MEMORANDUM

Securing Ludhiana's Canal-Based Drinking-Water Supply

Seeking Full Public Disclosure, Independent Scientific Scrutiny and Verification of the 580 MLD Bilga Water-Supply Project

Submitted in public interest by:
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1. Purpose of the Memorandum

Ludhiana's proposed canal-based drinking-water project is an important public infrastructure initiative intended to reduce the city's dependence upon over-exploited and potentially contaminated groundwater.

The project reportedly includes:

- abstraction of raw water from the Sidhwan Canal, connected with the Sirhind Canal system originating at Ropar Headworks;
- construction of a 580 MLD Water Treatment Plant at Village Bilga;
- clear-water pumping infrastructure;
- approximately 165-173 kilometres of transmission pipelines; and
- supply through about 137 overhead service reservoirs.

The project can become a major step towards Ludhiana's long-term water security. However, its public-health efficacy cannot be judged merely by its financial cost, treatment capacity or physical progress.

The project must be evaluated scientifically from the source of raw water to the consumer's tap.

This Memorandum therefore seeks disclosure of all presently undisclosed or insufficiently disclosed technical, financial, environmental, contractual and public-health facts concerning the project.

2. Principal Public-Health Concern

The proposed raw-water source is ultimately connected with River Satluj through Ropar Headworks and the Sirhind-Sidhwan Canal system.

The Satluj and its tributaries face multiple pollution pressures, including:

- industrial and pharmaceutical pollution through the Sirsa-Balad river system from the Baddi-Barotiwala-Nalagarh industrial belt;
- municipal, agricultural and possible industrial pollution through the Swan River;
- sewage, industrial drains and agricultural runoff between Nangal and Ropar;
- variations in flow, dilution, sediment movement and turbidity caused by hydropower and barrage operations;
- accidental chemical spills and illegal discharges;
- local contamination of the Sidhwan Canal; and

- possible contamination during storage and distribution within Ludhiana.

Pollution generated by Ludhiana and discharged through Buddha Darya enters the Satluj downstream and cannot normally travel upstream to Ropar Headworks. Nevertheless, Ludhiana-based pollution may still affect the proposed supply if sewage, dairy waste, industrial effluent, stormwater or accidental spills enter the Sidhwan Canal before the Bilga intake, or if treated water becomes contaminated in reservoirs and pipelines.

The shift from groundwater to canal water may reduce exposure to groundwater-related contaminants, including uranium. However, canal water cannot be declared safe without direct and periodic testing.

3. Need for Complete Public Disclosure

A project supplying drinking water to lakhs of residents must operate under the highest standards of transparency.

The following documents should be uploaded in readable form on the official websites of Municipal Corporation Ludhiana and the project authority:

1. Approved Detailed Project Report.
2. Final project cost and financing structure.
3. Design-Build-Operate contract and subsequent amendments.
4. Approved process-flow diagram of the Bilga WTP.
5. Hydraulic drawing of the raw-water intake.
6. Design raw-water quality report.
7. Environmental and Social Impact Assessment.
8. Environmental Management Plan.
9. Water-safety and emergency-response plans.
10. Guaranteed finished-water quality parameters.
11. Independent design-review and technical-vetting reports.
12. Construction schedule and updated physical and financial progress.
13. Operation and maintenance obligations.
14. Performance standards, penalties and accountability clauses.
15. Sludge and filter-backwash management plan.
16. Commissioning, trial-run and acceptance-testing protocol.

Disclosure of these documents would strengthen public confidence and permit meaningful scrutiny by independent experts and civil society.

4. Questions Requiring Documentary Answers

A. Project Planning, Cost and Contract

1. What is the presently approved total cost of the project?
2. What amounts are being contributed by the World Bank, Asian Infrastructure Investment Bank, Punjab Government, Municipal Corporation Ludhiana and other agencies?
3. What is the exact value of the Design-Build-Operate contract?
4. Who are the principal contractor, joint-venture partners, consultants, project-management consultants and independent engineers?
5. What was the original commencement date and contractual completion date?
6. What is the present physical and financial progress?
7. Have any delays, extensions of time, cost escalations, variation orders or contractual amendments been approved?

8. What operation and maintenance period is included in the contract?
9. What penalties apply for delay, inadequate treatment, equipment failure or non-compliance with drinking-water standards?
10. Who will own and operate the project after completion of the contractual O&M; period?

B. Raw-Water Availability and Intake

11. What is the exact location of the Bilga raw-water intake?
12. Is the plant connected through a dedicated intake channel, drain, pipeline or a combination thereof?
13. What is the sanctioned quantity of water to be drawn from the Sidhwan Canal?
14. Is adequate water legally and physically available throughout the year?
15. What arrangements have been made during canal closure, maintenance, drought or low-flow conditions?
16. How many hours or days of raw-water storage will be available?
17. Will the project continue to meet Ludhiana's demand during interruptions in canal supply?
18. What protection has been provided against illegal discharge, accidental spills, canal breaches, sabotage and contamination near the intake?
19. Has the entire canal route from Ropar Headworks to Bilga been surveyed for drains, outfalls, industries, settlements and vulnerable crossings?
20. Which authority is responsible for protecting the raw-water source?

C. Pollution Through the Satluj, Sirsa and Swan Rivers

21. Has a scientific source-apportionment study been conducted for pollution affecting the Satluj upstream of Ropar Headworks?
22. What is the verified influence of pollution from the Sirsa-Balad river system and the Baddi-Nalagarh industrial belt?
23. What is the influence of the Swan River upon water quality at Ropar?
24. Have pharmaceutical residues, antibiotics, pesticides, solvents, heavy metals, PFAS and other industrial chemicals been tested?
25. At which locations and during which seasons were samples collected?
26. Were samples collected during industrial-discharge incidents, rainfall events, canal reopening and low-flow conditions?
27. Are Punjab and Himachal Pradesh operating a joint pollution-warning and emergency-response mechanism?
28. Will the Bilga control room receive advance information regarding upstream industrial spills and abnormal river-water conditions?

D. Treatment Process and Efficacy

29. What is the complete and finally approved treatment process for the 580 MLD Bilga plant?
30. Does the plant include only conventional coagulation, clarification, filtration and chlorination, or does it include advanced treatment?
31. Are powdered activated carbon, granular activated carbon, ozonation, ultraviolet disinfection, advanced oxidation, ion exchange, nanofiltration or reverse osmosis included?
32. Which contaminants formed the basis of the plant design?
33. What maximum raw-water turbidity, organic load, microbial load and chemical concentration can the plant safely treat?
34. What treatment barriers are provided for pesticides, pharmaceuticals, antibiotics, PFAS and dissolved industrial chemicals?
35. Can the plant remove dissolved uranium if it is detected above the permissible limit?

36. What treatment guarantees apply to arsenic, lead, chromium, cadmium, mercury and other metals?
37. What redundancies are provided if a pump, clarifier, filter, disinfection unit or online-monitoring instrument fails?
38. Can any treatment stage be bypassed? If so, under whose authority?
39. Will untreated or partially treated water ever be capable of entering the clear-water system?
40. Has the proposed treatment process been pilot-tested using actual Sidhwan Canal water during different seasons?

E. Uranium and Other Health-Critical Parameters

41. Has uranium been tested in Satluj water at Ropar, Sirhind Canal, Sidhwan Canal, Bilga raw water, treated water and WTP sludge?
42. What analytical method and detection limit were used?
43. Will testing distinguish between dissolved and particle-bound uranium?
44. What action will be taken if uranium exceeds 0.03 mg/L or 30 micrograms per litre?
45. Will testing also include arsenic, fluoride, nitrate, pesticides, pharmaceutical residues, antibiotics, PFAS and disinfection by-products?
46. Which accredited laboratories will undertake these tests?
47. Will the complete laboratory reports - not merely selected summaries - be placed in the public domain?

F. Continuous Monitoring and Emergency Response

48. Which parameters will be monitored continuously at the intake and plant outlet?
49. Will online monitoring include turbidity, pH, conductivity, chlorine residual, ammonia, organic matter and abnormal colour?
50. What are the warning and shutdown limits?
51. Will abnormal raw-water conditions automatically trigger an alarm or closure of the intake?
52. Who has the legal and operational authority to stop abstraction?
53. Is there an emergency protocol for industrial spills, sudden toxicity, algal blooms and microbial contamination?
54. Is sufficient stored water available to maintain supply while contaminated raw water is isolated?
55. Who is authorised to issue a public-health or boil-water advisory?
56. Within what time must consumers be informed after detection of unsafe water?

G. Sludge and Backwash Disposal

57. How will sludge from clarification and filter-backwash water be treated?
58. Will the sludge be tested for uranium, heavy metals, pesticides and industrial chemicals?
59. Where will treated sludge be transported and disposed of?
60. Will any sludge, backwash water or chemical waste be discharged into a drain, canal, Buddha Darya or the Satluj?
61. Has adequate land and infrastructure been earmarked for safe sludge handling?
62. Who will independently audit sludge generation and disposal?

H. Overhead Reservoirs and Distribution System

63. How many new and existing overhead reservoirs will form part of the project?
64. Have the structural safety and hygiene conditions of all existing reservoirs been assessed?
65. How frequently will reservoirs be cleaned, disinfected and inspected?
66. Will the distribution network operate continuously under positive pressure?

67. What safeguards will prevent sewage ingress through leaking pipelines?
68. How will illegal cross-connections and backflow be prevented?
69. Will residual chlorine, E. coli and turbidity be tested at network extremities and consumer taps?
70. What mechanism will enable citizens to report discoloured, foul-smelling or contaminated water?

I. Independent Verification and Public Accountability

71. Which independent scientific institution will verify plant performance before commissioning?
72. Will commissioning include a 30-90 day trial under varying raw-water conditions?
73. Will samples be jointly collected, sealed and divided between government and independent laboratories?
74. Will PAC representatives, public-health experts and independent scientists be permitted to observe sampling and commissioning?
75. Will raw and finished-water results be displayed on a real-time public dashboard?
76. Will the dashboard disclose the date, sampling point, result, standard, laboratory, detection limit and plant operating condition?
77. Will annual independent water-safety audits be mandatory?
78. Which officer or authority will be personally accountable for the supply of non-compliant drinking water?
79. What grievance-redressal and compensation mechanism will protect affected consumers?
80. Will all project-monitoring committee decisions, inspection reports and corrective-action reports be placed in the public domain?

5. Requests and Recommendations

In view of the project's direct bearing upon public health, it is respectfully requested that the concerned authorities:

1. Publish all material project documents and approved technical designs.
2. Constitute an independent multidisciplinary review committee comprising water-treatment experts, toxicologists, hydrogeologists, public-health specialists and representatives of civil society.
3. Undertake comprehensive baseline testing from the Satluj-Ropar source to the Bilga intake.
4. Prepare and disclose a contaminant-to-treatment-barrier matrix.
5. Establish continuous upstream early-warning stations.
6. Provide adequate off-stream storage for pollution incidents and canal closures.
7. Ensure that the treatment process is capable of addressing contaminants actually detected in the raw water.
8. Conduct independent commissioning and performance-guarantee testing before public supply begins.
9. Establish transparent source-to-tap monitoring covering the plant, reservoirs, distribution system and consumer taps.
10. Publish water-quality data through a continuously updated public dashboard.
11. Establish an interstate Satluj-Ropar Source Water Protection and Emergency Coordination Committee.
12. Ensure that WTP sludge and filter-backwash water are scientifically treated and do not become another source of environmental pollution.

Conclusion

The canal-based water-supply project represents an important opportunity to improve Ludhiana's water security and reduce dependence upon over-exploited and potentially uranium-contaminated groundwater.

However, the real measure of the project will not be its cost, capacity or visible civil construction. Its success must be measured by whether it consistently delivers safe drinking water to every consumer.

The principle governing the project should be:

Protect the source → Detect pollution early → Isolate unsafe raw water → Treat according to the actual contaminants → Independently verify performance → Protect reservoirs and pipelines → Monitor consumer taps → Disclose all results publicly.

Public disclosure should not be treated as an administrative formality. It is an essential public-health safeguard and the foundation of public confidence.

The concerned authorities are therefore requested to place all relevant facts, technical documents, water-quality results, contractual obligations, progress reports and performance assessments in the public domain at the earliest.

Submitted in public interest.

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