly concluded that there was no disaster zone, because he didn't see any handicapped kids in the streets of Muynak as they drove around the area. These are too simplistic. Time is needed to explain why the disaster zone should be taken seriously. As a result, time is being used in on-the-job training to bring mission members up to speed.

Friday afternoon, 28 May -- Continued

I became really concerned today about the way the mission is operating. While all involved are experts on something, no one knows the region, its history, even the history of the problem or about the USSR/FSU/CAR linkages. What concerns me is that people are offering advice and, potentially, money for projects based on their incomplete understanding of the region or its problems. There are many experts within Turkmenistan, Uzbekistan and Tajikistan who have dealt with, for example, problems of soil stabilization in arid environments and have even given training courses for UNEP on desertification control through land reclamation. Yet, I hear suggestions from mission members with little previous awareness of this problem or attempts within the region to cope with it about the kinds of vegetation that could be used to fix blowing sands in the exposed seabed region. In sum, it worries me that the joint mission may be fulfilling one of Murphy's Laws that "experts come from out of town." I've been here almost two dozen times and I don't feel comfortable

making such suggestions about how to best fix soils or plant trees *and* I have participated in numerous such training courses, including field experiments. Are we giving them reliable advice? I doubt it.

More Impressions -- Saturday, 29 May and Sunday, 30 May (morning)

During the mission members' meeting with the Chairman of the Karakalpakstan Supreme Soviet, World Bank mission leader Wildeman presented priorities (see notes) for an action plan for a Phase 1 response to the disaster zone. I was really surprised at this, because the mission, which was less than half way through its task of gathering proposed priorities from a variety of sources had not even met as a group. Yet, Wildeman was already presenting priorities to Karakalpakstan's leaders. The *first priority* was drinking water to the population. He also mentioned that \$10-15 million US would go to support the modernization of the BVOs. So, not only were priorities being set, but money was being assigned to each of these projects. This meeting suggested to me that the Bank knows what it wants to do and that the joint mission is to provide a degree of legitimacy to enable the Bank to do what it wants to do. Later in the day, during our brief visit to Muymak to see some on-site attempts at land reclamation in the dried sea bottom, we discussed reforestation and sand dune fixation. There on the spot, Wildeman developed a \$14 million program. Could reforestation work on such saline soils? Who knows? The scientists from the Karakalpakstan Academy of Science said that they were unfamiliar with other groups around the world or in other Central Asian Republics that had carried out research or development demonstration projects trying to stabilize blowing dust and sand. The density of vegetation was a little better than sparse, because that's what the moisture in the region could support. There was wildlife, rodents, insects, and lizards. Cows roamed freely, grazing on the desert vegetation.

Once again, some of the questions asked reflected an unfamiliarity with the region's social or environmental conditions. For example, Wildeman said, "why not just plow down to 30cm and turn the soils as had been done in the Canadian prairies in the early years?" In other words, turn under the salt layer. But there are still problems that would develop, as there is a clay layer below. Good soils would blow, salt would eventually rise to the top. Again, it seems like on-the-job training for mission members, as they pick up basic facts about the region. As another example of this, Jan Post, a Bank Ecologist, asked, "why build a lake or reservoir and keep fish in it, why not just develop fish farms (ponds)?" This was asked without knowing the societal purposes that these reservoirs serve to a community.

From the airplane on the flight to Muynak you could see numerous flooded fields. The soils were being flushed (as can be seen in my photos). I wasn't sure what was grown in these fields; some said rice, others said alfalfa (as fodder), still others said cotton. Evaporation losses from flushing fields must be great (they are flushed up to four times to

prepare them for the growing season). [Question: is this the only way to flush salts from the soils?]

It seems that there is still no clear view of the roles of UNEP and UNDP within this joint World Bank/UNDP/UNEP mission. Berkoff says these agencies are subordinate to the World Bank on the mission (not equal partners). Wildeman, however, does refer to it as a joint mission. He also knows and has said that the UN system has no money (i.e., power) but the Bank does. Ellen Brown, one of the "independent" consultants (the wife of a 17-year Bank official and a social anthropologist) told Thornton not to talk about the Bank in a negative way (e.g., stifle criticism), and don't bring up the "joint" nature of the mission or the UN participation. Thornton said to me that Berkoff noted the wrap-up session set for Almaty would be a closed session and that the location might change. He had intimated to Jeff that El-Habr might not be invited. From the way that UNEP and UNDP have been treated, it seems like Rathnam, the mission task leader, has no interest in input from me, Thornton, or Ani (UNDP).

A considerable amount of time is spent eating. The habit of whole evenings consumed in ceremony continues from the old Communist regime. Ani and I did not go to their banquet in Nukus. Instead, we chose to hold discussions with Yusup and Asiya. The next day those on the mission who went to the official banquet spoke about the experience (it went from 4:30 to 9:30 pm). Few, however, remembered what had happened the night before. Some had to be carried (literally) to the car. Others could not recall what had happened at the party. These activities are a waste of time (you can say they build friendship, solidarity, working relationships, etc., but I've been to scores of them, and the residual effects of such "comradery" are nil). You can get better results by staying within the bounds of good reason and coming up with good projects. While the Bank people complained about the time spent in formal meals, they did not seem to use their authority to reduce that time. They acknowledged that time for the mission was short but were reluctant to offend the governments of the CARs. That time might have been used, for example, to bring all the mission team members together to discuss activities, priorities, findings, objectives, etc. I still do not know what the activities or goals of the smaller groups within the framework of the joint mission are. My working group is led by Cook, a 27-year veteran Bank water specialist who probably knew in advance what the Bank's program for the CARs for the disaster zone will look like. I never had a discussion of more than a few minutes with him.

I continue to find it frustrating how anecdotal much of the information we have gathered seems to be, and how that information might be used to justify large sums of money for developing projects that might be of marginal value, but are of interest to one powerful agency, such as the BVOs, or another. For example, is vegetation amelioration of the "dead zone" of exposed seabed a feasible action? Is it a valid assumption that all you need to do is

to bring into the region a couple of "Chinese experts" and planting equipment, and the desired vegetation belts will be constructed?

No one in the Bank group asked the Karakalpak scientists about the success rate of planting such vegetation. For example, if you put in 1,000 plants per hectare, how many would survive the harsh environment: no one asked about survival rates. When I asked, I found out it would be on the order of about 60% (a guess by a Karakalpak scientist). Will it work in the short term? Will it combat desertification processes? Who knows? Wildeman says here's the money, we can buy the expertise to plant some kind of vegetation (a technological fix) -- maybe it will work, maybe it won't, but the Bank will have done its job. It will have arranged for projects that total \$50-75 million for Phase 1. The same questions can be raised about bringing potable water to Nukus and the region. No attempt was made to evaluate what the impact or success might be in the long run. No attempt was made (or suggested) to deal with the at-risk population. Health was not mentioned by Wildeman as a high priority in Phase 1, unless the Bank's people see all problems stemming from the water supply (and not the soils, aerosols, or persistent pesticides).

The bottom line here is that I don't know how the Bank works. Are people rewarded for setting up activities? Are they rewarded for their long-term success? Is there accountability of Bank staff for the projects they set up?

Monday, 31 May -- Observations

I met Rathnam last night for the first time. We sat at the same dinner table in the hotel in Tashkent. He was pretty defensive about the mission's operations and he was very "slick" at answering questions about this "joint" activity, its organization, and its objectives. He does not seem really interested in the "joint" aspect of the mission but in the Bank as being *the* key actor with others providing legitimacy. After my conversation with him, I had a feeling that another "Edsel" may be in the making. In our conversation, Rathnam also provided further information about Wildeman's comments on the \$50 million "grants" to the region. He said that if donors at a pledging conference didn't come up with \$50 million but, say, only \$20 million, then the Bank would provide the \$30 million as soft credit or loans!! Rathnam and I then had a long argument about the notion of regionalism, during which I suggested that the joint mission (and the Bank) should foster within the Central Asian Republics. He said the Bank was already doing so, by creating regional organizations such as the BVOs. However, I was talking about creating "a sense of belonging to the same region" or a recognition that they are in the same ecological boat and not just a geographiclaly defined region.

To date, the members of the mission have gone either alone or in pairs to different agencies or organizations. On Sunday morning (30 May) for about 45 minutes in Nukus after

breakfast, we sat down together as a group (not all were present, but no Uzbeks were around) to discuss for the first time in general the problems of developing this region. One mission consultant (Tariq) felt that the approach taken to date with each consultant going his/her own way to gather information was not particularly useful and that we needed more interaction and discussion as a group. This morning we will meet at the World Bank in Tashkent. It's an Uzbek holiday, so all government offices are officially closed.

Monday, 31 May

At the World Bank Office in Tashkent

Notes to Date on an Interim Review of World Bank Joint Mission (as of 31 May)

Bank representatives gave an overview of their recent trip. They started in Urgench, visited Tuyamuyun reservoir (the water quality here is about 4g/liter); there they will isolate 550 million m³ (later to go up to 900 million) in clean water in the Kaparas reservoir which will be used for Karakalpakstan and Turkmenistan (at an estimated cost of about \$15 million). They then went to Tashauz in the Aral disaster zone within Turkmenistan; they supported the need to bring into the region potable water, because Tashauz's water quality poor. We then visited Kunya Urgench (also in Turkmenistan) -- *potable water was the Number One priority; a second priority was soil stabilization*. The mission then visited Nukus to ask about priorities: overwhelmingly, they targeted potable water and gave a high priority to complete sewerage works, about 15 km. The quality of existing water-related and sewerage-related engineering works is considered very poor.

The group then visited Muynak and overflowed the delta at a height of about 500 feet. They spoke of converting the Amudarya delta into wetlands. The locals (said Bank officials) did not know how to do this. Karakalpakstan government representatives felt that the sea had become a sewer, more correctly, it had become Karakalpakstan's sewer. Muynak (with 15,000 remaining people and another 15,000 in collectives in the rural areas) wanted potable water using reverse osmosis plants.

I joined the mission when it returned to Nukus where the salinity of the drinking water is 2-4g/liter -- *potable water was the highest priority* to officials in Nukus. They also spoke of *soil stabilization*. We flew back to Muynak on a Bank-chartered plane. The scientists in Karakalpakstan said they could plant 10,000 ha/year, while the sea itself is retreating at 5,000 ha/year. [\$35,000/ha/year on the exposed seabed of the receding Aral Sea. The total cost of soil stabilization could be as high as \$3 million.] Yet, there are about 2 million hectares of exposed seabed or delta to be stabilized.

The actual seabed is so saline that apparently no endemic species can survive. The people rely on winds to remove the salts. They have asked the joint mission to support the

development of a Karakalpakstan/Turkmenistan/Kurya Urgench potable water network. (The estimated cost would be about \$75 million.) To develop sewers in Nukus would cost about \$5 million.

They are very interested in developing wetlands, maybe polders. They would like experts from the World Bank to help them develop soil stabilization programs and to identify new cropping (irrigation) techniques. These suggestions, however, are in fact national, not regional, programs. They do not even encourage riparian states' cooperation and may even prompt the opposite reaction. Wildeman feels that we must give them potable water; they are in need of potable water (salinity in regional water supplies can be as high as 6-10 g/liter). The "visible" sightings suggest that the region has a relatively healthy population with no obvious signs of malnutrition, although it probably exists. [Compare disaster zone data with Turkmenistan's health statistics, because Turkmenistan is about 80-90% desert.] People argue respiratory illnesses could come from desert's sands. From a humanitarian point of view it is very sad; as a "bankable" situation, Wildeman is not convinced. Its statistics are similar to other Third World countries. We must address the issue of potable water.

Government officials in Karakalpakstan all expressed interest in micro-enterprise ventures.

Jan Post said that we are dealing only with symptoms in the disaster zone, not the crisis' cause. From an ecological point of view, Post argued that there was no good argument to save the sea. There is virtually nothing left. The aquatic fauna was replaced by reintroduced species. There is science in the region. We must get them to share it. We need to complement it with training in new technologies/methods. The influence of the Aral Sea on people in the surrounding area is not clear. Post remarked about his observation of vegetation on mounds of sand -- he felt there was no understanding of this phenomenon. Where does the dust or sand come from? He asserted that the disaster zone's water problem is one of the mixing of irrigation and drainage water. *He said that the UNEP diagnostic report has blown the Aral situation out of proportion.* He said that we need to focus on drainage and on hygiene.

If you ask them why save the deltas, they say it is to bring back fish, but it isn't just to do that; it is also muskrats and other fauna and flora. It's a human-induced situation that has occurred within a generation or so. That's why it has captured everyone's attention. 3-4-5 million people living in awful conditions vis-a-vis drinking water; 50-50% split, rural and urban. The overriding issue is regional. Distances are vast, and 85% of the problem is regional.

Kaparas reservoir is being singled out. Tariq: We are here for the Aral Crisis. The two Bank missions have found that the water supply and sanitation sectors are in need of

assistance, like other developing countries. Regardless of the level or degree of the crisis, there is a need for Bank assistance.

Ani (UNDP): Regarding health: with the Minister of Health, I got data on kidney disease; therefore, there are measurable health effects. Karakalpak statistics are worse than for Uzbekistan. They have no capability for producing medicines. I met with NGOS, but they are discouraged by the current political conditions. For instance, they can't get telephone lines from the government. There are a lot of political activities.

Wildeman: Yusup Kamalov's NGO has been looking for \$3,000 to hold a conference in August in Nukus. It is indicative of the local desire to get something going. [NB: The Bank didn't offer to help find these funds, but the UNDP and UNEP mission members did offer.]

Jeff Thornton: There's a gap between the government and the people; for example, people haven't been involved in the forest development, so they cut down trees for firewood. The production mentality seems to be absolute; unused land is being devoted to agriculture. Every drop of water that could be used for agriculture will be blocked from reaching the sea. The prevailing attitude is that the sea is dead; you can't rob agriculture of water or jobs. Create fish ponds. Use potable water projects to foster "villagization."

Ellen Brown: Look at the people on the land. 50% of the population is rural; this population is clustered in state farms. There are three target populations: urban area, large clustered rural areas, and about 470,000 people who drink contaminated canal and groundwater and are difficult to access. Distinguish among the populations along the river -- there is a dense population in the upper reaches of the Amudarya. Look at the 30,000 people in Muynak. If you solve the Muynak problem, then you can deal with the rest. Two major diseases: kidney disease and anemia (a study by Crosslink, an NGO). *Priorities are 1) potable water, and 2) money: these people have no money for options; they can't move or work, etc.*

Wildeman: All is not well between Karakalpakstan and Uzbekistan. "We are the missionaries of this river basin." "We are the blacks of Uzbek society," according to the Vice Prime Minister of Karakalpakstan. Riparian cooperation could blow apart at any moment.

Rathnam: (1) This is not a Bank mission; it's a joint mission using Bank methodology to identify and support the joint mission. The Bank is a lender of last resort. (2) Out of the 5 riparian countries, Tajikistan is not yet a member of the World Bank. Uzbek scientist Razakov has developed specifications for polder development along the receding Aral shore. (4) On the health issues, Dr. Sencer (from a USA institution in Massachusetts) did a report on the state of health and found the statistics to be questionable. (NB: Rathnam said he would

get a copy of this to the team members, but none was given out. We should try to get this report because Rathnam is relying on its results, challenging others to discredit it.)

Kirman (Adviser to the joint mission): Priorities are consistent with what Senger found. Employment creation: We should focus more on this because the resource base in the area is poor. Kirman supports regional projects: the area has been recognized by the international community as a disaster area. It is also recognized that Karakalpakstan is at the tail end of a regional irrigation system. Take advantage of existing support and sympathy to do something in the area, but don't try to give the impression that all their suggestions are taken as regional ones. [NB: The Bank's mission is regional, and they have a problem distinguishing between what constitutes a national project as opposed to a regional one.] We need not go back over the history; UNEP flagged the situation as a crisis. It's quite a large program we are discussing, but these are the needs of the region. We do not know as yet how much will be available as a grant. We should not include anything in the 3-year program that cannot be completed in that time (even feasibility studies). How much of \$50 million will go to the disaster area (\$40 million) and how much to BVOs (\$10 million)? How much environmental work will we be doing, or shall we only focus on water aspects? What attention should we pay to environmental degradation issues?

Robert Rangely (UK consultant to the Bank for the joint mission): Lift a stone and find a scorpion: that's the Aral Sea situation. This is a classic situation. It has the same problems as when one uses a river in an arid area. These problems exist everywhere: The irrigation drainage is going back into the rivers, soils leached in the irrigation system and salt gets back into the river. The urgent things: *deal with the salt balance in the river*; look at the Aral Sea Crisis and environmental things, like (1) the loss of fisheries, (2) navigation, (3) littoral ecosystem degradation, and (4) aeolian action. (1) and (2) are gone; the sea will go down. One problem with the Bank's March 1993 report is that it gives hope for stabilization. Can replace (1) and (2). As for (3) in the Syrdarya with the loss of annual flooding, trees have died out. (4) aeolian salt -- work began in the 1970s; we should focus on this issue. (NB: Golytzy'n's Institute for Atmospheric Physics has done collaborative research with US scientists on this topic.) Focus on the ecosystem surrounding the sea, and on issues related to the fall of the level of the Aral Sea. Call for regional environmental action. With regard to the BVOs, Rangely liked the World Bank March 1993 report for maintaining international collaboration for focusing on regional over national projects. He made reference for analogies to the Mekong River and Lake Chad: Mekong has had trouble because national projects were offered instead of truly regional ones. The same is true for Lake Chad.

Kirman: on the September 1992 Bank (not joint) mission: the only item on the government agenda was to save the Aral Sea. Even the newly developed Aral Sea Fund is supposed to save the sea. The Interstate Commission is also supposed to save the sea. We (the Bank) introduced the word stabilization, we really meant stabilizing the environment

around the sea, not necessarily just stabilizing the level of the sea. First questions: What happens if the sea dies? In reality, the sea will likely die. Don't focus on fixing the sea on any level. BVOs may generate scenarios on water amounts into the sea. *Use the sea as a symbol for action.*

Jeremy Berkoff: The BVOs have developed scenarios. The Sea will stabilize at somewhere between 22 to 28 meters with considerably more exposed seabed. They are treating the sea as a Sixth Central Asian Republic (the Aral Sea deltas). They now call the water that reaches to the deltas, and possibly for polders, if developed in the future, environmental flows. There is water going into the sea with high salt content, and the Sea will likely become a salt sink. The concept under the USSR, which allowed substantial amounts of water to go into the sea, will be abandoned. There are misperceptions about irrigation. In economic terms, the irrigation is inefficient. There are power boosts at Karshi steppe, etc., for lifting water, and marginal soils are being developed. Marginal areas expansion is being proposed. The efficiency of irrigation is improving. For example, allocation to cotton fields have measurably changed in the last five years: 17,600 m³/ha to 12,600 m³/ha. The BVOs have rationed water. There is no main collector drain yet; politicians did not want to provide large sums of money for it, although engineers have recommended it. Irrigation in the region covered about 1 million ha at the turn of this century (1900); it was 4 million ha by 1960; and 7.5 million ha by 1992. The rice fields require flooding to create a freshwater lense so rice can be grown. There is no other use for this land. You must flush the soils repeatedly because you can't dump the salts. There is no place to push salts out of the system. GTZ said that Germany is not buying into the Aral Crisis, until the governments address the irrigation-related issues. Jeremy also noted that the World Bank Cotton Improvement Program in Uzbekistan is a country program, not a regional one.

Mahmoud Termazzi: All these solutions will not last for the long term; a reverse osmosis plant is an option; use of freshwater lenses; pump out the saline groundwater and pump in fresh water; complete pipes; flush reservoir. This is the makings of a study; identify a project to be completed in 3 years.

Wildeman: "Developing designs for water resources, polders, soil stabilization, microenterprises." We need to put consultants into the field; Question: how do we convert this to an action plan?

Rathnam: Agrees on the priority list. The 5 CAR governments must support the program; GEF can find some components to fund. Others bilateral arrangements will set up trust funds (e.g., the Dutch); they know how and what they want to fund (e.g., the UK). At the end of our joint mission (in June or July), donors will get a list of priorities.

Wildeman: If we go the normal route for consultants, it will take until October 1993. If we go to a sole source, bilateral consulting firm, it can take place quickly.

Kirman: Of the projects mentioned, you need some costs attached and priorities established. Get some consultants that will work with the local scientists to refine the projects to be completed in 3 years. We can't just say "study..."; we must say "assessment."

Termazzi: The joint mission's Phase 1 report is an inception report. Whatever we do should fit into a long-term program. Parts of these zones should be created as protected zones. Can you separate a water supply study from a sewage study?

Cook: What can we do in the next 3 years without compromising options? We could also do a groundwater activity for the rural area.

Wildeman: (1) micro-enterprise development (a few consultants over the summer), could have a report by October. Mistakes will be made, but it's OK, there will be a perception of action as a result of our mission. (2) soil stabilization (4 or 5 people from countries with experience: Israel, Australia, etc. to stabilize 10,000 ha/year near Muynak). (3) Polders (lots of local engineering, and the Dutch could evaluate existing works and set up a project on a pilot basis). (4) Water (Use a firm. There's a German engineering firm). Nukus wants water from Kaparas -- this is a Turkmen-Uzbek shared activity.

Rathnam: Are there things we can complete in Nukus projects? We have to avoid supporting only one country as opposed to a supporting regional project. Complete what can be done immediately. There's no central agency in the CAR region to provide us with regional priorities. We must focus on the 3-year limit of Phase 1. For political credibility we must complete their needs [regional environmental activities or projects]. (NB: How about making the region's governments aware of the environmental limits to growth?)

Rangely: Should we take a hard look at the overall situation? It will get worse, not better. The situation is dynamic. How will individual projects fit into an overall study (a framework) for microprojects? Our knowledge of major regional or national institutions is very weak. There will be long-term strategies put forth to Central Asia's Interstate Council. Every 5 years they will likely update those strategies.

Ani (UNDP): Agreements do not assure that funds will go to Karakalpakstan as having a right to clean water.

Wildeman: to Ani and Mickey: "In 2 days, write up a TOR for microenterprise development in generic terms for 5 CARs. Give man-month requirements (e.g., level of effort). Another group will deal with water quality."

Kirman: Whether and to what extent do we wish to introduce policy issues (water pricing, or the command system [e.g., information must be cleared by higher authorities]). The potable water pricing issue must be discussed with the government. In Kyrgyzstan people are indirectly taxed: low wages, labor, etc. When you raise water supply issues, you have got to look at the whole system and the aggrieved parties should not have to pay while upstream polluters should pay but refuse to do so. In Uzbekistan, there's a new law on water pricing systems; currently, agricultural water is provided at no cost to the user; domestic water carries a very low cost. There is no policy conditionality on a regional basis in Phase 1 to each CAR, but we will ask them to address these programs at the national level. Integrated Pest Management, for example, should be raised to a regional level activity.

Phil Micklin's was then invited in the afternoon to give a presentation to the Bank's joint mission: A former Soviet diversion program was to supply water to Central Asia; an auxiliary purpose was that water would go to the Aral Sea. Micklin is in the initial stages of setting up a GIS for the Aral Sea using satellite imagery from 1973, 1978, 1980, and 1989. He is focusing on the Delta. NATO is interested in a project jointly with Gidromet on the Aral Sea. There is a newly formed Central Asian Research Center (where?), that will be working on health issues. GIF-Japan has an irrigation/agriculture focus (not health). They have an agreement with the 5 CARs. Micklin is looking at the Amudarya and a Japanese scientist is looking at the Syrdarya. Micklin says we might want to invite political, social and economic regional experts with area expertise. There is considerable information available on climate change, dust, drainage, etc., but it does not reside in one place. A literature search would be valuable, and one could then try to compare data. There isn't one set of good streamflow data into the sea. The BVO has consistent data by 10-day periods. Look at the history of agriculture in the region; delta irrigation goes back 3,000 years, and irrigated agriculture systems were more efficient than those used now. If you look at the Aral Sea history, the chance of stabilizing the large Aral Sea (the Southern part) does not appear good. It needs an input of at least 25 km³/year of water over several decades and is not likely to get it.

Kirman to Micklin: In the agreement they planned for 10 km³ (but recently got 24 km³ due to heavy rains). Bank staff members repeatedly say why not let the Sea dry out? A lot of other problems exist in Karakalpakstan and the receding sea is only one of them.

Micklin: Why save the Sea? (1) to reduce salt dust storms; (2) to improve regional climate conditions (Goskomgidromet's report tells of a climate change that has resulted from declining sea level). Where does the dust come from (dust-salt storms)? Viktor Chub can show this. This Center (Goskomgidromet) was the main center for Central Asia. Their computers have broken down; their studies show no evidence of airborne Aral seabed salt reaching Panir Mountain glaciers. About 500 years ago the Sea was lower than today. During a local war, the Amudarya was diverted by Khoresmites to the Sarakamysh

depression. Native endemic varieties are found in the Amudarya and in delta lakes. Should you create polders which are likely to dry up during future periods of low flow?

Wildeman to Micklin: Is there a political commitment to maintain the Sea? The Uzbeks don't care about the Sea; the Karakalpaks care.

Micklin: The government wants to increase irrigation, while reducing cotton acreage. They are growing more. Turkmenistan is expanding irrigated acreage. It would like to see the Aral Sea brought back, but not if they have to give up water. Kazakhstan has the greatest commitment to the Sea. Uzbekistan has a commitment to improve the water supply for human activities. The following changes are directly related to the desiccation of the Aral Sea:

- changes in the groundwater regime
- changes in flooding characteristics
- changes in fish (biological productivity in the sea)
- changes in the desert ecosystems surrounding the Aral Sea
- changes in desert pastures (salt deposition, groundwater) for camels
- changes in animal habitats
- lower levels of the river

Tuesday, 1 June -- Observations

The situation with the Bank's "joint" mission is very fluid. It is clear that different people on the Bank's side of the mission have specific interests and are pushing them -- water, small enterprises, the BVOs, etc. The Bank people are quite backbiting, and there has been considerable bashing of UNEP and of UNDP's regional office head (Malik). The bashing of UNEP seems to focus on its Diagnostic Study.

The Bank's attitude seems to be that failures will occur, mistakes will be made, but our mission and priority list of projects will show that "we" tried to do something. "Our face will have been saved." The Bank representative (Wildeman) feels that the Bank waited too long to take action and now it must do something -- anything. Bank people seem to feel money will buy them whatever objectives they want to fulfill. I still have the feeling that the visual observations and anecdotal information are dominating some of the views about the mission's roles and goals. Time and again, those familiar with the region know that a considerable amount of information exists on a variety of environmental problems, but the Bank does not seem to want to accept that information because it goes against what the Bank representatives "feel."

All government people I spoke to seem to believe that the Sea is doomed to disappear in the not-too-distant future, but no one appears willing to say it publicly.

The Bank does not seem to expect a lot from the Uzbek government. The Bank will put money here (e.g., "they (the CARs) smell money") but they see the government as conservative on privatization and, therefore, slow to move forward; "in a few years, maybe." The Bank knows that corruption is high in various Central Asian Republics and wonder (in the case of Uzbekistan) if money will get out of Tashkent and into the disaster zone.

The Bank people are sensitive to political issues here and are trying to be sure that each republic feels informed and involved. That is why they are going to avoid taking on regional issues that may lead to interstate conflict. It is also why the Bank task and mission leaders feel compelled to make contact with Turkmenistan government officials as well as officials from Tajikistan, even though it appears they are most concerned about Uzbekistan and Kazakhstan.

I have spent some time looking at methods used by organizations to identify priorities -- how to identify what people really want or really need. With regard to the joint mission, it is my feeling that so much money is potentially available (\$50 to \$75 million, or maybe even a few hundreds of millions) that there is little need to consider basic priorities. It seems that the Uzbeks and other Central Asians can have just about anything that appears on the upper half of their wish lists for water-related projects. As for the Bank, it is a bit like a child in a candy store -- there are so many potentially useful projects in all sectors from which to choose. The joint mission's problem will be to see that the funds designated for Phase 1 activities of the World Bank/UNEP/UNDP Action Plan gets to their intended uses.

Many of the meetings we are holding with representatives of government agencies in Uzbekistan border on being a total waste of time, e.g., EKOLOG, ECOSAN. These two organizations have been touted as NGOs, but in reality they are government agencies embedded in larger official government ministries.

Tuesday, 1 June -- More Notes and Observations

Early in the morning Jeff Thornton, UNEP consultant with the Environment Team, and I took a taxi to the home of the American Ambassador to Uzbekistan (Clark). We met with Paula Feeney, the AID Director for Environmental Affairs in the Central Asian region based in Almati. Also present was the US Ambassador to Kazakhstan. They were together in preparation for the visit of three US senators to Nukus and the Aral Sea (Senators Brown-Colorado, Simon-Illinois, and a senator from Nevada). We had been invited by American consul George Kent to brief the Ambassador on the Aral Sea problem. Paul met Kent at the Hotel and arranged for us to brief the Ambassador. Jeff and I spent at least 30 minutes alone with the Ambassadors and Feeney and briefed them on the Aral Sea situation in general, and on the mission. It was a good opportunity to speak openly and truthfully to them before the Bank's representatives arrived. According to the top aide to the Ambassador, our comments

were very much appreciated by the Ambassadors and by Feeney (who happens to be the wife of the US Ambassador to Kazakhstan).

The three World Bank leaders of the mission (Rathnam, Wildeman, and Post) arrived about a half hour later to give a formal presentation about the Bank's mission.

The Ambassadors wanted to know what was meant by the Bank report's statements about "stabilizing" the sea. They spoke of the need for restructuring agriculture in Central Asian Republics. They also wanted to know how the bank was going to distinguish between national and regional programs, as the Bank's March 1993 report states that it will only consider regional projects. We noted that Karakalpakstan was at the "tailpipe" of the Amudarya river system, receiving the brunt of the water pollution caused by upstream users and that they are the victims of upstream pollution and water policies. The Ambassadors were well aware that the political situation in the region was one of potential conflict. They recognized many of the animosities among the republics. The Bank mission leaders spent a considerable amount of time describing the structural arrangements of the BVOs and other interstate organizations that had recently been formed. It was clear that the mission did not take control of this briefing situation to use the opportunity to present a concise overview of their goals and programs. Instead, they ended up answering specific, unrelated questions. The position presented to the Ambassadors appeared to be one of high-tech, costly solutions related to institutional development of water resource organizations (the BVOs).

The bottom line seemed to be that the sea was doomed to go down to a puddle of high salinity. The Ambassadors noted that environmental groups around the globe would not support policies that allowed the sea to disappear. Wildeman, later that day at lunch, suggested that it would be up to organizations like Greenpeace, who criticized their (Bank) plans, to offer *their* solutions to the Aral Sea crisis: how would you restructure agriculture so that it could be redirected from cotton dependence, etc. [NB: I would like to suggest that perhaps the UNEP could support environmental NGOs to hold a conference focused on the Aral Sea problem and their perception on possible solutions.]

Jeff and I then visited the Israeli Ambassador to Uzbekistan (Israel Mey-Ami), whom I had met in Tashkent, to discuss Israeli interest in the Aral Sea region. I asked him what Israel would do if it had the Aral Sea. He said it would be a paradise. They have technologies developed for the agriculture of such regions: drip irrigation and, more broadly, efficient water use would be a high priority, etc. They have a joint program with the US related to water and agriculture. He mentioned a top-secret Israeli project called Tower. This project was recently declassified after ten years of being top secret. Here, the Israelis are pumping water to 900m to a tower from which it cascades down becoming desalinized and, at the same time, drives turbines producing electricity. He said that the Israelis were prepared to assist in training programs related to water and land use in arid areas, but that they lacked the

funds to do so unilaterally. He said that he would discuss our conversation about the Aral Sea problems with the Israeli government and would discuss with them possible UNEP activities (e.g., a training course on land use and water use in arid lands).

My lunch-time conversation with Termazzi and Wildeman about the Bank mission was very enlightening. They agreed that too many people were on the mission. Most World Bank missions, they said, had at most about four people. They noted that the mission was speaking with too many voices (as was the case at the US Ambassador's residence). They said there was no plan yet, and that they were hoping to identify "do-able" pieces. Wildeman felt that the UNEP and UNDP efforts in the mission were becoming most important because they would likely produce the most concrete and ready-to-go proposals requiring relatively limited resources. It would show that actions supported by the joint mission had begun. Other projects are likely to be more costly and will require more time for preparation and approval.

Wednesday, 2 June

I prepared two TORs, and Ani (UNDP) revised their texts and retyped them for presentation to Wildeman and Berkoff. One TOR related to environmental technologies and the second related to environmental education and training activities. [NB: A third one was later prepared in Colorado and faxed to Tashkent; it focused on a regional climate study in the Aral Sea basin, using limited area modeling techniques.]

Thursday, 3 June

We learned that all flights from Tashkent to Ashgabat (Turkmenistan) were full until 7 June, so the Bank rented a plane, and 12 people from the mission went to Turkmenistan. We were not met at the plane (as is customary), but outside the airport entrance; we met Nicolai Orlovsky (Deputy Director of the Desert Institute) and my interpreter, Isabel Moskaleva, and the Minister for Nature Protection and Environment, Ashirov. We went to the Hotel Ashgabat and apparently no rooms had been set aside for the mission. Furthermore, the rooms were perceived to be of low quality and time was lost trying to decide where to stay in town. We decided to eat lunch at the hotel and take time to decide what to do during the less-than-two-day visit. I knew Ashirov from the September 1992 meeting in Geneva at the UNEP Diagnostic Study review. At lunchtime, we were discussing how to salvage the mission, because Ashirov had apparently not been told of the importance of the Bank mission. I tried to impress him about its importance. Rathnam got very angry at me because I took Ashirov away from him. He said it was *his* job, as he was *the* task leader and order came from *him*, not Wildeman, who was only a mission leader. I decided to let the mission take its own course, and I would focus on interviewing Orlovsky and Sarkisov, among others, in Ashgabat. Later, I heard expressions of displeasure with the visit to Turkmenistan. The Bank

members felt that the trip was of little value and that few high-ranking people were in town to meet with them. There was apparently a fair amount of formal presentation and sightseeing to the Karakum Canal and to an underground lake before they returned to Tashkent by chartered plane. It was felt that too many people had gone to Ashgabat.

Friday, 4 June -- Notes and Observations

Tonight I went to Babayev's daughter's wedding (>600 people, many of whom were ex-Ministers). Babayev, until very recently, had been the head of the Turkmen Academy of Sciences. He is still the Director of the Desert Institute, but I do not know for how much longer. At the wedding, I sat next to a Chinese visitor (Yang Youlin) to the Turkmen Desert Institute from China's Lanzhou Desert Institute. He is here with an associate (Fen) to establish a joint venture with the Desert Institute on fruits and vegetable production, canning and marketing within Turkmenistan for a few years, and then for export to Iran, Turkey, and Russia.

Fruit and vegetables are very expensive in Ashgabat. Many of them (cherries, for example) are imported from Kazakhstan and Uzbekistan. Will they be able to produce and can them more cheaply, or will the cost of these remain high? Youlin is dedicated to this project. He has been here one month and if the project works, he will be here for two or three years. This was interesting because it was a joint venture between two research institutes for a small business enterprise. Youlin was hopeful about the future of such enterprises in Turkmenistan.

They got funds (the Chinese) from their local government, their Institute, and donations from co-workers. They expect to establish a small business enterprise for the Turkmen market. All will profit by it. The government has not yet signed all the papers, however, and there are still some Ministers who oppose the concept. Yang Youlin said he expects an OK in a few weeks. He told the Turkmen government that he had done all he could to support this project. If they did not approve it soon, he and Fen would close down the business and leave the country.

He said he felt that the Turkmen government was ready for privatization and that, while a privatization appears to be unable to succeed in the short term, it will if one takes a long-term perspective. If investors make the mistake of seeking profit in the near term, they will get discouraged.

Friday, 4 June, Discussions with Moses Sarkisov

Moses Sarkisov, Director of the Turkmen State Institute for Scientific Research and Design (Turkmengyprovodhoz), and I met in the late afternoon for a couple of hours (the other mission members were on their way to the airport to return to Tashkent). Sarkisov felt adamant about the importance of and need for keeping the Amudarya cleaner than it is now. He went through a long discussion of why he felt the Kaparas Reservoir concept will not work (e.g., separating clean water from drainage water in the Tuyamuyun reservoir). He noted that the river will still stay dirty with salt and other contaminants, until they deal with drainage water. He felt *a drainage collector was the most important* action that should be considered. His plea was to help those republics to finish them. (For Turkmenistan, he spoke of the collector that would extend from Chardjou to the Karashor depression; for Uzbekistan it is the main drain on the right bank of the Amudarya that would take drainage water to the Aral Sea.)

Sarkisov said he supported the idea of building a dam to protect the Amudarya Delta; later he said they should help protect both deltas (Amudarya and Syrdarya), and then put drainage water directly into the middle section of the remaining sea. According to Nicholai Orlovsky, Moses Sarkisov is one of the people with the most information about water resources in the region (Turkmenistan). He is an Armenian and the Turkmen government tried to get rid of him about two months ago. They realized, however, that there was no one to replace him so they kept him in his position.

Moses asked me to tell the Bank that the Kaparas concept will not work and is likely to be a waste of money. I asked him about the Aral Sea being used to collect drainage water and how that might affect groundwater quality in the deltas. He said it would take a long time for that to happen and, besides, he said Tashauz Oblast already is using contaminated groundwater.

Talking to Moses was very good, because he had reasons to question the Kaparas concept; these reasons challenged the Bank's view of the concept for developing potable drinking water. I do not know who is right. When I later spoke to Igor Zonn in Moscow, he said he thought the Kaparas concept could work.

Saturday, 5 June -- More observations about Turkmenistan and the Aral Disaster Zone

The Turkmen do not care about the Sea. Not one person whom I asked in Ashgabat said that we should save it. They are more concerned about the Amudarya River and cleaning it to some acceptable level (not the cleanest level, but to some yet unspecified acceptable level!). They are very concerned about drainage water flowing back into the Amudarya and

are developing a second drainage line to Karashor from Chardjou (for which they need funds). They want help with the drainage. As for potable water problems in Tashauz, a region of Turkmenistan with the traditionally defined Aral Sea disaster zone, they also do not feel connected to it because it is seen as Tashauz's problem, not Ashgabat's. There has been a decentralization of water by regions; it appears that Tashauz will be on its own, but must use traditional ways of dealing with water problems (that is, they cannot charge a fee for water to pay for new development and equipment to bring potable water to the region). According to Ashirov, Turkmenistan's Minister for Nature and Environmental Protection, it would be unfair for those in Tashauz to have to pay for somewhat cleaner drinking water which others throughout the country get for free or at much lower costs.

I was unable to identify Turkmen NGOs related to any activities, let alone to environmental issues or water issues. The Turkmen government seems to have acceptable (even good) working relations with the Uzbeks and are not reluctant to take up joint projects related to potable water supply enhancement. Turkmenistan's Desert Institute could serve as a regional focal point for helping to stabilize the expanding exposed saline Aral seabed (if such a goal is decided on as a high priority). This Institute has had more than a decade of experience in providing training courses on land use in arid and semiarid areas. It has also worked closely with UNEP and UNESCO, and so its research standards have in the past been relatively high.

NOTE: I proposed to Nicholai Orlovsky, the Deputy Director of the Desert Institute, the development of a project on the Aral Basin. We would use a limited area model, rotation of computational poles or some other regional approach to assess the effects of the ultimate desiccation of the Aral Sea. Orlovsky liked the idea and said he could get the necessary regional data. J. Tribbia and S. Rodionov (NCAR scientists) could work on the modeling aspects, and I could oversee the activity and provide the historical and other relevant information. Orlovsky found three articles for me in Russian where such calculations had already been made (2 from the early 1960s, and 1 from the 1970s). There are probably already studies of the Sea drying out at George Golytsyn's Institute (Institute for Atmospheric Physics in Moscow), but if so, we could do our study to try to replicate or evaluate their results. The head of the joint mission, Bob Wildeman of the World Bank, thought this was a relevant study for Phase 1 of the mission's Aral Plan and could possibly find support in the Bank.

Saturday, 5 June, morning -- Observations and Flight to Moscow

The Bank called on Khabibulayev to arrange with the Minister of Nature and Environmental Protection, Ashirov. The visit of the mission to Turkmenistan was not well thought out. It was really a protocol visit, but because they rented a plane with lots of space,

about 12 people went. It was too big for such a trip, and it seems that the purpose of the Bank mission was not well explained to Turkmenistan. Nothing was prepared. The Turkmen did not receive any instructions about who wanted to visit what. Most Ministers were out of town. It became a game of "let's keep the mission busy." The first day was fruitless. The hotel was viewed as terrible and arrangements were poor. The Bank leaders were offended with their treatment and at least on one occasion told the Turkmen officials (e.g., Ashirov) as much. They felt the mission was too big and ill-planned, and it seemed that they just wanted to go back to Uzbekistan. Everything seemed *ad hoc*.

I tried to get Ashirov, whom I know from Geneva and the UNEP Diagnostic Study, to realize how important the mission could be to Turkmenistan, but Rathnam was upset because HE was the mission's task leader and HE should be negotiating with the Minister. I backed off and developed my own activities. I wanted some Bank members (e.g., Jan Post) to see that the level of science in Turkmenistan was high because of its long-term connections with UNEP and UNESCO. I also wanted them to see that data on lots of projects exist, but that it is closely guarded by them. The information gathered by scientists is one of their few possessions of potential value. Why, then, should they freely give up their data to a Bank that has no track record in the area and is basically unknown to them? Many did not know either what the Bank is or what it does.

I still have the feeling that the Bank task and mission leaders are in some kind of conflict situation and each has an idea of what he wants to do in the region (although they are still trying to distinguish between what is a national project from what is a regional one). They now view the UNEP and UNDP activities as humanitarian and such activities will be appealing to the potential donors. Thus, our (UNEP) activities are likely to be used to attract donor support for the high technology schemes being discussed related to bringing potable water supplies to population centers, fixing sand dunes, etc. Their original emphasis on the Aral Sea disaster zone is no longer believed valid by them. Some of the Bank people see the region as being no worse off than other Third World countries. They, therefore, question whether it should receive any special treatment.

Again, I am returning to the issue of how to define a region. We need a new view of the Aral disaster zone, one that is not just defined in geographic terms à la N. Glazovsky, but in functional terms so as to include the causes as well as the effects of water-related problems in the disaster zone. Such a definition will provide more flexibility in developing viable responses to the disaster zone and such responses will be of longer-term value. If we focus only on a geographic definition, we will end up being forced to focus only on the effects (and victims) of an ecological disaster. However, by broadening the concept to include its causes, wherever they originate, would make more sense by forcing us to focus on the causes of the problem as well. Thus, a functional definition of the disaster zone is much more useful. We could even go a step further and, if my recollection of the method is correct, we could focus

on structural/functional approaches to identifying the disaster zone. That would broaden the identification of causes to include, perhaps, Moscow's decisions, including, as one interviewee suggested, the refusal in 1986 of Gorbachev to supply Siberian water to Central Asia. According to that interviewee, there was no Aral Sea problem, until that decision was made by Gorbachev. Central Asia had been promised the following: "produce cotton now and we'll give you water later." However, with perestroika came the Soviet decision to terminate consideration of the Siberian river diversion schemes.

As for the possibility of selling Siberian water to Central Asia, it is too soon for such a transaction, if it were to occur. The Russians are considered by Central Asians as the culprits and, therefore, according to them, have a moral obligation to give water to Central Asia. The Russians, however, like spurned lovers, feel no obligation to give anything to the region. As one Uzbek woman (Zulfie, UNDP) put it, "you either side with the Russians or you side with the Uzbeks on this issue. There is no in between."

Sunday, 6 June -- MHG's Observations on the Mission (on Delta Flight Home)

On several occasions the task leader (Rathnam) and the mission leader (Wildeman) made reference to the common complaint of the CARs that they had met 131 missions and nothing had happened. They kept referring to the fact that they, the mission (really, the Bank), *had* to do something. The Bank had visited the CARs on its first mission in September 1992 and it apparently had not (ostensibly) done much in the meantime. It appears that the mission was put together hastily with the mission leader and his adjunct (Wildeman and Berkoff, respectively), having been assigned to the mission only weeks before it was to begin in mid-May 1993. My point about mentioning this again is based on my view that it's not the Bank's responsibility to worry about the other 130 missions that went to Central Asia to decide whether to give aid or not. It's an added pressure that should not affect its behavior. The World Bank should be more concerned about its own behavior and whether *it* is serious about its deliberations with government officials in the region. I think this kind of self-imposed pressure (because the Bank may have been slow in responding after September 1992) could lead to precipitous policy development for the region (it appears that the putting together of the second Bank mission had been an example of just such a hurried response).

On the flight to New York, I just learned in a conversation with a Russian diplomat at the UN Mission (Sergei N. Shestakov) that Karimov's daughter married an American and they live in Washington, DC. Shestakov felt that was a planned marriage which would allow Karimov to visit unofficially to Washington and perhaps to do politicking in more subtle ways. I thought this was an interesting view. Karimov, Uzbekistan's president, had to permit his daughter to marry an American. I asked him about the possibility of a Russian sale of Siberian water to Central Asia. He said it was likely not possible, at least not for ten or twenty years. He said the Russian public was against the transfer concept of Siberian water

because it would have adverse ecological effects on the Siberian environment.

Part II

Notes on Interviews in Aral Basin
(during Joint World Bank/UNEP/UNDP Mission)

Part II

Notes On Interviews in Aral Basin during the Joint World Bank-UNEP-UNDP Mission

Thursday, 27 May 1993 -- MHG Meeting with Yusup Kamalov in Nukus

Yusup noted that the Aral basin's water distribution problem is not a technical problem; it's a political one. The five Central Asian Republics do not trust each other. There is a real Aral disaster zone--it is the Karakalpakstan region and the Priaraliya, the region immediately surrounding the sea. These are geographically at the end of the Amudarya and Syrdarya irrigation system pipelines. The water pollution starts in the upper reaches of the Amudarya and Syrdarya and increases greatly in the middle reaches of these rivers; it becomes dramatic (and catastrophic) in the lower reaches of these rivers. The adverse environmental effects are great and so too are the regional health effects. If the joint mission would focus on regional health and water quality immediately, that would be great, but you cannot solve the problems there. Nevertheless, you must first focus on the impacts of a disaster before you deal with the causes of the disaster.

Yusup proposes a bank that provides credit that is locally available. It would also provide loans that make money (in World Bank jargon, "money must replicate"). The money is not to be taken away as profit but, instead, is to be put back into the system to correct water supply quantity and quality situations. As for the BVOs (River Basin Authorities for the Amudarya and Syrdarya), they are still institutional remnants of the old regime of communists and will simply gain more power, if given more funds [NB: The Bank mission is talking about giving \$10-15 million to the BVOs] for rationalizing their operations and strengthening their control over Syrdarya and Amudarya water quantity and distribution.

Yusup raised the issue of human rights. Many of the proposals suggested by the Uzbekistan officials to resolve the Aral Sea crisis are really focused on economic development issues, and by the time they are resolved (and achieve their objectives), he said that he would be surprised if any Karakalpaks would still be alive. He said that Karakalpaks have a right to clean water. The Tajiks have clean water, why not the Karakalpaks? Also, there are plans to let the right and left bank collector drainage systems terminate on Karakalpakstan territory. This, he said, is also a violation of the Karakalpaks' human rights.

The Karakalpaks are culturally closer to Kazakhs than to Uzbeks. The political leaders in Tashkent (e.g., Uzbeks) call the shots, and the Karakalpak leaders willingly obey. There are only 1.5 million Karakalpaks, and they are greatly outnumbered by the 20 million or so Uzbeks. They resent the Uzbek government, which still is pretty much a communist system, with former communist leaders professing to wear democratic hats. He noted that, following the breaking up of the USSR, there was a call for independence from Karakalpakstan. It has faded, however, with little likelihood of success on the horizon.

Yusup felt that Tashkent was highlighting the disaster zone in Karakalpakstan to gain sympathy and support from the donor community, yet little assistance is being directly funnelled into Karakalpakstan. As with the Leaning Tower of Pisa in Italy, where no one

wants to "fix" it, the government of Uzbekistan does not want major changes in the Karakalpak situation. It is this bad situation in the Aral region that has been attracting worldwide attention to the region. The World Bank also wants to use the Aral disaster to get a hook into the donor community. But any response to the disaster-zone response really borders on humanitarian bilateral aid, which is not a World Bank concern.

[MHG's thoughts: If one had to use an analogy for this situation it might be (but isn't) as follows: The story of the child who kills his parents and says he's an orphan. On closer inspection, the Aral situation is more like someone killing his friend's parents and pleading for help for his orphaned friend but keeping the money that comes in to enhance his own situation. Guess which one in this story is Uzbekistan and which is Karakalpakstan?]

It was suggested by Diane Wildeman on this trip that she viewed the Karakalpakstan relationship to the Uzbekistan government as one like that between Quebec and the rest of Canada. This is incorrect. It is more like Canada and the Inuit, or like the relationship of a rider on horseback to the horse. They are in no way equal partners, and they often pull (in the Uzbek-Karakalpak situation) in opposite directions.]

Friday, 28 May 1993

Interview with Yuri Attov Tureyun (Minister of Health for Karakalpakstan)

We met with the Minister of Health for Karakalpakstan in Nukus. He is the top official (or near it) in the ECOSAN branch in Karakalpakstan. We asked if he knew of the several clean water and clean air projects proposed by ECOSAN in Tashkent. He said he had not been informed about these project proposals in need of several millions of dollars.

[MHG Observations: An ECOSAN-Karakalpakstan office opened in February 1993, but no activities have been undertaken since then. It seems to be an Uzbekistan government "front" for the benefit of the donor community to show that ECOSAN has a presence in the disaster zone. But ECOSAN is in the President's (Karimov's) office and is really not an NGO. It is playing on the disaster zone image to get donor money to flow into Tashkent, which would then be used elsewhere other than in the disaster zone.]

Q: What is the highest need in Karakalpakstan?

- A: 1. Training: The training of medical specialists (pediatrics, gynecology, internal disease, sanitary condition experts). Bozatau region has only one specialist for monitoring sanitary epidemiology.
2. Equipment (there is no typical hospital or high-level hospital); clinics are overcrowded.

Q: What should we do in the next three years (e.g., the Bank's Phase 1)?

- A. 1. Gallstone and kidney diseases are among the most prevalent health problems. These are the result of waterborne diseases. Water is corrosive, polluted.

First Priority action: To develop a Kidney Disease Center at a cost of about \$15 million, based on a joint venture. The rural population uses water from wells, but this water is of low quality. Now we are trying to develop a joint venture between the USA and Karakalpakstan, but Uzbekistan doesn't support it. If this joint venture produces gas for sale, then there will be a kidney center developed by a petroleum company in the US.

2. Insufficient amounts of medicine are made in local factories. The quality of what does exist is poor. The poor quality of water produces poor medicines. The distillation for medicine-producing plants is inadequate (distillation equipment has short life span [2-3 months], filters need to be frequently changed).
3. Develop factory-to-product clean water for preparing medicines and medical injections.

Karakalpakstan Needs Medicine

In the old Soviet Union, there were 300 plants to produce medicine (200 in the USSR, 50 in the Ukraine; there is only one in Uzbekistan that produces only 4.8% of Uzbekistan's needs). They want to use more than 300 kinds of plants (vegetation in Karakalpakstan for medicine production to produce traditional medicines, e.g., "zbunsina," an ancient medicine made from wild species).

There are medicinal waters that are not polluted in the Chimbar region (Nukus); in the Nukus region there are pure medicinal underground waters. A goal is to build a hospital near these medicinal underground water supplies.

In all of Uzbekistan the highest level of morbidity is in Karakalpakstan. There is also a high rate of infant mortality; mortality of mothers is estimated at about 100/100,000.

Why has there been a decrease in the birth rate and in child mortality? They use (and Karimov supports) birth control; "with pleasure" they do abortions, which also decreases birth rate.

[MHG Observation: One World Bank representative said that Karakalpakstan's health statistics are no different than those of Third World countries. One major difference, however, is that the adverse health conditions in this region are human-induced.]

- Q. How good are health statistics in Uzbekistan in general and in Karakalpakstan specifically?
- A. The Minister of Health said yes; Uzbek health statistics are good. (Asiya Turenizova said no. She said that only 10-15% of the women in Karakalpakstan are healthy. TB and malignancies are major regional health problems.)

ECOSAN has no office in Nukus; therefore, no action. On 10 February 1993 a meeting was held in the Supreme Soviet of Karakalpakstan to create an ECOSAN office in Nukus. The President of ECOSAN came to Nukus from Tashkent, along with Uzbekistan's Minister of Health and the Chairman of Goskompriroda.

ECOSAN (Tashkent) has three projects on the Aral Sea region. The Minister of Health in Karakalpakstan was neither involved in developing them nor aware of their existence.

A. Asiya Tureniazova's Comments

- There is a high level of intestinal infection and anemia among women in clinical practice. The clinics provide iron-containing medicines without accounting for its assimilability. The medicines have not been very effective.
- We need everyday measures to treat diseases. People cannot go on living in clinics.
- A possible solution is sour milk production, enriched with iron and other necessary components prepared from ecologically pure milk. This will decrease intestinal infectious diseases; in cases of food poisoning, we use sour milk; it improves the function of intestinal digestive processes. More than 80% of Karakalpakstan women have iron-deficiency anemia. (Asiya doesn't know why. Is this dealing with a symptom--perhaps too much bleeding?) Set up a sour-milk plant at first for nursing mothers; a big plant is not required. We need to develop a production capability on a small scale. But, we still don't know what the reason is for anemia.

Minister of Health again

- A. The interval between births should be 2-3 years, but many women in Karakalpakstan have a child every year. 12-15% of women give birth 2 times/year; some have as many as 12 children. Making a bad situation even worse, anemic women give birth to anemic children.

Why is the health problem so bad in this part of Uzbekistan (e.g., in Karakalpakstan)?

- high levels of pesticides in mother's milk
- social-economic development is 2 times less than in Uzbekistan as a whole
- severe climatic conditions

Karakalpakstan is at the end of the pollution tailpipe of environmental problems related to Amudarya water use and widespread cotton production. Where does this

pollution begin? Upstream. Karakalpakstan is not empowered to solve this problem alone. All Central Asian Republics need to help.

- Q. Do Russians have a responsibility to help in the Aral Sea disaster zone?
- A. We cannot force Russia to help us. We worked for them all our lives; they have a moral responsibility. Karakalpakstan has asked for help from Russia, but none has come from Yeltsin. Yet, Yeltsin said that the Aral Sea problem is a Russian problem. Despite all those statements, however, the situation in the Aral region is worsening, year by year.
- Q. Ani (UNDP): Should Karakalpakstan first develop its gas reserves and then use that money to finance the improvement of its health facilities?
- A. Germany has given medicines but has not given equipment to enable Karakalpakstan to produce medicines.

Friday, 28 May 1993 -- Deputy Prime Minister of Karakalpakstan (Congrad Doshumbayev)

- Q. What does the government view as the most important problem related to the Aral Sea today? What do you think about the dropping level of the Sea?
- A. There is not just one problem; the Aral Sea situation is a complicated one. The most important problem: the impact of the shrinkage of the Aral Sea on life and economy of people in the region (e.g., Karakalpakstan). The second most important problem: A clean regional water supply for drinking and for irrigation. Other problems surround these.
- Q. Where can an infusion of \$50-100 million help in the next three years in the disaster zone?

[MHG Observation: New environmental projects must "walk on two legs" (my words; by this I mean environment and health).]

- A. To be resolved in the next three years:
- First priority -- improve the drinking water supply; within 3 years, develop a health protection system. Being properly financed, the government can do three times as much work (and faster) as they are doing now (e.g., install water treatment plant).
 - Second priority -- develop a health protection system.
- Q. Ani (UNDP) -- Are your solutions dealing with the causes of the problem or only with the effects (e.g., symptoms)?

A. All this is interconnected. To start with, along the Amudarya zone the amount of irrigated land has increased from year to year. All oblasts put collector drainage water directly back into the Amudarya. We must not pollute the river.

Q. How do you deal with others outside your political jurisdiction (of Karakalpakstan) who pollute the Amudarya?

A. This problem has existed since the Soviet Union decided to expand irrigated cotton production in Central Asia. Karakalpak officials had asked the Soviet government to help to solve this pollution problem. In 1988 the government of the former Soviet Union paid some attention to Karakalpakstan problem. They said they would undertake construction to divert drainage water from the river, increase the water supply, and improve the Aral Sea's coastal zone. Now, with the collapse of the Soviet Union, no one is taking on the responsibility for financing solutions to the Aral Sea pollution problem.

Q. Ani (UNDP) -- You are an economist, but your answer to solving these pollution problems has focused only on resorting to engineering, e.g., technology and construction. Why do you make no mention of economic solutions? Or why no mention of water pricing?

A. At the governmental level, there is support for the pricing of water; others, however, oppose it. It is being debated now within government and science circles.

This is a perverse economic situation; Amudarya water in the upper part of the stream is quite fresh, yet they (the Tajiks and the Uzbeks) pay less for water than we do. Downstream Amudarya waters are heavily polluted, yet Karakalpakstan pays a lot and in many ways (e.g., environmental degradation, human health problems). All upstream users (e.g., polluters) should pay for this polluted water in order to cover the expenses to clean it up. It is clearly a political problem.

Congrad's main concerns seem to be the low level of economic activity in Karakalpakstan and the need to improve the quality of life.

Q. Bob Wildeman -- Have you considered setting up a private sector bank (making loans to private entrepreneurs to get them going)?

A. The private sector is only now being developed.

Q. Wildeman: Would you welcome its development with outside aid?

A. Our state banks cannot finance the private sector, but the first step has been taken to finance privatization.

Q. Wildeman: What if the World Bank and the NGOs provided seed capital to activities organized by younger private citizens who would then work with the Ministry of Economics? Would your government welcome it, because it is a departure from the

past, that is, to work in partnership with the State Bank [to start small businesses (micro-enterprise development)]?

- A. I would welcome it, but some might not support it. [NB: The Vice Prime Minister is convinced that the PM and Chairman and the Nukus Bank for Karakalpakstan are entrepreneurs.]

Friday, 28 May 1993, 4:30 p.m. -- Computer Center (with Yusup Kamalov) and with the Center's Director (Nahmet)

The Center studies air pollution.

The Academy of Science in Karakalpakstan was organized in the early 1960s to undertake research on natural resources history and language trends of Karakalpakstan. It has six institutes.

The NGO of which Yusup is co-director, the Union for the Protection of the Aral Sea and the Amudarya, is based in Nukus and has been organized by intellectuals (writers, etc.). Its base of operations is within the Computer Center where Yusup works. There is an NGO newspaper.

Yusup is seeking support for an NGO meeting in Nukus during August of 1993. It will focus on one key question. Called Amu 93, it will focus on Amudarya problems. Environmentalists and scientists along the Amudarya (from Dushanbe to Muynak and Tashaus) and some NGOs will participate along with a limited number of foreign and Russian NGO representatives. Yusup noted that he must invite NGOs from Russia. The key issue will be as follows: How can we influence each other's country? How can we normalize relations along the Amudarya? [NB: Ani (UNDP) suggested we might be able to find this money for the meeting. Ani said she could do it easily with her European NGO network connections. I do not know if funds were found.]

Yusup then gave a long talk about the paradox of the socialist system:

"We thought the USSR knew of all the sources of economic well-being. Each Republic/Minister needs specific resources. If you were powerful, you could allocate resources. Moscow decided on what and how to divide resources for the five Central Asian Republics. Uzbekistan, with the largest regional population, got most of the region's resources. But the efficiency of industry and agriculture has been low, and, as a result, approximately 97% of regional waters are wasted. Much of our water ends up in artificial lakes at the ends of irrigation systems (e.g., canals). All have clean water in them. It goes underground, and the Aral Basin groundwater goes to Caspian Sea. The Caspian Sea level is increasing. Uzbekistan will never give back to the river or the Aral Sea any surplus water that it receives but may not need now. It may be saving it for later. There is no trust between governments of neighboring states in Central Asia. Without trust, we cannot solve this problem."

Tajikistan refuses to pay more for water than those in the lower states of the Basin.

Muynak was a closed town because there was bacteriological weapons testing in the region. This could have adversely impacted human health. Bacteriological testing occurred on some islands in the Aral Sea. Also, there was chemical weapons testing to the west of the Aral Sea.

There was a cholera outbreak around the Nukus area in 1961-62. Yusup, among others, thinks there was a very strong connection between this outbreak and Aral Sea weapons testing. An institute for chemical weapons is now located in Nukus.

Friday night, 28 May 1993 -- MHG talk with Rafael (the interpreter) after the mission's banquet to which Ani and I did not go (4:30-9:30 p.m.)

He said that the Ministry of Sanitation official suggested stabilizing the Sea at its current level (approximately 37.5 m). The Minister also suggested the possibility of letting the sea fall to approximately 34 m to allow it to split into East and West. The western half would be kept fresh and clean for fisheries, etc., whereas the eastern part would be used as a terminal lake for drainage water. The main purpose would be to keep the sea bed wet so that a dried bottom could not become windblown. Jeff Thornton (UNEP) and Jan Post (World Bank) are pursuing sand stabilization activities for the exposed Aral seabed.

Friday, 28 May 1993 -- MHG observations/thoughts at dinner

There are conceptual changes that are required to cope with the Aral Crisis in the Disaster Zone. Could this be put as a question to the Uzbeks?

1. Does the Aral Sea have an intrinsic value (or must its value be proven in a cost-benefit analysis compared to other uses of river/sea water)?
2. To what level should the Aral Sea be allowed to fall before it is stabilized?
3. Who is the at-risk population that needs to be targeted for the three-year Phase I of the Bank's Emerging Response to The Disaster Zone?
4. Should Karakalpakstan have a more direct voice about future developments in the Basin (as the victim of the policies of the Former Soviet Union and of current national policies of Uzbekistan)?
5. A "business as usual" scenario includes focusing on technical fixes for the Aral Sea crisis and focusing on the symptoms rather than on root causes. Will the acceptance of a "business as usual" scenario only worsen the current downward spiral of environmental degradation?
6. Should the Aral Basin (or the Amudarya and the Syrdarya basins) be treated as an ecosystem rather than a river(s) that happens to pass through several independent states? To do so would mean that there would be a responsibility placed as well on

the upper basin and middle reaches states, forcing them (at least morally) to be accountable for the entire ecosystem(s) of which they are a part. [N.B.: Treating the Aral Basin as an ecosystem is not the same as treating water in the Basin as a common property resource. These concepts will evoke different responses, and the former is more user-friendly because it doesn't challenge the concept of property ownership. It stresses communal responsibility.]

7. There needs to be a realization that the first drop of pollution is as bad as the last drop in a river system, with regard to damage to ecosystems. In other words, the Tajik argument that the water is relatively clean when it leaves its borders does not relieve it of its responsibility to minimize its contributions to the pollution of the Amudarya. It is like a drought where the first rainless day contributes to the damage to the same extent as the last day (except that it has become cumulative).
8. Does Karakalpakstan have a moral (or legal) foundation for its concern about the violation of its human rights (with drainage water being dumped onto its territory, with the Sea drying up as a result of decisions made outside of its borders, and with Karakalpakstan inhabitants having to bear the impact of the adverse health effects of toxic chemicals in the river and on the fields)?

The Aral Sea problem appears to be a hydra-headed one. As you begin to deal with one problem, two others crop up to take its place.

What, then, might be a priority focus? I suggest the following:

1. Protect the genetic base of the Karakalpak population.

The health statistics in the disaster zone are very alarming. Despite the view espoused by some of the Bank's mission members that their health statistics are no worse than those of other Third World countries, health conditions in the Aral disaster zone were not the result of natural factors but were the result of human mismanagement over a thirty-year period.

2. Improve the health of the at-risk population (women, children, etc.).

- Sour milk production (put iron supplement into sour milk; this is a small scale activity; help women and nursing mothers)
- Provide clean water to medicine manufacturing plants in the region
- Provide clean water to clinics (and where shots are given and other health care activities are undertaken).

3. Bring potable water to targeted populations

- How to choose the first targets for Phase 1 of the joint mission plan?

4. Develop local banks for the encouragement of micro-enterprises

- These eco-banks can be used to encourage better water/land uses.

5. Training must take place across the board

- Locals must be trained from the outset on each operation so they can become self-sustaining with their new knowledge base. For example, you can bring potable water to rural and urban population centers, but you must educate the people about the fact that it is unhealthy to drink from the canals and ditches, which they would likely continue to do.

I asked Wildeman why no mention had been made of training needs of the local population. He asked me to write it into my report. I stressed that every new activity undertaken as a result of this joint mission should have an education and training component in order to begin to change ways of thinking.

I also suggested that a carrot (cash) be used to get the CAR Academies of Science to cooperate meaningfully on topics of mutual interest other than just focus on water quantity (and, maybe, quality). Other areas of environmental cooperation would include soil stabilization, irrigation efficiency, environment-friendly crops and cropping patterns, etc.

Saturday, 29 May 1993 -- MHG Notes on the Joint Mission's Meeting with the Supreme Soviet Chairman of Council of Ministers of Karakalpakstan

Bob Wildeman (joint mission leader) made an opening presentation to the Supreme Soviet in which he identified what the Bank's mission members identified as priority activities. He said that the joint mission is trying to develop/identify a prioritized action plan. He then presented the following plan.

The World Bank's #1 priority is drinking water for inhabitants of the disaster zone. He then went on to list recommended activities.

- (a) The conversion of the Kaparas reservoir to a freshwater-only reservoir (at a cost of several million dollars to complete the main gate and other facilities).
- (b) Construction of water treatment facilities and a water pipeline to Nukus.
- (c) In Turkmenistan The World Bank will support similar facilities to extend water into Tashaus and its surrounding area.
- (d) It is difficult to justify the construction of a Nukus-Muynak pipeline on economic grounds, BUT we would support reverse osmosis water treatment plants for Muynak and collective farms in the region.

- (e) We would support several works within the city limits of Nukus, i.e., the completion of sewage treatment works (including the completion of pumping stations, sedimentation ponds, pipelines).
- (f) In terms of soil stabilization, we would support a replanting/reforestation program at a large level (\$5 million for a three-year program in Uzbekistan multiplied by three in order to encompass the three disaster zone republics).
- (g) We would support other Nukus-related activities such as bath houses, etc. These are not expensive.
- (h) We would support a micro-enterprise development project, one that makes small credits available to small entrepreneurs to start small businesses. This is a popular program with worldwide success. It is targeted at people who have little access to capital. It is a good for local economies because it diversifies them. It also gives individuals with ideas and energy the chance to put them into practice.
- (i) There may be other projects we will soon identify as our mission continues. Perhaps there are some projects that your government might put forward.

Following Wildeman's presentations, he received questions and comments from the floor from high-ranking Karakalpakstan government officials.

Congrad Doshumbayev, Vice Prime Minister of Karakalpakstan

- Increasing the potable/drinking water supply is one of the most urgent problems in the area. The focus on Nukus by the World Bank is good because that is where half the population lives and where water quality is poor.
- The stabilization of newly exposed seabed soils is a major task facing the government.
- * - I'd like to emphasize that health protection needs financing. We'd like this to be included in a plan of action for the disaster zone.

Ministry of Forestry -- Arktenbayev

- There are many activities related to soil stabilization already in progress. His focus was on the exposed seabed.
- If the World Bank helps us, then we can solve many of our economic problems; personnel training and expert exchanges are necessary.

Head of Water Supply/Sanitation in Karakalpakstan

- The main feeder of drinking water to Muynak should be included on the list of World Bank priorities for the disaster zone.

- He noted, however, that water treatment alone would not resolve all of the region's water quality problems.

Mr. Yakushin (responsible for main feeder from Tuyamuyun Reservoir to Nukus)

- We have spoken of and requested construction of a second pipeline to Nukus, but you made no mention of it.
- We have a problem with manufacturing equipment, e.g., pumps. Therefore, we would like to set up joint venture on pump manufacturing.
- We have no plants for producing reagents such as aluminum sulfate and sands that are required for purifying and treating the water.
- We would like an automated system of management and laboratory for monitoring and controlling water quality.

Vice Prime Minister

- In the rural areas water is not supplied by piped-in water. Please render help to construct water pipes in a rural area network.

Chief Architect (must be City Planner) of Karakalpakstan

- More than 2000 widely dispersed village settlements are in need of water and gas supplies. How can we help them in an overall plan? We need help in developing a comprehensive general scheme. We believe the cost of such a plan is on the order of 200 million 1993 roubles (approximately 1,000 = \$1, as of May 1993).

Reimov (Head of Karakalpakstan Research)

- All must work to develop this catastrophe zone.
- Karakalpakstan scientists feel it is impossible to carry out phytoamelioration (the use of vegetation for land reclamation) on the seabed; they cannot stabilize the soils of the seabed. 90% cannot be restored.

Director of Karakalpakstan Agriculture Branch of the Karakalpakstan Academy of Sciences

On the problem of soil stabilization of seabed soil and in the Delta:

- We have researched the seabed since 1980. We have developed experimental farms on about 320 hectares of exposed seabed. We must increase the number of experimental sites on the coastal area.

- We need a buffer zone between the recently exposed seabed and the more distant irrigated territory (they are looking at different types of plants and planting schemes in order to reclaim the seabed soils).

Cook (Bank Consultant)

I have two questions:

Q1. About the pipeline from the reservoir (there are 235 km of pipeline to Nukus): Nukus gets its water from the Kaparas reservoir but repairs are presently being made on this pipeline. Meanwhile, the city gets its water from the irrigation canal. Is the pipeline still out of operation? Why?

A: The pipeline was originally to take water from the riverbed and, until a second line is opened to the Tuyamuyun reservoir, water will come from Karapas reservoir. Work on the pipeline is being carried out by two ministries. There will be two main feeders from Kaparas. Today, Nukus gets its water from Tuyamuyun, which supplies approximately 90% of Nukus water; the remaining 10% comes from local lakes. The first pipeline will be completed by the end of 1993; the second pipeline will include water to augment Nukus needs (this line has not yet been started).

Q2. Ground water question: They are trying to pump out salty water to lower the water table and recharge it later with fresh water. What is the status of this?

A: Tests have been carried out in two locations; results are generally not so good, but there are some encouraging results as well.

Ani, the UNDP Representative, noted that Karakalpakstan must be the focus of attention for assistance in Phase 1 of the joint mission's plan for the Aral basin's disaster zone.

Q. MHG: How closely do Uzbekistan scientists work with other Central Asian Republic scientists on soil stabilization?

A. Reimov: Turkmen scientists are working in the former (ancient) delta of the Amudarya. This is not the present-day delta in Karakalpakstan. This research is only relevant to and useful for the Urst Urt Plateau. Soil structure in this region is different from that in the exposed Aral seabed. Therefore, research on the seabed is carried out only by Karakalpak and Tashkent scientists; we have some results for the Delta.

The Head of Agricultural Research of the Karakalpakstan Academy of Sciences followed up by suggesting that discussions were being held with Turkmen and Kazakh scientists. [NB: I think the interaction among scientists in the region is

poor. This is an area where UNEP could help the region greatly. Bring these scientists together on specific environmental issues.]

Jan Post

The projects we have discussed focus on the symptoms of environmental degradation and not its causes.

- We should clean the water, but we should also take a close look at the causes of the problem, e.g., the overuse (or misuse) of pesticides, the possible substitution of pesticides by biodegradable ones; the mixing of irrigation and drinking water with drainage water.
- In addition, we have heard nothing about the Aral Sea, yet we talk about the Aral Sea Problem. Do we really know the influence of unstable soils on the land surrounding the sea? We should address this before we start to undertake large-scale projects focused on soil stabilization.

Ellen Brown

The rural population is being considered by the World Bank mission. [NB: It's actually a joint mission, although she never referred to it as such.]

Today, my interviews will focus on health protection. [NB: She made no mention of UNDP or UNEP interviews on health protection.]

Jeff Thornton

An authoritative, comprehensive development plan for the disaster zone will be very important.

Presentation by the Chairman of the Karakalpakstan Supreme Soviet

- The final report of the joint mission will be printed by Bank; please send us this document. He said that he is an environmentalist. He noted that he had helped to lay the foundation to the River Basin Authority (BVO) for the Amudarya.
- Karakalpakstan is the epicenter of this disaster.
- Programs are to be carried out as follows:
 - (1) Treatment of water in the Amudarya.
 - Purifying river water will solve several problems. We have a large-scale project for water purification on the river. This is a labor-intensive and costly project. I don't know when it will be completed. When you develop your mission's Action Plan, please mention this.

(2) The Aral Sea and the Ecological Disaster Zone.

- All Central Asian Republics understand the need for joint programs in this region. Now, only water distribution is the focus of these republics, but they realize the need to work together on other issues as well, such as the appropriate and proper use of irrigated land. All republics now suffer economic problems, but no common approaches have emerged. This requires greater financing. [NB: This is an aspect of "regional" identification that must be developed. These republics must come to realize that, with regard to water, they are all in the same "boat."]
- The resolution of such issues as the reconstruction of the regional irrigation system, the use of chemical and mineral fertilizers, improvements in the disposition of agriculture, type of crops grown, etc., is a function of the economic policies of each state in Central Asia. This is a major problem the World Bank should consider.
- In August 1993, the proposed meeting of heads of state of the Central Asian Republics will yield an agreement on Saving the Aral Sea. The World Bank can help them to accelerate joint decisions and actions. [NB: He does not refer to the mission as "joint" one but as a Bank mission.]

(3) Health Protection; Food and Water Supply

- Each Central Asian Republic is carrying out some programs related to improving its potable water supplies, but these programs are very small. We have to speed up the improvement in living conditions of the population in the disaster zone. This is really a two part problem: (a) health protection and water supply, and (b) local problems requiring urgent solutions.
- People are suffering from different epidemiological diseases. It is therefore important to improve local water distribution, create health spas, and manufacture medicines (this is an acute problem).

(4) "Saving the Sea Itself"

- Uzbekistan has decided to save the Aral Sea as an object of nature which has its own right to survive. [NB: The fact is that no formal decision has as yet been made on this.]
- There is an agreement of the CARs to put a fixed amount of water into the Sea each year (signed in Kyzyl-Orda this year).

- In addition, some other water may flow into the Sea (high annual flows in the past few years have made it possible for river water to reach the Sea). We must consider how best to use this water to improve the ecological situation in the area. We cannot fill the Sea (e.g., save it) with freed-up clean water, just for the sake of restoring the Sea.
- We should save the Sea at some level and should solve some of the ecological problems of the deltas.
- We must manage the entire area as a system. [NB: Should we view the Aral basin as Ecosystem?]
- We must restore the fisheries and vegetation, and flush the soils of salts.
- We must try to recreate a certain desired macroclimate in the area. [NB: This is now under consideration for the deltas. Research supports the contention that the regional climate has changed in the past three decades, with winters getting colder and summers getting hotter, e.g., the climate has become more continental.]
- We must pursue phytoamelioration efforts (use vegetation for soil reclamation) on the exposed seabed.
- We have not decided which areas in the delta are to be flooded.

(5) Economic Problems

- It is impossible to solve all of our problems with charity.
- The main source of financing is to be the national economy. We have favorable climate, fertile soils, rich natural resources, cheap labor sources and a developed infrastructure.
- There is no lack of electricity, gas, or of a transportation or communication network.
- During the Soviet period, this region suffered from a lack of technology.
- Most of the population and government personnel are not yet ready for a market system. We need time to train personnel. It will be very time-consuming to switch to such a system because we were taught one way for 70 years. There are still some diehard supporters of the old regime.
- Karimov has put forward five principles for Uzbekistan. [NB: The P.M. then mentioned only one]:

1. The state should be the reformer. We are carrying out some privatization but we do not yet know if there will be positive results. Our ignorance of a market economy has already yielded some negative results. Only a few thousand are now ready for private sector management. Today, we are at an interim period and should rely on joint stock companies (a textile company is the only such company in Nukus) and joint ventures. Maybe in the next two or three years, this will have a positive influence within Uzbekistan. [NB: He made no mention in his talk of Training and Education Needs.]

Bob Wildeman

We agree with your assessment of economic problems. We did not talk much about the Aral Sea itself because we have a team in Tashkent working with the BVOs, and we are even considering polder construction (which we hope to include in the final program, if not in Phase 1's focus on the immediate needs of the disaster zone). Our group was here to focus solely on the disaster zone itself.

The next steps to be taken by the World Bank:

- First Step: Our wrap-up meeting will take place during the week of June 15, attended by all five CARs. If this program is supported and approved, Step 2 will begin.
- Second Step: Install international consultants to prepare all civil works for the project. The World Bank would draft the Terms of Reference, hire a consulting firm to set up the work in the Region. The consultants would come in August and undertake reviews in August, September, and October in order to produce preliminary engineering design.

We will return in October for formal appraisal and review with you. We will prepare a World Bank appraisal report; that will take 3-4 months to process internally within the Bank. [NB: No mention was made of the roles of either UNEP or UNDP.]

- In the meantime, consultants will be completing their work with details. We welcome suggestions on technical assistance for technologies. It will be a large part of our program. We anticipate spending \$10 million on BVOs to meet their institutional needs.
- Between now and August, when consultants are expected to show up in Central Asia, we will move as quickly as possible.

Saturday, 29 May 1993 -- MHG's Observations on the Flight and Visit to Muynak (2:45 p.m.)

We flew over large expanses of rice fields and some fields devoted to fodder production. The rice fields are flushed four times to clean the soils before planting can begin.

There is a large expanse of unmanaged water at some distance from the Sea along the Amudarya (it may be a reservoir, large lakes, or wetlands). It is shallow in many parts, with the land under the water sometimes showing furrows of previously cultivated land.

As we fly closer to the Sea there are three lakes, two of which are salty. The large one is fresh in the spring because of snow melt. You can see small flocks of birds on it, suggesting a live ecosystem.

In Muynak, we drove from the airport to a site about 18 km into the buffer zone. This was an area that had been under the sea until the mid 1970s, and in 1982 a program was developed to revegetate the area in order to keep the soils of the exposed seabed from blowing in the wind. The area was covered with vegetation (haloxylon aphyllum, haloxylon persicum, etc., and saxsaul bushes. [NB: This is the same vegetation that is used in the Karakum Desert in Turkmenistan to fix otherwise moving sand dunes.] It has taken some years for the soils to become less saline as a result of wind action which generates dust storms, before plants could take hold. In the early period of dessication, the Sea was less salty (about 14%; now it's about 33-35% [equivalent to sea water in the open ocean]). Thus, the newly exposed seabed soil is relatively more salinized as the Sea recedes today (as compared to those areas first exposed a decade ago).

In the car on the way to the Nukus airport, Karakalpakstan's Vice Premier said to me, "Marx was a smart man, but the application of Marxist thought by Russians was wrong. If Lenin had done things a little differently, it would have worked." He also told me that there was a "Jewish problem" in the communist movement in the early days. [NB: This is the same person who had boasted to Bank officials a few days earlier that he would be an entrepreneur in a few years.]

Tuesday, 1 June 1993 -- Science and Training Center (EKOLOG)

This is a pseudo-NGO created by the Uzbek government.

Director, Science and Training Center (EKOLOG)

- The center was created in 1991. It is attached to Uzbekistan's Goskompriroda (Nature Protection Committee). It deals with in-service training and service in agrobioecology (animals, fauna, flora, biotechnologies, and standards of soils, water, atmosphere).
- He said that Habibulayev is the Chairman of the Committee [not Ministry] for Nature Protection in Uzbekistan. The connection with Goskompriroda is reflected in a close contact with this research center. It deals with research and propaganda (e.g., information) about environment. It is attached to a group

protecting natural resources. Center personnel design projects and prepare data bases on ecological information. They also deal with the Aral Sea basin [NB: but it does not seem to be a main or major concern].

- It is funded through direct contracts and by request. They have connections with enterprises, agricultural groups, and government (land preserves). Financial arrangements are flexible; the center can make its own deals with contractors.
- Aral Sea Studies. Ekolog compiles data bases for ecological information on the Aral Sea and Basin. It is roughly ready to undertake assessments of this disaster zone, but money is needed to finish this project.
- They work for the State Center for Science and Technology. This program will include approximately 60 scientific projects to cover main problems with the Sea, water resources, social problems, human resource problems.
- The social aspects on complex programs they now do are as follows:
 - The effective distribution of human resources under conditions of crisis--unemployment, demographic, food problems.
 - Creation of favorable sanitary conditions.
- Review of areas around air fields used for agricultural purposes in order to look for pesticides.
- The Center's activities have many facets.
- They also have training courses; people come to Central Asia for training.

Q. Is there any group, ministry, etc., in Uzbek who knows everything going on in the Aral Basin?

- The Center has tried to create and maintain a data base. They have spoken to the Chairman of Goskompriroda about it. The Uzbeks have a saying, "When you have too many sheep, the sheep start dying." [NB: I guess the relevance of this comment was that there are too many groups collecting information, but no one group has it all in hand.]
- Each sector of society has its own point of view as to how to deal with the Aral Sea situation.

Q. What are your priorities?

- There are approximately 25 projects that relate to refilling the Aral Sea. Yet, there is an overall absence of information on the Aral Sea Disaster Zone

(historical as well as current information). We need central information in one place so that we can better evaluate projects as to their scientific soundness.

Q. What are the major environmental problems in Uzbekistan?

- The main problem being considered in CIS and Uzbekistan is to provide enough good food to the people. [NB: Another organization referred to the need for "pure" food. I understood the latter to mean uncontaminated food.]
- The #1 problem, however, is drinking water; how to get clean water to the people.
- This can be done only by rationalizing agriculture, beginning with the structure of agricultural land; the rationing of water and land; and stimulating farmers to grow ecologically clean produce. Uzbekistan is an agricultural country and should remain so. There are zones of ancient cultivation.
- In the Fergana Valley there are no big state farms. There are collectives (they own their own land). The productivity levels of the latter are higher than those of the former. Now big collectives no longer exist (with 5-10,000 hectares). Now, there are small ones with 500-700 ha for each farmer. In Karshi, farms are bigger but will eventually be divided.
- State farms are now being cancelled. In time they will disappear. The density of population in Fergana Valley is 421 people/km², the highest in the Former Soviet Union. Now people can lease 10-15 ha on their own from collectives; part of the produce goes to collectives, and part of it they can sell in the free market.

There are at least two ways to solve the agricultural problem:

- (1) Follow the natural course of events. Work according to current agrarian policy, and, gradually, productivity will increase, relying on the talent of the farmers.
- (2) There is the political way; an infusion of new technologies and other inputs could shorten the time to increasing productivity. [He supports the second route; outside help along with using the entrepreneurship of the farmers.] Foreign aid would speed up the progress.

Scorpion Analysis (a representative of Ekolog)

- Uzbekistan's agriculture is of low efficiency. Uzbek farmers use too much water for what they produce. They have a high rate of chemical fertilizer use and a high cost of agricultural production.

It is necessary to unite efforts to save the Aral Sea into one set of hands. [NB: How about an Aral "Tsar" like the US Energy or Drug Tsar??]

Ecological problems are dealt with by Goskompriroda. It is in charge of State policy, and its policy should be comprehensive. It is now working on a program mentioned at the beginning of our discussion. It is comprehensive and is to be carried out in several phases. We plan to make the program very broad. We could start a multinational program using this program as a basis.

The first stage of this program would be to collect all information on the Aral Zone (e.g., in the fields of research on water, land and society). Systematize all this information. Offer support for specific solutions to these problems. This program will be revised and reviewed by experts to provide support for management for 5, 10, 15 years, during which they could stabilize the processes of degradation in Priaraliya (the area surrounding the Aral Sea), and then improve the situation. 20-30 different institutes should work together, with Goskompriroda taking the lead.

Thursday, 3 June 1993, 3 p.m. -- Interview with Minister Ashirov (Ashgabat, Turkmenistan)

Ashirov (Minister of Environment and Nature Protection in Turkmenistan

[NB: This was a meeting with 12 joint mission members.]

We have merged our hydrology and meteorology bureaucracies (into three buildings in the same location). We have eight national parks, 32 forests, and 67 meteorological stations.

Bob Wildeman: The Kaparas reservoir is being separated from the Tuyamuyun Reservoir to create a fresh water impoundment to serve Tashaus and Nukus. When finished, the quality of water will be approximately 1g/l, as opposed to river water which is currently greater than 4g/l.

We met with a Regional Hakimiyad (Dep. Hakima) and agreed on local-level priorities. We ask him about his most urgent needs. In addition to water, he wanted support for small business development, and soil stabilization measures, among other needs.

- Q. Waldeman: Management of the water supply in Turkmenistan has now been decentralized to the oblast level. The mission representatives were concerned about who they should talk to about water problems--the local level (e.g., in the disaster zone) or in Ashkhabat (e.g., the central government)? Where is the decision-making authority?

Ashirov: The Turkmenistan State Service for Housing was decentralized 2-3 months ago. The responsibility for housing services was given to each executive body in each region. No centralized organ was left. The same approach was taken with regard to water supply systems. Problems are now to be resolved at the regional level.

Waldeman: Tashaus is the only Turkmen area within the Aral disaster zone. It is now their local responsibility. The next step is the Cabinet of Ministers. The local Hakima would not provide information until it was cleared in Ashgabat. He knew the

dates of our meeting in Turkmenistan and said we would get together there, but he isn't here.

Probably the cost allocation for the Kaparas activity would be shared between Uzbekistan and Turkmenistan. Is that acceptable?

Ashirov: Cost sharing will have to be involved, based on proportional share. There are no problems between Turkmenistan and Uzbekistan to date.

[NB: Why are we all (the other 10 mission members) sitting around the table watching the task leader and Russian leader negotiate a schedule for the two-day agreement? Mike Rathnam is focused on institutional arrangements.]

The Ministry of State Ownership and Support of Entrepreneurship handles sewage and sanitation issues. It generates its own money by taxing businesses. Water, gas and electricity are not free. 35 KW/person is free. Enterprises pay for all the energy they receive.

The State structure is not perfect. We are still working on it.

Wildeman: The World Bank likes the idea of transferring decision-making authority down to regional levels. All decision-making was at the top in the past.

If Tashaus officials were to charge people for water, would they have to get permission from the Turkmenistan Cabinet of Ministers?

Ashirov: No--only the President can decide to maintain a policy of free water.

Waldeman: The World Bank will provide capital investment costs and grants, but operation and maintenance costs must be paid for by the recipients.

Ashirov: No--the President will pay for it. The people will never be asked. The people will think it is unfair. They are already living in a disaster zone. Other regions that have good water do not have to pay. They too should have good water available--and for free.

Thursday, 3 June 1993 -- Discussions with Aga Hodjamamedov, President of the Turkmenistan Academy of Sciences

(Hodjamamedov recently replaced Babayev in this position, who had held the position for more than a decade. The change has been attributed to Babayev being tied to the "wrong political factions" in this new country. Babayev was unceremoniously and precipitously removed from office. [NB: Aga has little power and little information on many of the issues we wanted to discuss. Having been just appointed to this position, he was very reluctant to answer any of our questions that could be (even remotely) considered political, social, or economic. Babayev was in the room, and he had been one of Babayev's less

sharp students. In fact, he turned to Babayev to answer several of the questions asked by mission members. In sum, the quality of his responses was low.))

Problem #1: Drinking water is a major concern of the central government. We need to improve the quality of water.

We usually refer to two kinds of water: (a) collector drainage water; and (b) drinking water.

The amount of pasture in Turkmenistan today is has 36-38 million hectares. There is a problem in Turkmenistan because of an increasing number of cattle.

Drainage water has adverse consequences for both land and vegetation. We would like to desalinate drainage water for use in agriculture. In Arizona there is a big plant for the desalinization of drainage water. When President Nyazov visited the USA, we included this particular problem in a plan to cooperate with the US. Today, drainage water is directed mainly to Lake Sarakamysh. It is not an insignificant volume of water. Out of a volume of drainage water of about 7 billion m³/year, around 5.5 billion m³ goes into Lake Sarakamysh. The salinity of Sarakamysh water is 8-10 g/liter. The salinity of Lake Sarakamysh has been increasing since the 1960s. The evaporative season is from May to mid-October, during which 40% of the lake's water is evaporated. It is 43 m above mean sea level. It is in a natural depression, but it is now growing. Its current surface area is 7-8000Km². Filtration of drainage water into the soils is high. Fish from the Lake are inedible.

Q. Can you return Sarakamysh water to the Aral Sea?

A. There are proposals to shift it to the Aral Sea. But the quality of the water in Sarakamysh is very poor due to pesticides, organics and salts. To do so will make The Aral Sea a truly dead lake. If we put all drainage into the sea, the sea will biologically die.

Q. Bob Wildeman: We should supply water to sea, but what kind of water and from where? From the Caspian Sea?

A. In the Caspian Sea the salinity of water starts at 15 g/l. By the time it gets to the Aral Sea its salinity would be even worse. The Caspian Sea is a "living" lake, by which I mean that its level rises and falls. Today, its level is relatively high. Tomorrow, however, it may become low again, as was the case in the 1970s. The Siberian water transfer is a dead issue. It won't happen. This leaves are only two other options as possible sources of water: taking water from the Amudarya and the Syrdarya.

- Let us focus on the Amudarya. 200 cm³/sec flow of the river in Tajikistan; by the time it gets to the delta it is at 300 cm³/sec. 1700 cm³/sec is lot along the river. This is not enough minimum flow to stabilize the Aral Sea; the same is true for the Syrdarya. About 20% of the Syrdarya gets to sea.

- As for the water diverted from the Amudarya to the Karakum Canal, it is off limits as far as reductions go. What's done is done! The Canal is already a given (it was designed to supply irrigation and water).

Q. Should we, then, let the Aral dry up?

A. The reality is to put the collector drainage water into the Aral Sea mixed with a specified amount of fresh water. This, however, would only be a temporary solution.

Q. MHG: Do the Central Asian Republics' science academies get together?

A. Yes. The Council of Presidents (of the academies) of the former Soviet Union republics hold an annual General Assembly. Its location rotates each year, and each Academy in the region takes the lead on one issue: Uzbekistan-head institute for cotton; Kazakhstan-mineral resources and technology; Turkmenistan-deserts and problems in deserts, adaptation to arid conditions; Tajikistan-earthquakes; Begress(?) - computers; Kyrgyzstan-mountains.

Q. Wildeman: When will the new extensions of the Nyazov (the former Karakum) Canal be completed?

A: No schedule exists. I cannot answer you.

Thursday, 3 June 1993 -- Meeting in Ashgabat with Nikolai Orlovsky, Deputy Director, Turkmenistan's Desert Institute

Q. Does your institute have any activities in the Aral Sea region or in the Disaster Zone?

A. Orlovsky: Our institute studies soil degradation in the Priaraliya region and in the non-irrigated areas but not oases. In oases we study only the secondary uses of drainage water and degradation of the land, pastures, and vegetation. We have developed measures to create pastures, fix sand dunes, and stabilize vegetation. We also study ecology.

In Turkmenistan, Tashaus Oblast is in the Aral Disaster Zone. Here we irrigate agricultural land and pastures. Drainage is discharged from Khorezm to Lake Sarakamysh.

Agajan Babayev Interview

(Former President of the Turkmen Academy of Sciences and still Director of the Desert Institute [I think].)

About 85% of Turkmenistan's territory is desert; that means there are 4 million people on .5 million Km² of land.

This is the least populated region in the former Soviet Union. The Desert Institute was created in January 1962. It is the National Training Center for Combatting Desertification in Turkmenistan.

He mentioned the Institute's involvement in the Colorado-Amudarya Rivers Project (CARP).

Q. Is the Turkmenistan Academy of Sciences interacting with other academies in Central Asia?

A. To a very limited extent.

Q. Will there be cooperation on desertification in Priaraliya (the region immediately surrounding the Aral Sea) among Turkmenistan, Uzbekistan, or Kazakhstan?

A. Last year we completed an interstate (CAR) agreement on desertification. Turkmenistan will be the lead institute on this problem. We now refer to all former Soviet republics as adjacent foreign states.

Although there is no more Soviet Union, we try to join together to work on similar problems. We meet annually; each October we meet to discuss our regional problems. The Desert Institute publishes a magazine, which is now being translated into English in the USA.

Our institute is doing work on desertified zones with very saline soils and high groundwater like the region surrounding the Aral Sea. We recommended, as early as 1987, planting vegetation on the dry, exposed sea bottom. We developed original pilot projects on the exposed Aral seabed. We sowed saxsaul, haloxylon persicum (salt-loving plants). These trees grow 12-13 meters high. The root is one meter deep. We learned important things there. Mainly, sand and salt, when dried, weather quickly. Sand and salt storms occurred. It will be impossible to restore the Aral Sea, but it is possible and necessary to stabilize the dry bottom.

Q. Jan Post: How close to the Aral Sea's edge would halophytic (salt-tolerant) vegetation grow on the exposed, saline seabed?

Post said that to plant on dry soil, the aquifer's water table should be lower than 3 meters. The area is vast--60 Km. They've planted up to 30 Km toward the sea. We are sure we won't find species that can survive in the highly saline soils that exist very close to the receding sea. It will take years for the winds to remove some of the salt from the surface layer, after which some vegetation can be planted with some degree of success. There will always be a zone where nothing grows.

A. Babayev: We have been waiting for seeds from Arizona.

We have collected seeds along the Persian Gulf shore to try them on the western edge of the Karakum Desert. Haloxylon is growing poorly in the Kara-bogaz region (adjacent to the Caspian Sea), but it does grow well on dry, sandy soils.

We are looking for plants that not only stabilize the soils but can also be used as fodder. With natural vegetation, soil is poorly stabilized.

It is not necessary to plant everywhere, but only in those areas which are subjected to wind erosion.

The Institute of Forestry has the information on the plants that can survive in highly saline soils that mission member Jan Post is talking about.

Thursday, 3 June 1993 -- The Following quote was made by Nikolai Orlovsky, (Ashgabat)
[NB: I thought it represented a widespread view throughout the Central Asian region.]

"The standard of living in the disaster zone does not depend on whether the Aral Sea is saved or whether the Amudarya delta is saved. It depends on the quality of drinking and irrigation water."

[NB: I spent Thursday evening and Friday talking to Orlovsky, Sarkisov, and others (see my other set of notes). Orlovsky showed me several large posters that depicted the relationship between the regional bodies of water; the Caspian Sea, the Aral Sea, and Lake Sarakamysh. I took photos of them, which I can pass on to you, if you wish.]