3.2 ຂໍ້ສະເໜີຈາກບໍລິສັດນ້ຳປະປາລາວຕໍ່ການຮ້ອງຟ້ອງ

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ
ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ

ນະຄອນຫຼວງວຽງຈັນ
ລັດວິສາຫະກິດນ້ຳປະປານະຄອນຫຼວງ

ເລກທີ_____/ນປນຄ
ວຽງຈັນ,ວັນທີ_____

ໃບແຈ້ງການ

ຜູ້ອຳນວຍການລັດວິສາຫະກິດ ນ້ຳປະປານະຄອນຫຼວງວຽງຈັນ ຂໍຖືເປັນກຽດແຈ້ງມາຍັງບັນດາ ທ່ານ ຜູ້ຊົມໃຊ້ນ້ຳປະປາພາຍໃນນະຄອນຫຼວງວຽງຈັນ ຊາບທົ່ວເຖິງກັນວ່າ ມາຮອດປະຈຸບັນນີ້ ໂຮງງານ ຜະລິດນ້ຳປະປາໃຫຍ່ທັງສອງແຫ່ງ ເຊັ່ນ: ໂຮງງານຜະລິດນ້ຳປະປາເກົ້າລ້ຽວ ສາມາດຜະລິດນ້ຳປະປາ ໄດ້ 20,000 ມ^3/ມື້ ແລະ ໂຮງງານຜະລິດນ້ຳປະປາຈືນາຍໂມ ສາມາດຜະລິດນ້ຳປະປາ 80,000 ມ^3/ມື້, ແມ່ນຜະລິດນ້ຳເຕັມອັດຕາຄວາມສາມາດຂອງທັງສອງໂຮງງານແລ້ວ, ແຕ່ກໍ່ບໍ່ສາມາດບໍລິການຕອບສະ ໜອງນ້ຳໃຫ້ພຽງພໍກັບຄວາມຕ້ອງການຂອງ ຜູ້ຊົມໃຊ້ນ້ຳບາງເຂດຢູ່ຊານເມືອງ ຂອງນະຄອນຫຼວງວຽງ ຈັນໄດ້ກໍ່ຍ້ອນວ່າ ອັດຕາການເພີ່ມຂຶ້ນຂອງປະຊາກອນ ແລະ ການຂະຫຍາຍຕົວຂອງຕົວເມືອງແມ່ນ ເພີ່ມຂຶ້ນຢ່າງໄວວາ. ຕາມແຜນການຜະລິດແລ້ວ ທັງສອງໂຮງງານແມ່ນສາມາດສະໜອງນ້ຳໄດ້ຮອດ ປີ 1999 ແລະ ປີ 2000 ຕ້ອງໄດ້ກໍ່ສ້າງໂຮງງານຜະລິດນ້ຳໃໝ່ເພີ່ມຂຶ້ນຕື່ມໜຶ່ງແຫ່ງ. ແຕ່ຫຍ້ອນການ ຂາດເຂີນທຶນຮອນທີ່ຈະມາລົງທຶນກໍ່ສ້າງ ຈຶ່ງເກີດບັນຫາການຂາດແຄນນ້ຳນີ້.

ອີງຕາມແຜນການໆສຶກສາຄົ້ນຄ້ວາຂອງອົງການ JICA STUDY TEAM ຊຶ່ງກຳລັງສຶກສາຄົ້ນ ຄ້ວາຄວາມເປັນໄປໄດ້ ໃນການກໍ່ສ້າງແລະຂະຫຍາຍໂຮງງານຜະລິດນ້ຳປະປາໃໝ່ເພີ່ມຂຶ້ນນີ້ວ່າ ຖ້າວ່າ ໄດ້ຮັບທຶນຊ່ວຍເຫຼືອລ້າຈາກລັດທະບານຍີ່ປຸ່ນ ໂຄງການກໍ່ສ້າງດັ່ງກ່າວໄລຍະໜຶ່ງ ແມ່ນຈະໄດ້ຂະຫຍາຍ ໂຮງງານຜະລິດນ້ຳປະປາເກົ້າລ້ຽວເພີ່ມຂຶ້ນຈາກ 20,000 ມ^3/ມື້ ອີກ 40,000 ມ^3/ມື້ ລວມເປັນ 60,000 ມ^3/ມື້, ປັບປຸງແລະສ້ອມແປງໂຮງງານຜະລິດນ້ຳປະປາເກົ້າລ້ຽວເກົ່າ 20,000 ມ^3/ມື້, ປັບປຸງ ໂຮງງານຜະລິດນ້ຳປະປາຈືນາຍໂມ 80,000 ມ^3/ມື້ ຄືກໍ່ສ້າງອ່າງເກັບນ້ຳໃຕ້ດິນອີກ 10,000 ມ^3, ພ້ອມ ທັງຕິດຕັ້ງໂປມສູບສົ່ງນ້ຳເຂົ້າເມືອງ, ແຍກທໍ່ສົ່ງນ້ຳເຂົ້າເມືອງ ແລະ ວາງທໍ່ສົ່ງແມ່ເອົານ້ຳຂຶ້ນອ່າງເກັບນ້ຳ ສູງຕ່າງໆ ອອກຕ່າງຫາກ, ປັບປຸງແລະສ້ອມແປງໂປມສູບສົ່ງຢູ່ຫຼັກ 6, ວາງທໍ່ສົ່ງແມ່ 2.2 ກມ ແລະ ວາງ ທໍ່ແຈກທີ່ຈຳເປັນ 15.2 ກມ ຕື່ມ. ໂຄງການດັ່ງກ່າວຈະສຳເລັດແລະນຳໃຊ້ທ້າຍປີ 2007 ແລະໄລຍະ ສອງ ແມ່ນກໍ່ສ້າງໂຮງງານຜະລິດນ້ຳປະປາໃໝ່ 50,000 ມ^3/ມື້ ຢູ່ ທ່າງ່ອນ ຈະສຳເລັດໃນປີ 2012.

ໃນໄລຍະໜຶ່ງ ຖ້າໂຄງການກໍ່ສ້າງແລະຂະຫຍາຍໂຮງງານນ້ຳປະປາເກົ່າລ້ຽວສຳເລັດທ້າຍປີ 2007 ຈຶ່ງ ສາມາດບໍລິການສະໜອງນ້ຳປະປາໃຫ້ພຽງພໍກັບຄວາມຕ້ອງການຂອງ ຜູ້ຊົມໃຊ້ນ້ຳໄດ້ຮອດປີ 2012. ໃນໄລຍະລໍຖ້າແຕ່ນີ້ຫາປີ 2007 ບໍລິມາດການຜະລິດນ້ຳປະປາບໍ່ສາມາດເພີ່ມຂຶ້ນໄດ້ອີກ ເພາະການຜະ ລິດນ້ຳໃນປະຈຸບັນໄດ້ເຖິງຂີດຄວາມສາມາດຜະລິດສູງສຸດແລ້ວ, ມີແຕ່ການກໍ່ສ້າງໂຮງງານຜະລິດນ້ຳ ປະປາໃໝ່ ຫຼືຂະຫຍາຍໂຮງງານເກົ່າເທົ່ານັ້ນ ຈຶ່ງສາມາດເພີ່ມການສະໜອງ ນ້ຳໃຫ້ຜູ້ຊົມໃຊ້ໄດ້ຢ່າງ ພຽງພໍ.

ດັ່ງນັ້ນ, ການບໍລິການແລະການຊົມໃຊ້ນ້ຳປະປາໃນໄລຍະນີ້ ຕ້ອງມີມາດຕະການອັນເໝາະສົມ ເພື່ອປະຫຍັດນ້ຳໃຫ້ພໍມີນ້ຳຮັບໃຊ້ປະຈຳວັນດັ່ງນີ້:

15. ລັດວິສາຫະກິດນ້ຳປະປານະຄອນຫຼວງຈະໄດ້ຈຳກັດຫຼຸດຜ່ອນນ້ຳສູນເສຍ, ນ້ຳຮົ່ວໄຫຼຕາມສາຍທໍ່ ຕ່າງໆ.
    - ປ່ຽນຖ່າຍລະບົບທໍ່ທີ່ເກົ່າແກ່.
    - ປ່ຽນຖ່າຍໝໍ້ແທກນ້ຳທີ່ເກົ່າແກ່ ແລະ ເປ່ເພ.
    - ບໍລິການສິ່ງນ້ຳທາງລິດ.
2. ບັນດາທ່ານ ຜູ້ຊົມໃຊ້ນ້ຳປະປາຄົວເຮືອນ, ສຳນັກງານ ອົງການລັດ, ກະຊວງທະບວງກົມ, ຫໍພັກ ມະຫາວິທະຍາໄລ, ໂຮງຮຽນ, ໂຮງໝໍ, ໂຮງແຮມ, ໂຮງງານແລະອື່ນໆ ຕ້ອງມີການຄວບຄຸມ ການ ໃຊ້ນ້ຳຢ່າງປະຢັດ, ບ່ຳຟຸມເຟືອຍແລະປ່ອຍໃຫ້ນ້ຳຮົ່ວໄຫຼໂດຍບ່ໄດ້ນຳໃຊ້. ຕ້ອງໄດ້ກໍ່ສ້າງອ່າງເກັບ ນ້ຳໜ້າດິນ, ແລ້ວແຕ່ຂະໜາດທີ່ເໝາະສົມ ເພື່ອໂຕ່ງນ້ຳໄວ້ເວລາມີນ້ຳໄຫຼໃຫ້ມີນ້ຳຮັບໃຊ້ເວລາ ຂາດແຄນນ້ຳ. ສ້ອມແປງນ້ຳແຕກ ນ້ຳຮົ່ວພາຍໃນ (ຫຼັງໝໍ້ແທກນ້ຳເຂົ້າໄປໃນບ້ານ) ຫ້າມໃຊ້ ໂປມສູບນ້ຳໂດຍກົງຈາກທໍ່ນ້ຳປະປາ, ໃຫ້ປ່ອຍນ້ຳລົງອ່າງແລ້ວຈຶ່ງໃຊ້ໂປມດູດນ້ຳໄດ້ ເພື່ອຫຼີກ ເວັ້ນບັນຫາຂາດແຄນນ້ຳໃນເຂດນັ້ນໆ ໃນເວລາສູບນ້ຳ.

4. ໂຄງສ້າງລາຄານ້ຳໃນສະພາບປະຈຸບັນ

4.1 ໂຄງສ້າງລາຄານ້ຳໃນສະພາບປະຈຸບັນ

- ການກະທົບກ່ຽວກັບລາຄານ້ຳຕໍ່ກັບການນຳໃຊ້ນ້ຳຢ່າງປະຢັດ.

ລາຄານ້ຳແມ່ນມູນຄ່າດັດສົມການເຄື່ອນໄຫວຕົ້ນທຶນແລະລາຍຈ່າຍ -ລາຍຮັບຂອງວິສາຫະກິດ ເຊິ່ງມັນມີການກະທົບຕໍ່ການເຄື່ອນໄຫວທຸລະກິດ, ສັງຄົມ ແລະພື້ນຖານເສດຖະກິດຂອງລັດ ເວົ້າລວມ,ແລະເວົ້າສະເພາະມີການກະທົບຕໍ່ການນຳໃຊ້ນ້ຳ,ເມື່ອໆຈາກລາຄານ້ຳຖືກຜູ້ຊົມໃຊ້ນ້ຳ ມີຄວາມສາມາດຈ່າຍ ແລະບ່ຄຳນຶງເຖິງ ການໃຊ້ນ້ຳຢ່າງປະຢັດ.ສະນັ້ນຕ້ອງໄດ້ທົບທວນເບິ່ງລາ

ຄານ້ຳຜ່ານມາ.

❖ ສະຖິຕິການປະຕິບັດລາຄານ້ຳໃນໄລຍະ10ປີ (1994 - 2003)

ການປະຕິບັດລາຄານ້ຳແຕ່ລະໄລຍະ	ລາຄາສະເລ່ຍ ກີບ / m^3
1 /1994 - 3 / 1995	92
4 / 1995 - 6 / 1996	135
7 / 1996 - 5 / 1998	162
6 / 1998 - 3 / 2001	195
4 / 2001 - 10 / 2001	387
11 / 2001 - ປະຈຸບັນ	550

❖ ໂຄງສ້າງລາຄານ້ຳປະຈຸບັນ ສະເລ່ຍ 550 ກີບ / ມ^3

ປະເພດ	ເນື້ອໃນກຸ່ມລູກຄ້າຜູ້ນຳໃຊ້ນ້ຳ	ຂອບເຂດການນຳໃຊ້ (ມ^3 / ເດືອນ)	ລາຄາ (ກີບ / ມ^3)
I	ຄົວເຮືອນແລະສຳນັກງານບໍລິຫານຂອງລັດ	0 - 5 6 - 20 21 - 50 > 50	219 263 329 383
II	ການຄ້າແລະທຸລະກິດທົ່ວໄປ	0 - 5 6 - 20 21 - 50 > 50	549 602 636 670
III	ທຸລະກິດທີ່ນຳໃຊ້ນ້ຳເປັນວັດຖຸດິບ	0 - 50 51 - 100 >100	855 1 216 1 360
IV	ສະຖານທູດແລະບຸກຄົນຕ່າງປະເທດ	0 - 10 >10	6184 7668

❖ ປະເພດລູກຄ້າ: ການແຍກປະເພດລູກຄ້າ ແມ່ນອີງໃສ່ ປະເພດທີ່ມີລາຍຮັບແຕກຕ່າງກັນ.

➢ ປະເພດ I. ຄົວເຮືອນ ແລະ ສຳນັກງານບໍລິຫານຂອງລັດ = ພະນັກງານ, ທະຫານ, ຕຳຫຼວດ, ປະຊາຊົນທົ່ວໄປ, ອົງການຂອງລັດ (ລາຍບຸກຄົນ ແລະ ລວມໝູ່)

- ປະເພດ II. ພາກສ່ວນທີ່ທຳການຄ້າແລະທຸລະກິດທົ່ວໄປ = ວິສາຫະກິດຂອງລັດ, ເອກະຊົນ, ໂຮງງານ, ແລະຜູ້ມີອາຊີບຄ້າຂາຍທົ່ວໄປ
- ປະເພດ III. ວຽກງານທຸລະກິດ,ການຄ້າທີ່ໃຊ້ນ້ຳເປັນວັດຖຸດິບ = ໂຮງງານເບຍ,ນ້ຳກ້ອນ, ນ້ຳຫວານ, ໂຮງແຮມ, ເຮືອນພັກ, ສະລອຍນ້ຳ, ຮ້ານກິນດື່ມ...
- ປະເພດທີ່ IV. ສະຖານທູດ,ບຸກຄົນຕ່າງປະເທດ = ອົງການທູດ, ອົງການສາກົນ, ບໍລິສັດຕ່າງປະເທດ,ເຮືອນພັກບຸກຄົນຕ່າງປະເທດ.

4.2 ການສົມທຽບລາຄານ້ຳປະປາກັບຕົວເມືອງອື່ນໆ

ການສົມທຽບລາຄານ້ຳ ກັບບັນດາປະເທດຕ່າງໆ (ອີງຕາມຂໍ້ມູນຂອງJICA Study Team) ອີງຕາມຂໍ້ມູນຂອງ(JICA) ກ່ຽວກັບລາຄານ້ຳ ຢູ່ວຽງຈັນ ທຽບໃສ່ບັນດາປະເທດຕ່າງໆ ຢູ່ໃນ ເອເຊຍ.ເຫັນວ່າລາຄານ້ຳຕ່ຳຫຼາຍທຸກປະເພດລູກຄ້າ.

4.3 ຄຳເຫັນຂອງລູກຄ້າຕໍ່ກັບລາຄານ້ຳ:

- **ສຳລັບລູກຄ້າທຸລະກິດ ມີຄຳເຫັນວ່າ**

ລາຄານ້ຳປະປາແມ່ນເໝາະສົມ,ແລະເຂົ້າເຈົ້າກໍ່ມີການດູແລປະຢັດການນຳໃຊ້ເໝືອນກັນ,ເນື່ອງຈາກວ່າຖ້າໃຊ້ນ້ຳຫຼາຍກໍ່ຕ້ອງຈ່າຍຫຼາຍ,ຖ້າມີການປະຢັດກໍ່ຈ່າຍນ້ອຍ.

- **ສຳລັບລູກຄ້າປະເພດຄົວເຮືອນມີຄຳເຫັນວ່າ:**

ລາຄານ້ຳແມ່ນຕ່ຳ ທຽບ ໃສ່ໄຟຟ້າ.ເພາະວ່າການນຳໃຊ້ນ້ຳໃນຄອບຄົວທີ່ມີຈຳນວນພົນສະເລ່ຍ 6 ຄົນ, ໃຊ້ແຕ່ງຢູ່ຄົວກິນ, ຊັກເຄື່ອງຂອງ, ຫົດອາບໄມ້, ລ້າງລົດຕ່າງໆ.ລາຍຈ່າຍຄ່ານ້ຳພຽງແຕ່ 10 000 - 15 000 ກີບ/ເດືອນ ເທົ່ານັ້ນ.ກົງກັນຂ້າມຄ່າໄຟຕ້ອງຈ່າຍ150 000 - 200 000 ກີບ/ເດືອນ.ບາງບຸກຄົນເຫັນລາຄານ້ຳຕ່ຳຢູ່ທ່ຽງນຳໃຊ້,ນຳໃຊ້ແບບບໍ່ມີການປະຢັດ. ສຳລັບບາງເຂດທີ່ແຮງດັນນ້ຳຕ່ຳ ການສະໜອງນ້ຳ ບໍ່ສະໝ່ຳສະເໝີ ກໍ່ມີຄຳເຫັນວ່າ: ຂໍພຽງແຕ່ມີນ້ຳໃຊ້ສ່ວນການໃຊ້ຈ່າຍບໍ່ມີບັນຫາ.

- ສຳລັບລູກຄ້າສຳນັກງານ,ອົງການຂອງລັດແລະຄົວເຮືອນທີ່ຍັງນຳໃຊ້ນ້ຳນຳສຳນັກອົງການ. ມີຄຳເຫັນວ່າ: ການຈ່າຍເງິນຄ່ານ້ຳແມ່ນຂຶ້ນກັບລັດ,ເຊິ່ງບໍ່ໄດ້ຈົກຖິງຕົນເອງຈ່າຍ,ແມ່ນບໍ່ຄຳນຶງເຖິງການປະຢັດຢ່າງໃດເລີຍ.ແລະອີກຢ່າງໜຶ່ງເບື້ອງລັດບໍ່ມີລະບຽບຫຼືມາດຕະການໃດ? ທີ່ຈະຄວບຄຸມຜູ້ຊົມໃຊ້ນ້ຳໃນຮ່ວງງົບປະມານຢ່າງເຄັ່ງຄັດ. ອີກດ້ານໜຶ່ງ ເບື້ອງວິສາຫະກິດ ຍັງຂາດການປະຊາສຳພັນ ໃຫ້ລູກຄ້າເຂົ້າໃຈ, ກ່ຽວກັບ ຂະບວນວິຈັດ ການຜະລິດ, ການບໍລິການ, ແລະ ການຊົມໃຊ້ນ້ຳແບບມີປະສິດທິຜົນແລະປະຢັດ.

5. ສິ່ງທ້າທາຍ ຂອງບໍລິສັດນ້ຳປະປາຕໍ່ການປະຫຍັດນ້ຳ ແລະ ຄຸ້ມຄອງນ້ຳ

5.1 ມຸມມອງທາງດ້ານວິສະວະກຳ

ເມື່ອເວົ້າເຖິງນ້ຳປະປາ ທຸກໆຄົນຈະຕ້ອງເຂົ້າໃຈວ່າ ແມ່ນຂະບວນການນຶ່ງໃນການ ຜະຫລິດນ້ຳ ສະອາດ ໂດຍປັດສະຈາກເຊື້ອໂລກ ແລ້ວບໍລິການໃຫ້ສັງຄົມ ຊຶ່ງຜ່ານລະບົບທໍ່ ເຂົ້າໄປເຖິງບ້ານ ຜູ້ໃຊ້ນ້ຳຕະຫລອດ 24 ຊົ່ວໂມງ ໂດຍມີແຮງດັນນ້ຳທີ່ພຽງພໍ. ສະນັ້ນ ຂະແໜງນ້ຳປະປາ ຈຶ່ງເປັນ ຂອດນຶ່ງທີ່ສຳຄັນໃນຂົງເຂດ ການບໍລິການນ້ຳ ເພື່ອຮັບໃຊ້ສັງຄົມ, ຖ້າວ່າບໍລິການ ບໍ່ດີ ສັງຄົມ ຈະຕ້ອງ ມີການຈົ່ມວ່າໄປໃນທາງລົບ ເຮັດໃຫ້ເກີດພາບພົດບໍ່ດີຕໍ່ການດຳເນີນທຸລະກິດ ຂອງລັດ ວິສາຫະກິດ ນ້ຳປະປາ ແລະ ເຮັດໃຫ້ຂັ້ນເທິງຂາດຄວາມ ເຊື່ອຖື ໃນການຈັດຕັ້ງປະຕິບັດ. ໃນເມື່ອ ກ່ອນ ການຊົມ ໃຊ້ນ້ຳປະປາ ແມ່ນມີບໍ່ຫລາຍ ຍ້ອນວ່າຕາໜ່າງ ລະບົບນ້ຳປະປາບໍ່ ກວ້າງ ຂວາງ ແລະມີຂອບເຂດຈຳ ກັດການ ຂະ ຫຍາຍຕົວຂອງພົນລະເມືອງ ແລະ ອຸດສາຫະກຳ ຕ່າງໆ ເກີດຂຶ້ນ ຢ່າງວ່ອງໄວໃນຊ່ວງ ລະຍະເວລາ ອັນສັ້ນ ແລະ ຊຶ່ງເປັນພາລະອັນໜັກໜ່ວງ ຂອງ ພະນັກງານ ວິຊາການ ແລະ ກຳມະກອນ ໝົດ ທຸກຄົນ ພາຍໃນ ລັດວິສາຫະກິດ ນ້ຳປະປາລາວ ທີ່ຈະຕ້ອງ ໄດ້ຄົ້ນຄ້ວາ ແລະ ຊອກຫາ ສາເຫດ ຂອງມັນ ເພື່ອປ້ອງກັນ ບໍ່ໃຫ້ນ້ຳ ສູນເສັຍ ແລະ ຕົກເຮ່ຶ ເສັຍຫາຍ ໃນຢ່າງໄຮ້ປະໂຫຍດ ຊຶ່ງເປັນ ທຶນຮອນ ອັນໃຫ່ຍຫລວງ ຂອງ ປະເທດ ຊາດ ເວົ້າລວມ, ເວົ້າສະ ເພາະ ກໍແມ່ນທຶນຮອນ ຂອງ ລັດວິສາຫະກິດ ນ້ຳປະປາລາວ.

ຈຸດປະສົງ ແລະ ເປົ້າໝາຍ Aim and target

ການຄຸ້ມຄອງ ແລະລົດຜ່ອນນ້ຳສູນເສັຍ ໃນລະບົບທໍ່ ແມ່ນເປັນບັນຫາທີ່ສຳຄັນທີ່ສຸດ ຊຶ່ງລັດວິສາຫະ ກິດນ້ຳປະປາ ຈະຕ້ອງ ໄດ້ເອົາໃຈໃສ່ເປັນພິເສດ ແລະ ຈະຕ້ອງ ມີວິທີການ ທີ່ເໝາະສົມເພື່ອໃຫ້ ນ້ຳ ສູນເສັຍ ຢູ່ໃນປະລິມານທີ່ຕ່ຳສຸດ ຊຶ່ງ ຈຸດປະສົງ ອັນຕົ້ນຕໍ ຂອງມັນ ກໍແມ່ນ ເພື່ອ ລົດຜ່ອນຕົ້ນທຶນ ການ ຜະຫລິດເຊັ່ນ: ຄ່າໄຟຟ້າ,ຄ່າສານເຄມີ,ຄ່າແຮງງານ ແລະ ຄ່າໃຊ້ຈ່າຍອື່ນໆ, ນອກຈາກນີ້ກໍຍັງ ເປັນ ການເພີ້ມລາຍໄດ້ ໃນການຂາຍນ້ຳ ແລະ ເພີ້ມສະມັນ ຕະພາບ ໃນການບໍລິການນ້ຳ ໃຫ້ສັງຄົມ ໃຫ້ມີປະສິດທິຜົນ ສູງຂຶ້ນກວ່າເກົ່າ ແລະນ້ຳທີ່ປະຫຍັດ ໄດ້ ຈະໄດ້ ຂະຫຍາຍ ໄປສູ່ ຂົງເຂດອື່ນໃຫ້ ໄດ້ ຊົມໃຊ້ ນ້ຳປະປາ ທົ່ວເຖິງກັນ ແລະ ມີແຮງດັນ ພຽງພໍ. ອີກດ້ານນຶ່ງ ເຮົາສາມາດ ລົດຜ່ອນ ການ ລົງທຶນ ເຂົ້າໃນກິດຈະການຂະຫຍາຍ ໂຮງງານ ຜະຫລິດນ້ຳປະປາ ໝາຍຄວາມວ່າ ເຮົາສາມາດ ຍືດເວລາ ອອກໄປອີກ ໃນລະຍະນຶ່ງ ໃນການ ຂະຫຍາຍ ໂຮງງານ ຜະຫລິດ ນ້ຳປະປາ ຍ້ອນວ່າ ຄວາມສາມາດ ໃນການຜະຫລິດ ຍັງມີ ເຫລືອເຟືອຢູ່.

ສະນັ້ນ, ເພື່ອບັນລຸຈຸດປະສົງດັ່ງກ່າວ ພວກເຮົາ ຈະຕ້ອງໄດ້ມີ ແຜນການລະຍະສັ້ນ, ແຜນການ ລະຍະຍາວໃນການປອ້ງກັນ ແລະລົດຜ່ອນນ້ຳສູນເສັ່ງ ໃນລະບົບນ້ຳປະປາ ຢ່າງ ຮອບດ້ານ. ການຄຸ້ມຄອງ ແລະລົດຜ່ອນນ້ຳສູນເສັ່ງ ໃນລະບົບທໍ່ ແມ່ນເປັນບັນຫາທີ່ສຳຄັນ ທີ່ສຸດ ຊຶ່ງລັດວິສາ ຫະ ກິດນ້ຳປະປາ ຈະຕ້ອງ ໄດ້ເອົາໃຈໃສ່ເປັນພິເສດ ແລະ ຈະຕ້ອງ ມີວິທີການ ທີ່ ເໝາະສົມເພື່ອ ໃຫ້ ນ້ຳ ສູນເສັ່ງ ຢູ່ໃນປະລິມານທີ່ຕ່ຳສຸດ.

ນ້ຳສູນເສັ່ງ Unaccounted For Water (UFW)

ແມ່ນ ຄວາມແຕກຕ່າງ ຫລື ຜົນລົບ ລະຫ່ວາງ ປະລິມານນ້ຳຜະຫລິດ ອອກຈາກໂຮງງານ ແລ້ວ ສົ່ງເຂົ້າໃປໃນທໍ່ ແລະ ປະລິມານນ້ຳ ທີ່ຈົດໄດ້ ແລ້ວ ພິມບິນເກັບເງິນ, ຊຶ່ງເຮົາໄດ້ແບ່ງນ້ຳສູນ ເສັ່ງ ດັ່ງກ່າວນີ້ ອອກເປັນສອງສ່ວນ ດ້ວຍກັນຄື :

ນ້ຳສູນເສັ່ງທີ່ເກີດຈາກຈຸດຮົ່ວ Physical losses

ຊຶ່ງລວມມີ ອ່າງເກັບນ້ຳຮົ່ວ, ອ່າງເກັບນ້ຳລົ້ນ, ທໍ່ສົ່ງໃຫ່ຍຮົ່ວ, ທໍ່ແຈກຈ່າຍນ້ຳຮົ່ວ, ທໍ່ບໍລິການເຂົ້າ ເຮືອນຮົ່ວ ແລະ ອຸບປະກອນທໍ່ນ້ຳຮົ່ວເຊ່ນ : ຂໍ້ຕໍ່,ຂໍ້ງໍ,ປະຕູນ້ຳ,ປະຕູລົ້ມ,ປະຕູລະບາຍ ,ກ໊ອກດັບ ເພິ່ງ ແລະ ອື່ນໆ.

ນ້ຳສູນເສັ່ງທີ່ບໍ່ເກີດຈາກຈຸດຮົ່ວ NonPhysical losses

ຊຶ່ງສ່ວນໃຫ່ຍແລ້ວ ແມ່ນ ສິ່ງທີ່ຜິດປົກກະຕິ ທາງດ້ານເຕັກນິກ ຢູ່ໃນ ລະບົບໝໍ້ແທກນ້ຳ ເຊ່ນ: ໝໍ້ແທກນ້ຳບໍ່ທ່ຽງຕົ້ງ, ໝໍ້ແທກນ້ຳຕາຍ, ໝໍ້ແທກນ້ຳບໍ່ເໝາະສົມກັບຂະໜາດຂອງການ ຊົມໃຊ້ ນ້ຳ ແລະ ໝໍ້ແທກນ້ຳ ທີ່ບໍ່ໄດ້ມາດຕະຖານ ລາຄາຖືກ ແລະ ມີຄຸນນະພາບຕ່ຳ. ການຕິດຕັ້ງ ໝໍ້ແທກ ນ້ຳ ບໍ່ຖືກ ມາດຕະຖານເຕັກນິກ ເຮັດໃຫ້ໝໍ້ແທກນ້ຳ ຫງ່ຽ. ຕິດຕັ້ງ ກ່ອນບໍ່ທັນໄດ້ສ້ຽ ເອກກະສານ ຈ່າຍເງິນ, ຕິດຕັ້ງແລ້ວ ບໍ່ເອົາ ໝໍ້ແທກນ້ຳໃປໃສ່, ບໍ່ໄດ້ ເຂົ້າກົດ ເລກບັນຊີບິນເກັບເງິນ ແລະ ລະບົບ ການພິມບິນເກັບເງິນ ບໍ່ຖືກຕ້ອງ. ອ່ານໝໍ້ແທກນ້ຳ ບໍ່ຖືກຕ້ອງ ກັບ ຕົວຈິງ ມີການ ຄາດຄະເນ ຫລ ເດົາເອົາ, ໝໍ້ແທກນ້ຳ ບໍ່ສາມາດ ອ່ານຕົວເລກໄດ້ ເຊ່ນ: ໝໍ້ແທກນ້ຳໜ້າ ມືດ, ໜ້າມົວ, ໜ້າແຕກ, ໝໍ້ແທກນ້ຳຝັ່ງດິນ, ດິນຖົມ ໝໍ້ແທກນ້ຳ ບໍ່ໝຸນກົ່ວ ທັ້ງສອງດ້ານ ນອກຈາກ ນັ້ນ ກ໋ຍັງມີ ການລັກໃຊ້ ນ້ຳ ໂດຍ ບໍ່ຜ່ານໝໍ້ແທກນ້ຳ, ລັກປັ້ນໝໍ້ແທກນ້ຳ ຫລ ພະຍາຍາມເຮັດໃຫ້ ໝໍ້ແທກ ນ້ຳ ຕາຍ ເຊ່ນ: ເອົາຄົມ ໜີບແກນໃບພັດ ໃຫ້ຄົດ, ເອົາໄມ້ ໃປຄັດ ໃບພັດໃວ້, ເອົາສາຍ ເຊືອກ ຫລ ສາຍເຫລັກ ລວດ ໃປຄັດໃບພັດໃວ້, ເອົາແມ່ເຫັລກ ໃປຕິດໃວ້ກັບ ໝໍ້ແທກນ້ຳ ຊຶ່ງເວ້ົາ ລວມແລ້ວ ແມ່ນລູກຄ້າ ພະຍາຍາມ ຫາທຸກວິທີ່ທາງ ເພື່ອ ເຮັດແນວໃດ ໃຫ້ໄດ້ຈ່າຍເງິນຄ່ານ້ຳໜ້ອຍທີ່ສຸດ ເທ່ົາທີ່ຈະ ເຮັດໄດ້.

ນ້ຳສູນເສັ່ງທີ່ໃຊ້ເພື່ອສາທາລະນະປະໂຫຍດ Public use

ຊຶ່ງສ່ວນໄຫ່ຍ ແມ່ນນ້ຳ ທີ່ຮັບໃຊ້ສັງຄົມ, ໃຊ້ໃນກິດຈະການ ສາທາລະນະປະໂຫຍດ ຫືລ ນ້ຳໃຊ້ຟີຣ ເຊ່ນ: ນ້ຳລ້າງອ່າງ ຢູ່ໂຮງງານ ຜະຫລິດນ້ຳປະປາ, ນ້ຳໃຊ້ລ້າງ ທໍ່ນ້ຳປະປາ, ນ້ຳໃຊ້ມອດໄຟ.

ລັກຊະນະການຮົ່ວໄຫລຂອງນ້ຳ Particulars of Leakage

ການຮົ່ວໄຫລ ຂອງນ້ຳ ໃນລະບົບທໍ່ ມັນຈະ ແຕກຕ່າງກັນ ແຕ່ລະຈຸດຊຶ່ງອີງໃສ່ເງື່ອນໄຂ ຕົວຈິງ ຂອງ ສະພາບແວດລ້ອມ ຊຶ່ງລວມມີ ສາມລັກຊະນະຕໍ່ລົງໃປນີ້:

ນ້ຳຮົ່ວທີ່ພົບເຫັນດ້ວຍຕາເປົ່າ Visible Leaks

ແມ່ນນ້ຳທີ່ຮົ່ວແລ້ວໄຫລອອກມາເທິງໜ້າດິນຊຶ່ງສະດວກໃນການຊອກຫາ, ຮູ້ສະຖານທີ່ຈຸດຮົ່ວ ໄດ້ຢ່າງແນ່ນອນ ແລະ ສາມາດສ້ອມແປງໄດ້ໃວ.

ນ້ຳຮົ່ວທີ່ເຄິ່ງເຫັນເຄິ່ງບໍ່ເຫັນ Semi-Visible Leaks

ແມ່ນນ້ຳຮົ່ວທີ່ເຮົາພົບເຫັນແດ່ ບໍ່ເຫັນແດ່ ຊຶ່ງຈະຕ້ອງໄດ້ຊອກຫາດ້ວຍຕາເປົ່າຢ່າງລະອຽດ ເພາະວ່າ ນ້ຳຮົ່ວລັກຊະນະນີ້ ເຮົາຈະພົບເຫັນຢູ່ໃນຂຸມເລີກ ປະຕູນ້ຳ,ປະຕູລົມ,ປະຕູລະບາຍ ແລະ ກອົກດັບ ເພີງ ເທ່ລານີ້ເປັນຕົ້ນ. ບາງເທື່ອເຮົາອາດພົບເຫັນຢູ່ຕາມຕະຄອງ ຮ່ອງນ້ຳ ຮ່ອງລະບາຍ ບ່ອນ ທີ່ມີທໍ່ນ້ຳຜ່ານ.

ນ້ຳຮົ່ວທີ່ບໍ່ສາມາດແນມເຫັນດ້ວຍຕາເປົ່າ Invisible Leaks

ແມ່ນນ້ຳທີ່ຮົ່ວຢູ່ໄຕ້ດິນ ຊຶ່ງເຮົາບໍ່ສາມາດແນມເຫັນດ້ວຍຕາເປົ່າໄດ້ ຫຍຸ້ງຍາກໃນການ ຄົ້ນຫາ ເພາະວ່າເຮົາບໍ່ຮູ້ສະຖານທີ່ຈຸດຮົ່ວແນ່ນອນ ບາງເທື່ອຮົ່ວຢູ່ຈຸດນຶ່ງ ພັດໄປໄຫລອອກຢູ່ຈຸດອື່ນ ໂດຍອີງໃສ່ເງື່ອນໄຂແລະຄຸນສົມບັດຂອງດິນ ບາງເທື່ອກ້ໄຫລຊຶມຜ່ານໄປນ້ຳດິນແລ້ວໄຫລລົງ ນ້ຳ ຕະຄອງຮ່ອງນ້ຳໄປເລີຍ ຊຶ່ງເຮົາຈະຕ້ອງໄດ້ນ້ຳໃຊ້ເຄື່ອງມືອຸບປະກອນຊອກນ້ຳຮົ່ວເຂົ້າຊ່ວຍ.

ສາເຫດທີ່ພາໃຫ້ນ້ຳຮົ່ວໄຫລ Causes of Leaks

ການຮົ່ວໄຫລ ຂອງນ້ຳໃນລະບົບທໍ່ ເກີດຂຶ້ນ ມາຈາກ ຫລາຍສາເຫດ ທີ່ ແຕກຕ່າງກັນ ຊຶ່ງ ເຮົາ ມັກພົບເຫັນເລື້ອຍໆ ມີດັ່ງນີ້ :

ການສຳຫລວດອອກແບບບໍ່ເໝາະສົມ Improper design

ໝາຍຄວາມວ່າ ອອກແບບ ບໍ່ຖືກຕອ້ງຕາມມາດຕະຖານເຕັກນິກ ແລ້ວ ເປັນສາເຫດໃຫ້ ວຽກງານ ການຂຸດທາງວາງທໍ່,ການວາງທໍ່ຂ້າມຂົວ,ຂ້າມຫ້ວຍ,ຂ້າມຮ່ອງລະບາຍ ລວມທັງການ ຕິດຕັ້ງ ເອົາບ໊ ເຂົ້າບ້ານໃຫມ່ ແລະອື່ນໆ ບໍ່ມີ ປະສິດທິຜົນ ແລ້ວ ເຮັດໃຫ້ ທໍ່ນ໊ ແຕກຮົ່ວໄດ້ງ່າຍ

ນາຍຊ່າງຕໍ່ທໍ່ນ໊ ບໍ່ມີຄຸນນະພາບ Poor Workmanship

ໝາຍຄວາມວ່າ ນາຍຊ່າງ ກ໋ານະກອນ ບໍ່ມີ ຄວາມຊ໋ານິຊ໋ານານ ໃນການຕິດຕັ້ງວາງທໍ່ ບໍ່ໄດ້ ຜ່ານ ການຝຶກອົບຮົມມາກ່ອນ ຫລື ຝຶກອົບຮົມມາແລ້ວ ແຕ່ບໍ່ປະຕິບັດຕາມເຕັກນິກວາງອອກ ຊຶ່ງເຫັນໄດ້ ຈາກການ ກໍ່ສ້າງວາງທໍ່ ຫລື ການຕິດຕັ້ງຫາກໍ່ສ໋ າເລັດແລ້ວເກີດມີນ໊ ຮົ່ວຢູ່ເລື້ອຍ ໆ .

ວັດຖຸອຸບປະກອນທໍ່ນ໊ ມີຄຸນນະພາບຕ໋ ່ Poor quality of materials

ທໍ່ນ໊ ປະປາ ທີ່ບໍ່ໄດ້ມາດຕະຖານ ລາຄາຖືກໂດຍບໍ່ຜ່ານ ການກວດກາ ແລະ ຈັດຊື້ຕາມລະ ບຽບການ ຈຶ່ງເປັນສາເຫດນຶ່ງ ທີ່ພາໃຫ້ ທໍ່ແຕກ ທໍ່ຮົ່ວ ໄດ້ຢ່າງງ່າຍດາຍ.

ນ໊ ໜັກຈອນ Traffic load

ທໍ່ນ໊ ປະປາ ທີ່ວາງຂ້າມທາງ ຫລື ວາງຂ້າງທາງ ຕ້ອງໄດ້ ຮັບ ການສັ່ນສະເທືອນ ຊຶ່ງ ເຮົາ ເອີ້ນວ່າ ນ໊ ໜັກຈອນ ທີ່ ເກີດຈາກການສັນຈອນ ໄປມາຂອງລົດໜັກ ແລ້ວເຮັດໃຫ້ ດິນຍຸບ ຕົວລົງ ກະທົບ ໃສ່ທໍ່ນ໊ ແຕກຫັກ ຢູ່ເລື້ອຍໆ

ອາຍຸການໃຊ້ງານຂອງທໍ່ໝົດຄຸນນະພາບ Aging and deterioration

ໃນເມື່ອທໍ່ນ໊ ປະປາ ແລະ ອຸບປະກອນຕ່າງໆທີ່ ໃຊ້ງານມາ ຫລາຍປີ ແນ່ນອນ ຄຸນນະພາບ ຂອງມັນ ກ໋ ຕ້ອງ ເຊື່ອມລົງໄປເລື້ອຍໆ ແລ້ວ ບໍ່ສາມາດຕ້ານທານ ກັບແຮງດັນ ພາຍໃນ ແລະ ການກະທົບ ຈາກ ພາຍນອກໄດ້ ນີ້ກ໋ ເປັນສາເຫດນຶ່ງ ທີ່ເຮັດໃຫ້ ທໍ່ແຕກທໍ່ຮົ່ວໄດ້ງ່າຍ.

ແຮງດັນຂອງນ໊ ໃນທໍ່ເພີ້ມຂຶ້ນ Increase of water pressure

ນີ້ກ໋ ເປັນສາເຫດນຶ່ງ ທີ່ເຮັດໃຫ້ການຮົ່ວໄຫລຂອງນ໊ ເພີ້ມຂຶ້ນ ຊຶ່ງແມ່ນກົດເກນ ຂອງທ໋ ມະຊາດ ຖ້າວ່າ ບ່ອນໃດທໍ່ນ໊ ມີຮູຜົ່ວ ແລະ ນອບບາງນ໊ ກ໋ ໄຫລອອກບ່ອນນັ້ນ.

ການກໍ່ສ້າງພື້ນຖານໂຄງຮ່າງ Infrastructure

ໃນການປັບປຸງ ບູລະນະ ຕົວເມືອງ ຂອງ ລັດຖະບານ ຄື ການກໍ່ສ້າງ ພື້ນຖານໂຄງຮ່າງ ໃນຕົວເມືອງ ນີ້ກໍເປັນສ່ວນນຶ່ງ ທີ່ເຮັດໃຫ້ ທໍ່ນ້ຳ ແຕກຮົ່ວຢູ່ເລື້ອຍໆ ເຊ່ນ ການກໍ່ສ້າງສ້ອມແປງຂະ ຫຍາຍ ຖະໜົນ ຫົນທາງ, ສາຍໂທລະສັບ ແລະ ການວາງສາຍໄຟຟ້າແຮງສູງໃຕ້ດິນເປັນຕົ້ນ

ຄ່າ PH ຂອງນ້ຳ PH value of Water

ຖ້າວ່າ ຄ່າPH ຂອງນ້ຳ ໃນທໍ່ຫລຸດລົງຕ່ຳ ບໍ່ໄດ້ມາດຕະຖານ ຊຶ່ງເປັນເຫດໃຫ້ ນ້ຳໃນທໍ່ເກີດ ເປັນກົດ ເຮົາ ເອີ້ນວ່າທາດອາຊິດ ແລ້ວເກີດມີ ຕະກອນຈັບຕົວກັນ ເປັນກ້ອນ ຕິດຢູ່ຜະໜັງ ທາງໃນທໍ່ນ້ຳ ຊຶ່ງ ເຮົາ ເອີ້ນວ່າ ຂີ້ໝັ້ງໆ ແລ້ວເກາະຊ່ອນ ທໍ່ນ້ຳ ແຕ່ທາງໃນ ອອກມາ ທາງນອກ ດິນນານໄປຫລາຍ ປີ ແລ້ວເຮັດໃຫ້ ທໍ່ນ້ຳຮົ່ວ ຢູ່ເລື້ອຍໆ.

ນ້ຳໃຕ້ດິນເປັນກົດ Acidic water in the ground

ຄຸນລັກຊະນະ ຂອງດິນ ແຕ່ລະຂົງເຂດ ກໍມີ ລັກຊະນະ ແຕກຕ່າງກັນໄປ ຊຶ່ງບາງເຂດ ນ້ຳໃຕ້ດິນ ເກີດເປັນກົດ ໝາຍຄວາມວ່າ ນ້ຳໃຕ້ດິນ ເກີດມີ ທາດອາຊິດຫລາຍ ແລ້ວເກາະຊ່ອນ ທໍ່ນ້ຳ ປະປາ ແຕ່ທາງນອກ ເຂົ້າໃນທໍ່ນ້ຳ ຄືດັ່ງ ທີ່ໄດ້ເວົ້າມາຂ້າງເທິງ.

ວິທີຄຸ້ມຄອງ ແລະ ລົດຜ່ອນນ້ຳສູນເສັ່ງ Methodology to reduce UFW

ການລົດຜ່ອນນ້ຳສູນເສັ່ງ ແມ່ນ ເປັນບັນຫານຶ່ງທີ່ສຳຄັນ ແລະຫຍຸ້ງຍາກສັບສົນທີ່ສຸດ ໃນການຈັດຕັ້ງ ປະຕິບັດ ຖ້າວ່າເຮົາປະປ່ອຍໃຫ້ ອັດຕາປະລິມານ ນ້ຳສູນເສັ່ງ ໃຫ້ສູງຂຶ້ນ ເຮົາຈະຕ້ອງໃດ້ ໃຊ້ ງົບປະ ມານ ສູງຂຶ້ນເໝືອນກັນ ໃນການຄຸ້ມຄອງ ແລະ ລົດຜ່ອນນ້ຳສູນເສັ່ງ ຊຶ່ງເຮົາຈະຕ້ອງໃດ້ດຳເນີນ ໃປ ດັ່ງນີ້ :

ຄວາມຕອ້ງການໃນເບື້ອງຕົ້ນ Pre-requisite actions

ວຽກງານ ອັນຮີບດ່ວນ ໃນເບື້ອງຕົ້ນ ທີ່ສຳຄັນ ກ່ອນໝູ່ໝົດ ໃນການຄວບຄຸມນ້ຳສູນເສັ່ງ ຊຶ່ງເຮົາຈະຕອ້ງໃດ້ວາງແຜນ ແລະ ພິຈາລະນາ ໃນການຄຸ້ມຄອງ ດັ່ງຕ່ໃປນີ້ :

- ໝໍ້ແທກນ້ຳໃຫ່ຍອອກຈາກໂຮງງານ Flow Meter

ການຕິດຕັ້ງ ໝໍ້ແທກນ້ຳໃຫ່ຍ ຢູ່ໂຮງງານ ແມ່ນເຮົາ ສາມາດ ຮູ້ໄດ້ວ່າ ປະລິມານນ້ຳ ທັງໝົດ ທີ່ສົ່ງອອກ ຈາກໂຮງງານ ມີເທ່ົາໃດ, ໝໍ້ແທກນ້ຳໃຫ່ຍ ຢູ່ໂຮງງານຕອ້ງ ໃຫ້ໄດ້ໃຊ້ງານ ຕະຫລອດ

ເວລາ, ທ່ຽງຕົງ, ຊັດເຈນ ແລະ ຕອ້ງມີການ ບັນທຶກລະອຽດ ແຕ່ລະຊົ່ວໂມງ, ແຕ່ລະວັນ ເພື່ອ ຕອ້ງການຮູ້ ປະລິມານນ ້ຳສິ່ງອອກ ໃນແຕ່ລະເດືອນ ແລະ ໃນແຕ່ລະປີ.

- ໝໍ້ແທກນ ້ຳລູກຄ້າ Customer's Meter

ໝໍ້ແທກນ ້ຳ ທີ່ນ ຳມາໃຊ້ ແຕ່ລະ ຂະໜາດ ແຕ່ລະ ຊະນິດ ເຮົາຕ້ອງກ ຳນົດລະອຽດ ກ່ຽວກັບ ຄຸນສົມບັດ ແລະ ຄຸນລັກຊະນະ ຂອງມັນ ເຮົາຕອ້ງໄດ້ ຄົ້ນຄວ້າ ແລະ ສຶກສາຂໍ້ມູນ ເພື່ອໃຫ້ ແທດເໝາະກັບເງື່ອນ ໄຂ ຕົວຈິງໃນປະເທດເຮົາ ເຊັ່ນ ຄຸນນະພາບຂອງນ ້ຳ ແລະ ແຫລ່ງນ ້ຳ ທີ່ມາ ຜະຫລິດ ນ ້ຳປະປາ. ແຕ່ສິ່ງສ ຳຄັນ ແມ່ນ ໃຫ້ໄດ້ ມາດຕະຖານ ທີ່ວາງໄວ້.

- ວັດຖຸ ແລະ ອຸບປະກອນທໍ່ນ ້ຳ Pipe and Fittings

ວັດຖຸ ແລະ ອຸບປະກອນ ທໍ່ນ ້ຳ ທີ່ມານ ຳໃຊ້ ເຂົ້າໃນ ວຽກງານຕິດຕັ້ງ ເອົານ ້ຳເຂົ້າບ້ານໃໝ່, ວຽກສ້ອມແປງ ນ ້ຳແຕກ ນ ້ຳຮົ່ວ, ວຽກປ່ຽນຖ່າຍລະບົບທໍ່ເກົ່າ ແລະ ວຽກກໍ່ສ້າງ ຂະຫຍາຍ ທໍ່ນ ້ຳ ເຮົາຕອ້ງ ກ ຳນົດລະອຽດ ໃຫ້ຖືກຕອ້ງຕາມ ມາດຕະຖານສາກົນ.

- ແຜນຍຸດທະສາດ Strategy

ອົງການ ມະຫາພາກ ຕ້ອງໄດ້ເອົາໃຈໃສ່ ຢ່າງຕັ້ງໜ ້າ ເຂົ້າໃນວຽກງານ ຄຸ້ມຄອງ ແລະ ລິດຜ່ອນ ນ ້ຳສູນເສັ ໃນທົ່ວປະເທດ, ແຕ່ລະແຂວງ ຕ້ອງມີການ ຝຶກອົບຮົມ ແລະ ແລກປ່ຽນ ຖອດຖອນ ບົດຮຽນ ຊຶ່ງກັນ ແລະ ກັນ, ເພື່ອປັບປຸງ ແລະ ນ ຳໃຊ້ ເຕັກໂນໂລຍີ ແບບໃໝ່ ໃຫ້ເໝາະສົມ ກັບສະພາບ ທີ່ພວກເຮົາ ພົບພໍ້ໃນ ປະຈຸບັນ. ສະນັ້ນ, ອົງການ ມະຫາພາກ ຕ້ອງມີ ແຜນການ ລະອຽດ ເຊ່ນ ແຜນການ ລະຍະສັ້ນ ແລະ ແຜນການ ລະຍະຍາວ ແລ້ວ ມອບໃຫ້ ອົງການ ທອ້ງຖິ່ນ ໄປຈັດຕັ້ງ ປະຕິບັດ ໃຫ້ໄດ້ ຮັບໝາກຜົນ ພ້ອມທັງມີການ ຕິດຕາມ ກວດກາ ຢ່າງເປັນປະຈ ຳ.

ການລິດຜ່ອນນ ້ຳສູນເສັ ທີ່ເກີດຈາກຈຸດຮົ່ວ

Actions to reduce physical losses

ການລິດຜ່ອນ ນ ້ຳສູນເສັ ທີ່ເກີດຈາກຈຸດຮົ່ວ ເປັນວຽກງານນຶ່ງ ທີ່ມີຄວາມ ຫຍຸ້ງຍາກ ແລະ ສັບສົນ ທີ່ສຸດ ຊຶ່ງ ເຮົາຕ້ອງໄດ້ ອາໃສ ບຸກຄະລາກອນ ທີ່ມີ ຄວາມສາມາດ ຄວາມຊ ຳນານ ເພື່ອ ວາງແຜນ ແລະ ຈັດຕັ້ງປະຕິບັດ ໃນການປ ້ອງກັນ ບ ່ໃຫ້ນ ້ຳແຕກ ນ ້ຳຮົ່ວ ໃນລະບົບທໍ່ນ ້ຳປະປາ ຊຶ່ງ ຈະຕ ້ອງ ໄດ້ ດ ຳເນີນ ໄປຫລາຍດ ້ານ ຄຽງຄູ່ກັນໄປ ເຊ່ນ :

ການຊອກຫານ້ຳຮົ່ວ Leak detection

ການຊອກຫານ້ຳຮົ່ວ ຈະຕອ້ງໄດ້ດຳເນີນໃປ ທັງສອງດ້ານ ພ້ອມກັນຄື : ການຊອກຫາ ນ້ຳຮົ່ວ ເທິງໜ້າດິນ ແລະ ການຊອກຫານ້ຳຮົ່ວໃຕ້ດິນ ຊຶ່ງ ແຕ່ລະດ້ານ ມັນມີຄວາມ ສະດວກ ແລະ ງ່າຍ ແຕກຕ່າງກັນໃປ ເຊ່ນ :ວິທີ ຊອກຫານ້ຳຮົ່ວ ຕາມສາຍທໍ່ Acoustic Method, ວິທີ ວັດແທກ ປະລິມານນ້ຳ Measurement Method, ວິທີ ໃຊ້ເຄື່ອງຟັງສຽງ ແບບທັນສະໃໝ Leak Noise Correlation

- **ການຊອກຫານ້ຳຮົ່ວເທິງໜ້າດິນ** ແມ່ນຊອກຫາໄດ້ງ່າຍ ແລະ ສະດວກໃນການຄົ້ນຫາ ພຽງແຕ່ເຮົາຍ່າງ ສັງເກດ ຕາມລະບົບສາຍທໍ່ໂດຍໃຊ້ປະສົບການເຮົາກໍຈະພົບເຫັນ.

- **ການຊອກຫານ້ຳຮົ່ວໃຕ້ດິນ** ແມ່ນພົບຄວາມຫຍຸ້ງຍາກໃນການຄົ້ນຫາ ເຮົາຕ້ອງໄດ້ ນຳໃຊ້ເຄື່ອງມື ອຸບປະກອນສຳຫລວດຊອກຫານ້ຳຮົ່ວເຂົ້າຊ່ວຍ ວິທີການນີ້ ມັນມີ ຂັ້ນຕອນ ລະອຽດ ໃນການຈັດ ຕັ້ງປະຕິບັດ ກ່ຽວກັບລະບົບເຕັກນິກ ແລະ ວິທີການ ສຳຫລວດຊອກຫານ້ຳຮົ່ວໃຕ້ດິນ. ສະນັ້ນ, ກ່ອນອື່ນໝົດ ກ່ອນເຮົາຈະລົງ ສຳຫລວດ ຊອກຫານ້ຳຮົ່ວໄດ້ ເຮົາຕອ້ງຮູ້ ລະບົບເຕັກນິກ ຂອງມັນ ຫລາຍດ້ານ ເຊ່ັນ : ນ້ຳຮົ່ວ ແມ່ນຫຍັງ ? ສຽງນ້ຳຮົ່ວ ຄືແນວໃດ ? ຂັ້ນຕອນ ວິທີການສຳຫລວດ ນ້ຳຮົ່ວ ຄືແນວໃດ ? ປະສິດທິຜົນ ທາງດ້ານເຕັກນິກ ຄືແນວໄດ ? ເຮົາຄວນ ເລືອກເອົາ ແນວໃດ ໃຫ້ເໝາະສົມ ກັບ ສະພາບ ເງື່ອນໄຂ ຕົວຈິງ ພາຍໃນ ປະເທດເຮົາ.

ການສ້ອມແປງ ນ້ຳຮົ່ວ Passive Leakage Control

ວິທີນີ້ ເປັນວິທີການ ຄວບຄຸມ ນ້ຳສູນເສັ່ງ ທີ່ງ່າຍດາຍທີ່ສຸດ ໂດຍທົ່ວໃປແລ້ວ ວິທີນີ້ ເມື່ອພົບເຫັນ ນ້ຳຮົ່ວ ທີ່ ປາກົດຂຶ້ນມາ ເທິງໜ້າດິນ ແລ້ວດຳເນີນ ການສ້ອມແປງ ໂດຍທັນທີ ໃຫ້ທັນເວລາ. ຈຸດນ້ຳຮົ່ວ ດັ່ງກ່າວ ແມ່ນເຮົາຈະຮູ້ໄດ້ດັ່ງນີ້ :

- ນ້ຳຮົ່ວ ທີ່ພົບເຫັນດ້ວຍຕາເປົ່າ ທີ່ໄຫລຂຶ້ນມາເທິງໜ້າດິນ.

ລູກຄ້າແຈ້ງໃຫ້ຮູ້ ຫລື ລາຍງານວ່າ ນ້ຳອອກຄ່ອຍ, ນ້ຳບ່ໄຫລ ແລະອື່ນໆ.

- ປະຊາຊົນທົ່ວໃປ ຕາມສະຖານທີ່ຕ່າງໆ ແຈ້ງໃຫ້ຮູ້.
- ພະນັກງານນ້ຳປະປາ ໂດຍສະເພາະ ແມ່ນ ພະນັກງານຈົດນ້ຳເກັບເງິນ ແຈ້ງໃຫ້ຮູ້.
- ພະນັກງານ ເດີນສຳຫລວດນ້ຳຮົ່ວ ລົງໃປກວດກາ ຕາມລະບົບສາຍທໍ່ ໃປສັງເກດຕາມ ສະຖານທີ່ຕ່າງໆ, ຕາມຕະຄອງຮ່ອງນ້ຳ, ຕາມບ່ອນທີ່ມີ ນ້ຳຂັງຕະຫລອດປີ ຫລື ບ່ອນທີ່ມີ ຕົ້ນໄມ້ ຕົ້ນຫຍ້າຊຸງວງາມ ຜິດປົກະຕິ ຕະຫລອດປີ ເປັນຕົ້ນ.

ການຄຸ້ມຄອງລະບົບສາຍທໍ່ Protection of pipelines

ວຽກງານດັ່ງກ່າວ ກໍແມ່ນວຽກງານນຶ່ງທີ່ສຳຄັນ ໃນການຄວບຄຸມ ແລະ ລົດຜ່ອນນ້ຳສູນເສັ່ງໃນ ລະບົບທໍ່ ຊຶ່ງເຮົາຈະຕ້ອງ ໄດ້ດຳເນີນໃປດັ່ງຕ່ໃປນີ້ :

- ແຜນຜັງລະບົບທໍ່ Mapping system ຕ້ອງໃຫ້ທັນສະໄໝຕະຫລອດເວລາ ເຊ່ນ ຈຸດທີ່ຕັ້ງ ຂອງທໍ່ນ້ຳ ແລະ ອຸບປະກອນຕ່າງໆ ເພື່ອສະດວກ ໃນການຄຸ້ມຄອງ ດູແລຮັກສາ.
- ລົງຕິດຕາມກວດກາ ປະຈຳວັນ Patrol of pipelines ກ່ຽວກັບ ການກໍ່ສ້າງພື້ນຖານ ໂຄງຮ່າງ ໃນຕົວເມືອງ ເພື່ອ ປ້ອງກັນ ບໍ່ໃຫ້ທໍ່ນ້ຳ ຖືກທຳລາຍ ຈາກການກໍ່ສ້າງຕ່າງໆ ເຊ່ນ :ການກໍ່ສ້າງ ຂະຫຍາຍ ຖະໜົນ ຫົນທາງ, ສາຍໄຟຟ້າໃຕ້ດິນ ແລະ ສາຍໂທລະສັບ ໃຕ້ດິນ ດັ່ງນີ້ ເປັນຕົ້ນ.
- ການອອກແບບ ແລະ ການກໍ່ສ້າງ Design and Construction of water works facilities ຈະຕ້ອງໄດ້ຄຳນຶງເຖິງ ຫລັກການ ທາງດ້ານເຕັກນິກ ຕາມມາດຕະຖານສາກົນ ເຊ່ນ ການວາງທໍ່ ຂ້າມທາງ ຂ້າມຂົວ ຂ້າມຫ້ວຍ ຂ້າມຮ່ອງ ຫລື ວາງທໍ່ລອດຮ່ອງ ລະ ບາຍ ຕ້ອງໃຫ້ໄດ້ມາດຕະຖານ ພ້ອມທັງ ຄຸນນະພາບ ຂະໜາດ ແລະ ຊະນິດ ຂອງທໍ່ນ້ຳ ແລະ ອຸບປະກອນຕ່າງໆ ທີ່ຈະນຳໃຊ້.
- ການປ່ຽນຖ່າຍ ລະບົບທໍ່ເກົ່າ Replacement of old pipe ຈະຕອ້ງໄດ້ ເຮັດຢ່າງ ຕໍ່ ເນື່ອງ ໃນເມື່ອ ທໍ່ນ້ຳ ໝົດອາຍຸການໃຊ້ງານ ມັນຈະເຮັດໃຫ້ ທໍ່ແຕກ ທໍ່ຮົ່ວ ຢູ່ເລື້ອຍໆ. ວຽກງານນີ້ ເປັນວຽກງານ ທີ່ໃຊ້ຈ່າຍ ງົບປະມານສູງ ເຮົາຕ້ອງ ມີແຜນການລະອຽດ ໃນ ແຕ່ລະປີ, ສ່ວນ ວັດຖຸ ແລະອຸບປະກອນ ທໍ່ນ້ຳ ທີ່ຈະເອົາມາປ່ຽນຖ່າຍນັ້ນ ກໍຕ້ອງໃຫ້ມີ ຄຸນນະພາບ ແລະ ມີປະສິດທິຜົນສູງ ຕາມມາດຕະຖານສາກົນ ແລະຄຽງຄູ່ກັນນັ້ນ ການ ຕິດຕາມກວດກາ ຄຸນນະພາບຂອງ ວຽກງານໃນສະໜາມ ກໍຕ້ອງໄດ້ເອົາໃຈໃສ່ ເປັນ ພິເສດ ເພື່ອປ້ອງກັນ ບັນຫາ ທີ່ຈະເກີດຂຶ້ນ ໃນຕໍ່ໜ້າ.
- ການຄວບຄຸມ ແຮງດັນນ້ຳ Ajusment of water pressure ກໍເປັນວິທີການນຶ່ງ ທີ່ຊ່ວຍ ໃຫ້ ນ້ຳສູນເສັ່ງລິດຜ່ອນລົງ ໄດ້ຫລາຍທີ່ສຸດ, ເປັນວິທີທີ່ງ່າຍ ແລະ ສາມາດ ດຳເນີນ ການໄດ້ໄວ ທີ່ສຸດ ເຊ່ນ :ລິດຜ່ອນແຮງດັນ ຂອງຈັກສົ່ງນ້ຳລົງ ແລະ ຕິດຕັ້ງ ປະຕູນ້ຳ ລິດຜ່ອນແຮງດັນ ໃສ່ແຕ່ລະຈຸດ ທີ່ມີແຮງດັນນ້ຳສູງ.
- ການຄຸ້ມຄອງ ອ່າງເກັບນ້ຳ Water reservoir ກໍແມ່ນວຽກງານນຶ່ງ ທີ່ສຳຄັນ ທີ່ເຮົາ ຈະຕອ້ງ ໄດ້ເອົາໃຈໃສ່ຕິດຕາມກວດກາ ຢ່າງເປັນລະບົບ ໂດຍປົກກະຕິແລ້ວ ສອງຄັ້ງ ຕໍ່ປີ ໃນການ ກວດກາເບິ່ງ ການຮົ່ວໄຫລຂອງອ່າງ ຫລື ນ້ຳລົ້ນອ່າງ ຍ້ອນລູກລອຍ ໃຊ້ການ ບໍ່ໄດ້.

ການລິດຜ່ອນນ້ຳສູນເສັ່ງທີ່ບໍ່ເກີດຈາກຈຸດຮົ່ວ

Actions to reduce non-physical losses

ບັນຫາໃຫ່ຍ ທີ່ເກີດຂຶ້ນ ໃນຂົງເຂດນີ້ ແມ່ນ ຢູ່ໃນລະບົບ ໝໍ້ແທກນ້ຳ ຂອງລູກຄ້າ ແຕ່ລະຫລັງຄາ ເຮືອນ ຊຶ່ງເຮົາຈະຕອ້ງ ມີວິທີການ ຄວບຄຸມ ດັ່ງຕໍ່ໄປນີ້ :

ລົງສຳຫລວດລູກຄ້າ Field customer survey

ຈຸດປະສົງ ຂອງການລົງ ສຳຫລວດລູກຄ້າ ແຕ່ລະຫລັງຄາເຮືອນ ແມ່ນເພື່ອ ລົງສຳຫລວດ ກວດກາ ສິ່ງທີ່ ຜິດປົກກະຕິ ທາງດ້ານເຕັກນິກ ເຊ່ນ:

- ໝໍ້ແທກນ້ຳຕາຍ, ໝໍ້ແທກນ້ຳອ່ານບໍ່ໄດ້ ຍອ້ນໜ້າມືດ ໜ້າມົວ ຫລື ໜ້າແຕກ, ໝໍ້ແທກ ນ້ຳດິນຖົມ, ໝໍ້ແທກນ້ຳຫງ່ຽງ ບໍ່ຂະໜານກັບໜ້າດິນ, ໝໍ້ແທກນ້ຳຢູ່ໃນເຮືອນ ແລະ ບໍ່ສາມາດ ເຂົ້າໄປອ່ານໄດ້ ແລະ ອື່ນໆ(Defective Water Meter)
- ຊອກຫານ້ຳຮົ່ວ ພາຍນອກ ແລະ ນ້ຳຮົ່ວພາຍໃນ ຢູ່ຕາມ ຂໍ່ຕໍ່, ຂໍ່ງໍ, ປະຕູນ້ຳ, ທໍ່ນ້ຳເຂົ້າເຮືອນ, ຫົວເຈາະທອງ, ປອກກອດທໍ່ ແລະ ໝໍ້ແທກນ້ຳ ຂອງລູກຄ້າ ແຕ່ລະຫລັງຄາເຮືອນ (Leakage in house connection)
- ຊອກຫາ ການລັກໃຊ້ນ້ຳ ໂດຍບໍ່ຜ່ານ ໝໍ້ແທກນ້ຳ, ປົ້ນໝໍ້ແທກນ້ຳ ຫລື ພະຍາຍາມ ເຮັດແນວ ໃດແນວນຶ່ງ ເພື່ອໃຫ້ ໝໍ້ແທກນ້ຳຕາຍ ແລະ ອື່ນໆ (illegal use) ທຸກໆບັນຫາ ທີ່ເຮົາພົບເຫັນ ຕອ້ງໄດ້ເກັບກຳຂໍ້ມູນ ແລ້ວ ເຮັດໃບລາຍງານ ໃຫ້ພາກສ່ວນ ກ່ຽວຂອ້ງໄປ ແກ້ໄຂທັນທີ.

ລົງສຳຫລວດລູກຄ້າລາຍໃຫ່ຍ Big consumer survey

ລູກຄ້າລາຍໃຫ່ຍ ແມ່ນ ລູກຄ້າທີ່ໃຊ້ນ້ຳຫລາຍ ຫລື ໃຊ້ນ້ຳ ເກີນກ່ວາ 2000ມ3 ຕໍ່ເດືອນ ຊຶ່ງແມ່ນ ສຳນັກງານ ອົງການ ກະຊວງ ໂຮງແຮມ ໂຮງໝໍ ແລະ ໂຮງງານ ອື່ນໆ. ໃນຂົງເຂດນີ້ ມີ ນ້ຳຮົ່ວ ພາຍໃນສູງ,ມີການໃຊ້ນ້ຳຢ່າງຟຸມເຟືອຍ ໂດຍສະເພາະ ແມ່ນ ອົງການຈັດຕັ້ງຂອງລັດ ທີ່ໃຊ້ງົບປະ ມານ ຈ່າຍຄ່ານ້ຳແຕ່ລະປີ. ຖ້າວ່າປະປ່ອຍ ໃວ້ຄືແນວນີ້ ແນ່ນອນ ຜົນກະທົບ ທີ່ຕາມມາ ກໍແມ່ນ ເກີດວິກິດການ ບັນຫາຂາດນ້ຳໃຊ້ ໃນທົ່ວລະບົບນ້ຳປະປາ. ຈຸດປະສົງ ຂອງວຽກງານນີ້ ກໍຄ້າຍຄືກັນ ກັບ ຂໍ້ 6.3.1 ຕ່າງແຕ່ວ່າ ເຮົາຕ້ອງລົງກວດກາເປັນປະຈຳ ດີທີ່ສຸດ ອາທິດນຶ່ງ ຕໍ່ນຶ່ງຄັ້ງ ຍິ່ງເປັນການ ດີ. ບັນຫາທີ່ຄວນເອົາໃຈໃສ່ ໃນວຽກງານນີ້ ແມ່ນ ການຕິດຕັ້ງ ໝໍ້ແທກນ້ຳ ບໍ່ຖືກຕາມມາດຕະຖານ ເຕັກນິກ ເຊ່ນວ່າ ບໍ່ມີທໍ່ນ້ຳສັ້ນ ຫລື ທໍ່ນ້ຳສັ້ນ ບໍ່ໄດ້ ມາດ ຕະຖານ, ຂະໜາດ ຂອງ ໝໍ້ແທກນ້ຳ ບໍ່ເໝາະສົມ ກັບ ການຊົມໃຊ້ນ້ຳ ຂອງລູກຄ້າ, ໝໍ້ແທກນ້ຳ ຂະໜາດໃຫ່ຍ ແຕ່ໃຊ້ນ້ຳໜ້ອຍ ຫລື ໝໍ້ແທກນ້ຳນ້ອຍ ພັດໃຊ້ນ້ຳຫລາຍ (Adiquate size for big consumer) . ສະນັ້ນ, ຈຶ່ງເຮັດໃຫ້ ຄວາມທ່ຽງຕົງ ຂອງໝໍ້ແທກນ້ຳ ບໍ່ແນ່ນອນ.

ປ່ຽນຖ່າຍໝໍ້ແທກນ້ຳ Replacement of defective meters

ຕາມປົກກະຕິແລ້ວ ໝໍ້ແທກນ້ຳເກ່ົາ ທີ່ມີອາຍຸການໃຊ້ງານເກີນກວ່າ 8ປີ ຂຶ້ນໄປຈະບໍ່ມີ ຄວາມ ທ່ຽງຕົງ ແລະ ຊັດເຈນແນ່ນອນ. ສະນັ້ນ, ຈຶ່ງຈຳເປັນ ຈະຕ້ອງມີແຜນການລະອຽດ ໃນແຕ່ລະປີ ເພື່ອປ່ຽນຖ່າຍ ແລະ ຄຽງຄູ່ກັນນັ້ນ ກໍຄວນຍົກຍ້າຍ ໝໍ້ແທກນ້ຳ ທີ່ບໍ່ສາມາດ ເຂົ້າຫາໄດ້ ຍ້າຍ ໄປໄວ້ບ່ອນ ທີ່ເໝາະສົມ ເພື່ອສະດວກ ໃນການອ່ານ ແລະ ຈົດກ່າຍ.

ທົດສອບໝໍ້ແທກນ້ຳ Water meter tests and field survey

ໝໍ້ແທກນ້ຳ ແຕ່ລະໜ່ວຍ ປຽບດັ່ງ ຈັກຄິດໄລ່ເງິນຂອງ ພວກເຮົາ ສະນັ້ນ, ໜ່ວຍງານ ທີ່ມີໜ້າທີ່ຮັບ ຜິດຊອບ ຕອ້ງໄດ້ ເອົາໃຈໃສ່ ໃນການຄຸ້ມຄອງ ຢ່າງເຂັ້ມງວດ ເຊ່ນ:

- ໝໍ້ແທກນ້ຳ ແຕ່ລະໜ່ວຍ ກ່ອນຈະ ເອົາໃປຕິດຕັ້ງ ຫລື ປ່ຽນຖ່າຍ ກໍຕ້ອງໄດ້ຜ່ານການທົດສອບ ຢູ່ ຫອ້ງທົດລອງເສັ້ງກ່ອນ ເພື່ອປະເມີນຫາຄ່າ ຄວາມທ່ຽງຕົງ ຄວາມຊັດເຈນ ຂອງ ໝໍ້ແທກນ້ຳ ໃຫ້ຖືກຕ້ອງຕາມ ມາດຕະຖານ ໝາຍວ່າ ບ່ໃຫ້ຊ້ຳ ແລະບ່ໃຫ້ໄວ.
- ທົດສອບໝໍ້ແທກນ້ຳ ຢູ່ສະໜາມ ດ້ວຍ ເຄື່ອງທົດສອບ ເຄື່ອນທີ່ Mobile flow meter ໃນເມື່ອ ມີການສົງໃສວ່າ ຕິວເລກການໃຊ້ນ້ຳ ຜິດປົກກະຕິ ຫລື ລູກຄ້າ ມີການຈົ່ມວ່າ ເລື້ອຍໆ ກ່ຽວກັບ ການຈ່າຍຄ່ານ້ຳແພງ ເຮົາຄວນ ລົງໄປທົດສອບຢູ່ສະໜາມເລີຍ.
- ເກັບກຳຂໍ້ມູນ ໝໍ້ແທກນ້ຳ ແຕ່ລະຊະນິດ ແຕ່ລະຂະໜາດ ແລະ ລະຍະເວລາ ທີ່ໃຊ້ງານ ເພື່ອ ຂຶ້ນແຜນປ່ຽນຖ່າຍ ໝໍ້ແທກນ້ຳ.

ຄຸ້ມຄອງ ແລະ ປັບປຸງລະບົບ ພິມໃບບິນເກັບເງິນຄ່ານ້ຳ

Upgrade of the IT billing systemand customer management

ລະບົບໃບບິນເກັບເງິນ ກໍເປັນຂອດນິ້ງທີ່ສຳຄັນ ໃນການຄຸ້ມຄອງ ແລະລົດຜ່ອນ ນ້ຳສູນເສັ້ງ ການຈົດກ່າຍຕິວເລກ ໃຫ້ຖືກຕ້ອງ ຊັດເຈນ ການພິມບິນເກັບເງິນ ກໍໃຫ້ຖືກຕ້ອງ ແລະທັນເວລາ ບັນຫານີ້ ກໍເພື່ອ ປ້ອງກັນການຈົ່ມວ່າຈາກລູກຄ້າ, ສະນັ້ນເຮົາຕ້ອງປັບປຸງໃຫ້ດີຂຶ້ນກ່ວາເກົ່າ.

• ການແຍກຜູ້ໃຊ້ນ້ຳຄົວເຮືອນ ແລະ ພາກສ່ວນໃຊ້ນ້ຳຂອງສຳນັກງານ ອົງການລັດ

- ຜ່ານມາຈາກການເກັບສຳຫຼວດ ເອົາຂໍ້ມູນຈາກຜູ້ໃຊ້ນ້ຳປະປາ ໃນນະຄອນຫຼວງວຽງຈັນ ເຫັນວ່າ ບາງສຳນັກງານອົງການຂອງລັດ ມີການໃຊ້ນ້ຳຮ່ວມກັນ ເຊັ່ນວ່າ: ໃນບາງສຳນັກ ງານອົງການ ຂອງລັດ ແລະ ຄອບຄົວທີ່ພັກອາໃສ ຢູ່ໃນບໍລິເວນຂອງສຳນັກງານອົງການ ຂອງລັດນັ້ນ. ສະນັ້ນເຫັນວ່າການໃຊ້ນ້ຳ ຈາກສຳນັກງານອົງການຂອງລັດ ເຫັນວ່າສູງຜິດ ປົກກະຕິ ເພື່ອໃຫ້ເຫັນ ແຈ້ງວ່າ ຈາກສຳນັກງານອົງການຂອງລັດ ມີການໃຊ້ນ້ຳຢ່າງປະຢັດ ແລະ ໝາະສົມກັບຄວາມຕ້ອງການໃຊ້ນ້ຳປະປານັ້ນ ພວກເຮົາຄວນແຍກລະຫວ່າງ ການ ໃຊ້ນ້ຳ ຈາກສຳນັກງານອົງການຂອງລັດກັບຄົວເຮືອນອອກ ທີ່ຢູ່ໃນບໍລິເວນຂອງສຳນັກ ງານ ອົງການຂອງລັດ ແລະ ຄວນແຍກຫ່ວງການໃຊ້ຈ່າຍຄ່ານ້ຳປະປາ ອອກຈາກກັນອີກ ດ້ວຍ; ຊຶ່ງຈະສາມາດເຮັດໃຫ້ຜູ້ໃຊ້ນ້ຳຢູ່ຕາມຄົວເຮືອນ ມີການປະຫຍັດນ້ຳ ແລະ ຈະບ່ ປ່ອຍໃຫ້ນ້ຳປະປາຖິ້ມເສຍ ເນື່ອງຈາກວ່າ ເຂົາເຈົ້າເອງນັ້ນຈະເປັນຜູ້ຈ່າຍຄ່ານ້ຳປະປາ ແລະ ອີກຢ່າງໜຶ່ງກໍ່ເປັນການຫຼຸດຜ່ອນຄ່າໃຊ້ຈ່າຍ ນ້ຳປະປາຈາກສຳໜັກງານອົງການ ຂອງລັດ.

5.2 ຄຸນະພາບນ້ຳໃນອານາຄົດ

- **ຄຸນະພາບຂອງການບໍລິການນ້ຳປະປາຕໍ່ລູກຄ້າ**

1. ຕ້ອນຮັບລູກຄ່ຳທີ່ມາພົວພັນວຽກຕາມແບບມະນຸດສຳພັນທີ່ດີ .
2. ຜະລິດນ້ຳປະປາເພື່ອປະຊາຊົນໃຫ້ມີຄວາມສະອາດປອດໄພ .
3.ສຳຫຼວດ;ວັດແທກ;ອອກແບບຖືກຕ້ອງຕາມເຕັກນິກ;ທັນເວລາ .
4.ຄຳນວນລາຄາຕາມລະບຽບຫຼັກການກຳນົດໄວ້ແລະຖືກຕ້ອງຕາມເວລາວາງໃວ້ .
5.ຕິດຕັ້ງນ້ຳເຂົ້າເຮືອນ;ສອ້ມແປງທໍ່ແຕກ;ວາງທໍ່ຕາມຖະໜົນຫົນທາງໃຫ້ຖືກຕ້ອງຕາມ ເຕັກນິກແລະທັນເວລາ .
6.ຈົດຕົວເລກໜ້ແທກນ້ຳໃຫ້ຊັດເຈນ; ລາຍງານໜ້ແທກນ້ຳເດີນບໍ່ປົກກະຕິ , ເປ່ເພ; ເສຍ ຫາຍໃຫ້ທັນສະພາບການ .
7.ເກັບເງິນຄ່ານ້ຳຢ່ຳໆຊື່ສັດບໍລິສຸດ,ເກັບເງິນແລ້ວຕ້ອງຖອກເຂົ້ຳຄັງເງິນສົດຕາມລະບຽບ ການວາງໃວ້ .
8.ວົງຈອນເອກະສານຕ້ອງມີກຳນົດເວລາຊັດເຈນ,ເອກະສານຜ່ານແຕ່ລະພະແນກກ່ຽວຂ້ອງ ໃຊ້ເວລາເທ່ຳໃດ;ໃຜເປັນຜູ້ມີສິດເຊັນ .
9.ທຸກຄ້ັງທີ່ລູກຄ້ຳຈ່ຳຍເງິນຕ້ອງມີໃບຮັບເງິນໃຫ້ລູກຄ້ຳເພື່ອເປັນຫຼ້ກຖານຈ່ຳຍເງິນ .
10.ປະຕິບັດໂມງເວລາລັດຖະການຢ່ຳງເຂັ້ມງວດ .

5.3 ລາຄານ້ຳ.

- **ລະບົບລາຄານ້ຳປະປາໃນອານາຄົດ.**

❖ ຈຸດປະສົງແລະເປ້ຳໝາຍຂອງໂຄງສ້ຳງລາຄາ.

➢ ຈຸດປະສົງຕົ້ນຕໍຂອງລັດວິສາຫະກິດນ້ຳປະປາ, ແມ່ນຮັບໃຊ້ແລະບໍລິການສັງຄົມ.ດ້ວຍການ ສະໜອງນ້ຳສະອາດໃຫ້ແກ່ສັງຄົມ, ບໍ່ວ່ຳຜູ້ທຸກ ຫຼື ບຸກຄົນທົ່ວໄປກໍ່ສາມາດຊົມໃຊ້ນ້ຳປະປາໄດ້.

➢ ເພື່ອເຮັດໃຫ້ ວິສາຫະກິດ ສາມາດເຄື່ອນໄຫວ ແລະມີຄວາມສາມາດກ້ຳມຕົນເອງ ທາງດ້ານ ຖານະການເງິນ,

➢ ເພື່ອໃຫ້ວິສາຫະກິດສາມາດ ປະກອບສ່ວນພັນທະຕໍ່ລັດໄດ້ຕາມລະບຽບກົດໝາຍ.

❖ ໂຄງປະກອບລາຄານ້ຳ (ມີ3ພາກໃຫ່ຍ).

1) ຕົ້ນທຶນການຜະລິດ ແລະ ການບໍລິການ.

A. ວັດຖຸດິບຕົ້ນຕໍແລະລາຍຈ່ຳຍຕົ້ນຕໍເປັນຕົ້ນ: ຫີນສົ້ມ, ຢາຂ້ຳເຊ້ືອ, ລາຍຈ່ຳຍຄ່ຳໄຟຟ້ຳ

B. ແຮງງານເງິນເດືອນ, ສະຫວັດດີການຕ່າງໆ

C. ມູນຄ່າຫຼັ່ງຫຼັ່ງພື້ນຖານ ຊັບສິນບັດຄີງທີ່ຕາມມູນຄ່າເດີມ, ເຊິ່ງມູນຄ່າດັ່ງກ່າວ ຍັງບໍ່ທັນສ່ອງແສງ ເຖິງ ມູນຄ່າປະຈຸບັນ ຂອງຊັບສິນບັດຄີງທີ່ເທື່ອ.ແລະບໍ່ສາມາດຈະລິງຫືນໃໝ່ໄດ້. ດັ່ງນັ້ນຈຶ່ງ ປັນສາຍເຫດ ຕົ້ນຕໍ ຂອງຖານະການເງິນ ວິສາຫະກິດ ນ້ຳປະປາ ບໍ່ສາມາດ ຈະລິງຫືນ ກໍ່ສ້າງ ແລະຂະຫຍາຍລະບົບນ້ຳປະປາໄດ້.

2) ລາຍຈ່າຍທາງດ້ານການເງິນ (ດອກເບັຍເງິນກູ້) . ປະຈຸບັນ ອັດຕາສ່ວນ ເງິນກູ້ ຕ່ຳຫືນ ສູງ, ສະນັ້ນ ວິສາຫະກິດ ຕ້ອງໄດ້ຮັບພາລະ ຈ່າຍ ດອກເບັຍເງິນກູ້ ສູງ ແລະ ປະກອບເຂົ້າໃນ ໂຄງປະກອບລາຄານ້ຳ.

3) ກຳໄລກຳນົດໝາຍ ແລະອາກອນທຸລະກິດ

ທິດທາງໂຄງສ້າງລາຄານ້ຳ.

ປະເພດ	ເນື້ອໃນ	ຂອບເຂດການນຳໃຊ້	ລາຄາ ກີບ/ມ^3	%ເພີ່ມຂຶ້ນ ແຕ່ລະປີ	2004 →	2007
I	ຄົວເຮືອນ ແລະສຳນັກງານ ບໍລິຫານລັດ	1 - 30 > 30	605 835	10 % 15 %	10% 15%	
II	ວຸກການຄ້າ,ທຸລະກິດ,ສະ ຖານທູດ,ບ້ານພັກຕ່າງປະເທດ	1 - 50 > 50	855 1035	15 % 20 %	15% 20%	
	ລາຄາສະເລ່ຍ		750			

- **ການພິຈາລະນາເຖິງຜູ້ໃຊ້ນ້ຳປະປາໃນຄົວເຮືອນ ແລະ ຜູ້ມີລາຍໄດ້ໜ້ອຍ.**

ທິດທາງແບ່ງເປັນ 2 ປະເພດແມ່ນມີການກະທົບຕໍ່ຜູ້ຊົມໃຊ້ນ້ຳຄື:

1. ຕໍ່ລູກຄ້າສຳລັບຄົວເຮືອນ ແລະ ອົງການລັດ. ລາຄາຈະສູງຂຶ້ນ ເຮັດໃຫ້ຜູ້ຊົມໃຊ້ນ້ຳ ເອົາໃຈ ໃສ່ຕໍ່ການນຳໃຊ້ນ້ຳມີການປະຢັດ, ແລະໃສ່ໃຈຕໍ່ ລາຍຈ່າຍທີ່ຕ້ອງສຳລະ.ແລະອີກປະການ ໜຶ່ງລູກຄ້າປະເພດນີ້ກວມເປີເຊັນສູງນັບທັງກົງເຕີແລະບໍລິມາດການໃຊ້ນ້ຳ.
2. ສຳລັບລູກຄ້າປະເພດ 2 ແມ່ນປະເພດທຸລະກິດແລະອົງການ,ບຸກຄົນຕ່າງປະເທດ. ປົກກະຕິ ລູກຄ້າປະເພດນີ້ ແມ່ນໃສ່ໃຈຢູ່ແລ້ວຕໍ່ກັບບັນຫາການນຳໃຊ້ນ້ຳ. ສຳລັບລາຄາປະເພດນີ້ ແມ່ນຖຸດລົງ, ແລະບໍ່ມີຜົນກະທົບຫັ້ງ ຕໍ່ ກັບການນຳໃຊ້ນ້ຳແບບປະຢັດ. ລູກຄ້າປະເພດນີ້ ກວມເປີເຊັນຕ່ຳນັບທັງກົງເຕີແລະປະລິມານການນຳໃຊ້ນ້ຳ.

- **ການພິຈາລະນາ ສຳລັບຜູ້ໃຊ້ນ້ຳປະປາ ໃນຄົວເຮືອນ ແລະ ຜູ້ທຸກຈົນ.**

ໂຄງສ້າງລາຄານ້ຳ ທີ່ປະຕິບັດ ຢູ່ປະຈຸບັນນີ້, ສຳລັບປະຊາຊົນ ທີ່ທຸກຈົນ, ມີລາຍຮັບຕ່ຳ ກໍ່ສາມາດ ສຳລະຄ່ານ້ຳປະປາໄດ້. ຕົວຢ່າງ: ຜູ້ທີ່ມີລາຍຮັບ ສະເລ່ຍ 100 000 ກີບ / ເດືອນ, ການໃຊ້ ນ້ຳປະປາ ຈຳນວນ 15 $ม^3$/ ເດືອນ ຈະຕ້ອງຈ່າຍ ຄ່ານ້ຳ ມູນຄ່າ 3 725 ກີບ / ເດືອນ. ໝາຍຄວາມວ່າ ລາຍຈ່າຍການໃຊ້ນ້ຳປະປາ ກວມພຽງແຕ່ 3 - 5 % ຂອງລາຍຮັບເທົ່ານັ້ນ. ສະນັ້ນຈຶ່ງເວົ້າໄດ້ວ່າ : ໂຄງສ້າງລາຄານີ້ ສຳລັບຜູ້ທຸກຈົນກໍ່ສາມາດໃຊ້ນ້ຳປະປາໄດ້.
ຖ້າເບິ່ງໃນແງ່ທຸລະກິດຢ່າງດຽວ, ໂຄງສ້າງລາຄານີ້ແມ່ນລາຄາເກື້ອກຸນ ບໍ່ມີເສດຖະກິດ. ແຕ່ຖ້າເບິ່ງໃນແງ່ສັງຄົມ,ແມ່ນສັງຄົມໄດ້ຮັບຜົນປະໂຫຍດຫຼາຍ.ເຮັດໃຫ້ສັງຄົມມີຊີວິດທີ່ດີຂຶ້ນ.

➡ ຜົນກະທົບ ຈາກລາຄານ້ຳທີ່ນຳໃຊ້ປະຈຸບັນ,ສ່ວນໃຫ່ຍເຫັນວ່າລາຄານ້ຳຕ່ຳ,ແລະຄວາມ ສາມາດໃນການນຳໃຊ້ ແລະ ສຳລະ ທົ່ວໄປເຫັນວ່າມີຫຼາຍ, ຈາກນັ້ນ ຈຶ່ງມີທັດສະນະ ການນຳໃຊ້ນ້ຳ ແບບຟຸມເຟືອຍ. ຍັງຂາດແນວຄິດ ປະຢັດ ເພື່ອຕົນເອງ, ເພື່ອປະເທດຊາດ ແລະເພື່ອຄວາມຢູ່ລອດຂອງສັງຄົມ.

5. 4 ການສົ່ງເສີມ ແລະ ການພົວພັນກັບລູກຄ້າທີ່ດີ

- **ການຕັ້ງເປົ້າໝາຍ ການປະຫຍັດນ້ຳ ແລະ ການຄຸ້ມຄອງນ້ຳໃຫ້ພຽງພໍ ໃນການໃຊ້**

- ປະຫຍັດນ້ຳໃຫ້ມີນ້ຳພຽງພໍ ຕາມແຜນການຂະຫຍາຍລະບົບນ້ຳປະປາ ແລະ ໃຫ້ຜູ້ໃຊ້ ນ້ຳໄດ້ຈ່າຍລາຄານ້ຳປະປາ ໄດ້ຢ່າງປະຫຍັດ ແລະ ມີປະສິດທິຜົນດີ.
- ການປະຫຍັດນ້ຳ ແລະ ຄຸ້ມຄອງການໃຊ້ນ້ຳໃຫ້ພຽງພໍກັບຜູ້ໃຊ້ນ້ຳ ຍັງເປັນການຫຼຸດ ຜ່ອນການລົງທຶນຂອງລັດທະບານລາວ ໃນການຂະຫຍາຍລະບົບນ້ຳປະປາກໍ່ຄືເພື່ອສົ່ງ ເສີມໃຫ້ເສດທະກິດຂອງຊາດ ໃຫ້ມີຄວາມໝັ້ນຄົງ.

- **ຄວາມໂປ່ງໃສຂອງບໍລິສັດນ້ຳປະປາ ຕໍ່ລູກຄ້າ.**

- **ບົດລາຍງານປະຈຳປີ ຂອງບໍລິສັດນ້ຳປະປານະຄອນຫຼວງວຽງຈັນ**

ສາທາລະນະລັດ ປະຊາທິປະໄຕ ປະຊາຊົນລາວ

ສັນຕິພາບ ເອກະລາດ ປະຊາທິປະໄຕ ເອກະພາບ ວັດທະນາຖາວອນ

ກຳແພງນະຄອນວຽງຈັນ
ພະແນກ ຄົມມະນາຄົມ ຂົນສົ່ງ
ໄປສະນີ ແລະ ກໍ່ສ້າງ
ລັດວິສາຫະກິດນ້ຳປະປາລາວ

ເລກທີ 080 /ນປລ

ບົດລາຍງານຫຍໍ້ ການເຄື່ອນໄຫວ ທຸລະກິດ ປະຈຳສົກປີ 2002 ແລະ ແຜນການ ສົກປີ 2003.

I. ສະພາບລວມ:

ໃນການດຳເນີນທຸລະກິດປະຈຳສົກປີ 2002 ຜ່ານມາພາຍໃຕ້ການຊີ້ນຳຈາກ ສະພາບໍລິຫານແລະພະແນກຄຂປກາກຳແພງ,ພາຍໃຕ້ການນຳພາຂອງຜູ້ອຳນວຍການ ແລະ ຮອງຜູ້ອຳນວຍການ ສົມທົບກັບອົງຄະນະພັກກຳແພງ ຄະນະພັກບໍລິສັດ ອົງການຈັດຕັ້ງມະຫາຊົນ ກໍ່ຄື ພະນັກງານ,ກຳມະກອນໄດ້ສຸມໃສ່ໃນການປະຕິບັດວຽກງານດ້ານການນຳພາການເມືອງແນວຄິດ, ດ້ານວິຊາສະເພາະ ແລະ ວຽກງານທີ່ຂັ້ນເທິງມອບໝາຍ ສາມາດບັນລຸຜົນສຳ ເລັດ ດັ່ງມີ ລາຍລະອຽດແຕ່ລະດ້ານລຸ່ມນີ້:

1/.ດ້ານການຈັດຕັ້ງ

ລັດວິສາຫະກິດນ້ຳປະປາລາວປະກອບດ້ວຍຜູ້ອຳນວຍການ1ທ່ານ,ຮອງຜູ້ອຳນວຍການ 3 ທ່ານ, 5 ພະແນກ, 4 ສາຂາ, 4 ໂຮງງານຜະລິດ, 2 ໂຄງການ, 1 ກອງກໍ່ສ້າງ ແລະ ສ້ອມແປງ ລວມພະນັກງານທັງຫມົດ 354 ຄົນ, ຍິງ 59 ຄົນ, ສັນຍາຈ້າງ 68 ຄົນ, 1 ຫນ່ວຍພັກ ສະມາຊິກ ສົມບູນ 36 ສະຫາຍ,ສະມາຊິກສຳຮອງ11 ສະຫາຍ, ຍິງ 8 ສະຫາຍ ລວມ 47 ສະຫາຍ, ສະມາຊິກກຳມະບານມີສະມາຊິກທັງຫມົດ 317 ສະຫາຍ, ຍິງ 52 ສະຫາຍ, ຊາວຫນຸ່ມປະຊາຊົນປະຕິວັດລາວມີສະມາຊິກທັງຫມົດ 134 ສະຫາຍ, ຍິງ 38 ສະຫາຍ, ສະຫະພັນແມ່ຍິງລາວມີສະມາຊິກທັງຫມົດ 59.

II. ຜົນງານ ປີ 2002.

1ວຽກງານນຳພາແນວຄິດ ແລະ ສຶກສາອົບຮົມ:

ໃນແຕ່ລະອົງການຈັດຕັ້ງກໍ່ໄດ້ດຳເນີນຊີວິດຂອງຕົນເປັນປົກກະຕິ, ຄະນະອຳນວຍການ, ຫົວໜ້າພະແນກ ແລະ ອົງການຈັດຕັ້ງມະຫາຊົນໄດ້ຮ່ວມຊີວິດ ສອງອາທິດ 1 ເທື່ອ, ສ່ອງແສງຢູ່ກຳແພງນະຄອນ ເປັນປະຈຳ.

- ໄດ້ເປີດຝຶກອົບຮົມວິຊາສະເພາະຂອງບາງຂະແໜງການໃຫ້ພະນັກງານ ໃນກຳແພງ ແລະ ຕ່າງແຂວງ ເພື່ອຍົກລະດັບການຄຸ້ມຄອງບໍລິການໃຫ້ມີປະສິດທິພາບສູງຂຶ້ນເທື່ອລະກ້າວ.
- ໄດ້ຈັດຕັ້ງຮຽນເອກະສານຄຸນທາດການເມືອງ,ຄຸນສົມບັດສົມທຳປະຕິວັດແບບແຜນດຳລົງຊີວິດແລະວິທີເຮັດວຽກຂອງພະນັກງານ.
- ຈັດຕັ້ງການຮຽນ ເອກະສານມະຕິ 4 ສະໄໝທີ 7 ຂອງພັກ.
- ໄດ້ຈັດຕັ້ງຮຽນເອກະສານກ່ຽວກັບຄວາມສາມະຄີຮ່ວມມືຮອບດ້ານ ລາວ - ຫວຽດນາມ.
- ໄດ້ຈັດຕັ້ງໜ່ວຍປ້ອງກັນເວນຍາມເປັນປົກກະຕິໃນໄລຍະ ວັນສຳຄັນມາຮອດປະຈຸບັນ ກໍ່ມີການເວນຍາມເປັນປົກກະຕິ.
- ໄດ້ມີການປະສານສົມທົບ ລະຫວ່າງ ພັກ-ລັດ, ອົງການຈັດຕັ້ງມະຫາຊົນ ເຮັດໃຫ້ລະບົບ ການຈັດຕັ້ງດ້ານການເມືອງເຄື່ອນໄຫວເປັນປົກກະຕິ.
- ໄດ້ມີການດຳເນີນຊີວິດການເມືອງ ແລະ ມີການຂຶ້ນແຜນການວຽກງານ ສະໜຸບຖອດຖອນບົດຮຽນ.
- ໄດ້ປັບປຸງການຈັດຕັ້ງ ແລະ ຊັບຊ້ອນພະນັກງານຂັ້ນນຳໃນບາງພະແນກການ ເພື່ອໃຫ້ ສອດຄ່ອງກັບສະພາບການຕົວຈິງ.
- ໄດ້ຝຶກອົບຮົມ ແລະ ທັດສະນະສຶກສາຢູ່ຕ່າງປະເທດ.

2. ວຽກງານການຜະລິດແລະບໍລິການ :

- ນ້ຳຜະລິດ ໄດ້	41.470.633 ມ3.
- ນ້ຳຈຳໜ່າຍ ໄດ້	28.728.711 ມ3.
- ເປີເຊັນນ້ຳເສັຍ	31%.
- ຕິດຕັ້ງນ້ຳເຂົ້າໃໝ່	1.700 ໜ່ວຍ.
- ສ້ອມແປງພາຍນອກ	3.314 ບ່ອນ.
- ຍົກຍ້າຍທໍ່ອອກຈາກເສັ້ນທາງ ເບີ 2 ສຳເລັດ	100%.

3. ວຽກການເງິນ :

* ລາຍຮັບລວມ : 19.977.873.771 ກີບ, ສົມທຽບໃສ່ແຜນການໄດ້ 102,15%.

4. ປະຕິບັດລາຍຈ່າຍທຸລະກິດ ລວມ : 19.200.113.215 ກີບ,ສົມທຽບໃສ່ແຜນການໄດ້ 96,74%.

- ກຳໄລ 777.760.556 ກີບ.
- ມອບພັນທະງົບປະມານ ໄດ້ 1.485.526.829 ກີບ.

5. ໜີ້ຕ້ອງຮັບ - ຕ້ອງສົ່ງ :

- ໜີ້ຕ້ອງຮັບ ລວມ 10.127.266.619 ກີບ.
- ➢ໃນນີ້ໜີ້ຂອງລັດແມ່ນ 7.782.281.613 ກີບ.
- ໜີ້ຕ້ອງສົ່ງ ລວມ 5.561.200.628 ກີບ.
- ໜີ້ຕ້ອງສົ່ງ ເປັນເງິນຕຣາ 103.331 ໂດລາ.

6. ວຽກງານພົວພັນສາກົນ :

ໃນໄລຍະຜ່ານມາ ລັດວິສາຫະກິດນ້ຳປະປາລາວ ພວກເຮົາກໍ່ໄດ້ມີການຮ່ວມມືນຳອົງການສາກົນ ເປັນຕົ້ນຄື:

6.1 : ໂຄງການຮ່ວມມືກັບຝະຣັ່ງ:

1./. ພາກປະຕິບັດວຽກງານປີ 2002 ຂອງໂຄງການຂະຫຍາຍຕາໜ່າງສະໜອງນ້ຳປະປາ.

ກ. ວຽກຂະຫຍາຍຕາໜ່າງສະໜອງນ້ຳປະປາກຳແພງນະຄອນວຽງຈັນ.

ໂຄງການສຶກສາຂໍ້ມູນກ່ຽວກັບຄວາມເປັນໄປໄດ້ຂອງໂຄງການກໍ່ສ້າງສູນຝຶກອົບຮົມຂະແໜງນ້ຳ ປະປາແລະສຸຂະພິບານສັນຍາໃຫ້ທຶນ ເລກທີ CLA 1001-01 ລົງວັນທີ 25/10/1994.

- ໄດ້ເຊັນສັນຍາກັບບໍລິສັດວິສາວະກອນທີ່ປຶກສາ Office International de Leau ໃນວັນທີ 24/4/2002 ມູນຄ່າ 98.550 ເອີໂຣ.

6.2: ໂຄງການຮ່ວມມືກັບທະນາຄານໂລກ :

ເປັນໂຄງການຊ່ວຍເຫຼືອຕ່າງແຂວງເຊິ່ງປະກອບດ້ວຍແຂວງອຸດົມໄຊ,ຜົ້ງສາລີ,ຫຼວງນ້ຳທາ ໂດຍຮູບ ການທີ່ລັດວິສາຫະກິດນ້ຳປະປາລາວເປັນຜູ້ປະສານງານແລະຊ່ວຍເຫຼືອທາງດ້ານເຕັກນິກວິຊາການ ຮອດປະຈຸບັນການກໍ່ສ້າງໂຮງງານຢູ່3ແຂວງດັ່ງກ່າວໄດ້ສຳເລັດ.ແຕ່ແຂວງອຸດົມໄຊຍັງໃຫ້ພວກເຮົາ ສືບຕໍ່ຊ່ວຍໃນການປະສານງານກັບທະນາຄານໂລກແລະຊ່ວຍດ້ານວິຊາການຄຸ້ມຄອງທຸລະກິດຂອງ ແຂວງເປັນຕົ້ນການຝຶກອົບຮົມພະນັກງານ.

6.3: ໂຄງການຮ່ວມມືກັບອົງການ JICA.

ໃນເດືອນ2 ປີ 2003 ອົງການ JICA ຈະໄດ້ສົ່ງຊ່ຽວຊານມາປະຕິບັດໂຄງການສຳຫຼວດລະບົບໂຮງ ງານນ້ຳປະປາແຫ່ງໃໝ່ແລະລະບົບສາຍທໍ່,ໂຄງການນີ້ຈະສຳເລັດໃນເດືອນ 12/2003.

6.4 : ໂຄງການຮ່ວມມືລາວ-ແບນຊິກ:

ໃນປີ 2002 ໂຄງການຮ່ວມມືລາວ-ແບນຊິກ ໄດ້ໃຫ້ທຶນ US$ 104.600 ເພື່ອໃຊ້ເຂົ້າໃນວຽກງານ ~ ຕ່າງໆ.

6.5: <u>ໂຄງການຮ່ວມມື ລາວ-ຈີນ :</u>

- ກ່ຽວກັບບົດວິພາກເສດຖະກິດເຕັກນິກສ້າງໂຮງງານ ຜະລິດທໍ່ PVC ປະຈຸບັນ ຝ່າຍຈີນ ຂໍໂຈະຊົ່ວ

ຄາວ.

III. <u>ສັງເກດຕີລາຄາດ້ານດີ ແລະ ດ້ານອ່ອນ</u>

* <u>ດ້ານດີ:</u>

1). ນັບແຕ່ຄະນະອຳນວຍການຕະຫຼອດຮອດພະນັກງານ,ກຳມະກອນຂອງພວກເຮົາໄດ້ມີຄວາມສາມະຄີຮັກແພງແລະມີຄວາມເປັນເອກະພາບໃນໜ້າທີ່ວຽກງານ,ເຮັດໃຫ້ພະນັກງານ,ກຳມະກອນເຊື່ອໝັ້ນຕໍ່ການນຳພາ,ມີຄວາມຫ້າວຫັນເຮັດໜ້າທີ່ວຽກງານທີ່ໄດ້ຮັບມອບໝາຍໃຫ້ເປັນຢ່າງດີ.

2).

ລັດວິສາຫະກິດນ້ຳປະປາລາວຂອງພວກເຮົາກໍ່ໄດ້ປັບປຸງແບບແຜນວິທີການເຮັດວຽກຂອງແຕ່ລະພະແນກ,ແຕ່ລະພາກສ່ວນເປັນຕົ້ນໄດ້ຫັນ ກອງກໍ່ສ້າງ-ຂະຫຍາຍ ໄປສູ່ການມອບໝ້າແຮງງານ.

3). ເຖິງວ່າລັດຖະບານບໍ່ທັນໄດ້ອະນຸຍາດປັບປຸງລາຄານ້ຳປະປາຕາມຄວາມເໝາະສົມແຕ່ພະນັກງານກຳມະກອນພວກເຮົາຍັງໄດ້ສູ້ຊົນຜະລິດນ້ຳປະປາຮັບໃຊ້ສັງຄົມເປັນປົກກະຕິແລະໄດ້ມອບພັນທະງົບປະມານ ໃຫ້ລັດ ເປັນປົກກະຕິ.

4). ໄດ້ປັບປຸງຊີວິດການເປັນຢູ່ຂອງພະນັກງານ ໂດຍໄດ້ເພີ້ມຄ່າຄອງຊີບໃຫ້ພະນັກງານ,ກຳມະກອນ ໃຫ້ສອດຄ່ອງກັບສະພາບເງິນເຟີ້ໃນປະຈຸບັນ ໄດ້ລະດັບໃດໜຶ່ງ.

5). ໄດ້ເລັ່ງລັດທວງໜີ້ສິນຄ່ານ້ຳປະປາແລະອື່ນໆ.

* <u>ດ້ານອ່ອນ:</u>

1) ມີພະນັກງານ-ກຳມະກອນຈຳນວນນຶ່ງ ຍັງຮັບຮູ້ເຊື່ອມຊ້ຳ ຕໍ່ທິດທາງການປ່ຽນແປງໃໝ່ຂອງພັກ ຍ້ອນ ລະດັບທາງທິດສະດີການເມືອງ ພະນັກງານ-ກຳມະກອນ ຂອງພວກເຮົາຍັງຕ່ຳ.

2) ສະຕິເຄົາລົບຕໍ່ລະບຽບວິໃນ, ສະຕິຄວາມຮັບຜິດຊອບຕໍ່ໜ້າທີ່ວຽກງານຂອງພະນັກງານ-ກຳມະກອນ ຈຳນວນໜຶ່ງຍັງອ່ອນ.

3) ການຕອບສະໜອງນ້ຳໃຫ້ແກ່ສັງຄົມຍັງບໍ່ພຽງພໍກັບຄວາມຕ້ອງການໃນບາງບ່ອນ-ບາງເຂດກໍ່ເພາະຍ້ອນວ່າຄວາມສາມາດການຜະລິດນ້ຳຍັງຈຳກັດ, ການຕິດຕັ້ງສ້ອມແປງ ບາງບ່ອນບໍ່ໄດ້ມາດຕະຖານເຕັກນິກ, ບາງບ່ອນບໍ່ທັນເວລາ.

4) ການນຳພາອົງການຈັດຕັ້ງມະຫາຊົນຍັງບໍ່ທັນໄດ້ດີ.

IV. <u>ວິທີການແກ້ໄຂ:</u>

1) ກ່ອນອື່ນໝົດຕ້ອງເພີ້ມທະວີການນຳພາທາງດ້ານການເມືອງແນວຄິດຂອງພະນັກງານ,ກຳມະກອນ ໃຫ້ເຂົ້າໃຈແຈ້ງຕໍ່ໜ້າທີ່ວຽກງານ ມີນ້ຳໃຈຮັກວຽກງານ, ມີຄວາມຮັບຜິດຊອບສູງ, ມີແນວ

ຄິດຫຼັກໝັ້ນ, ອຸ່ນອ່ຽນທຸ່ນທ່ຽງຕໍ່ໜ້າທີ່ວຽກງານ ພ້ອມທັງ ເຂົ້າໃຈແຈ້ງຕໍ່ແນວທາງປ່ຽນແປງໃໝ່ ຂອງພັກແລະລັດໃນລະບົບເສດຖະກິດຕະຫຼາດ,ແນວທາງປະຢັດມັດທະຍັດຂອງພັກ-ລັດ.

2) ເອົາໃຈໃສ່ຢ່າງຮີບດ່ວນ ແກ້ໄຂລະບົບນ້ຳ (ເຂດທີ່ຄວາມດັນນ້ຳຕ່ຳ) ແລະ ວາງທໍ່ແຈກເພື່ອ ຂະ ຫຍາຍ ລະບົບ ຈໍລະຈອນແຈກຢາຍນ້ຳຮັບໃຊ້ສັງຄົມໃຫ້ມີປະສິດທິຜົນ.
3) ສືບຕໍ່ກໍ່ສ້າງບຸກຄະລາກອນ ແຕ່ລະ ລະດັບວິຊາສະເພາະເຕັກນິກ, ຄອມພິວເຕີ ແລະ ພາສາໃຫ້ ມີຄວາມສາມາດ ໃນການດຳເນີນທຸລະກິດ ເປັນຕົ້ນພະນັກງານເຕັກນິກ, ພະນັກງານບໍລິຫານທຸ ລະກິດ, ພະນັກງານການເງິນ ແລະ ແຜນການ.
4) ຊັບຊ້ອນ ບຸກຄະລາກອນທີ່ມີຄວາມສາມາດ ໃຫ້ແຕ່ລະພະແນກການເພື່ອການດຳເນີນວຽກງານ ນັບມື້ໃຫ້ເຂັ້ມແຂງ, ປັບປຸງລະບົບການຄຸ້ມຄອງ, ລະບອບແຜນວິທີເຮັດວຽກ, ລະບົບລາຍງານ ແລະ ແກ້ໄຂບັນຫາໃຫ້ໄວ.

v. ແຜນການປີ 2003 ຂອງລັດວິສາຫະກິດນ້ຳປະປາລາວ.

1./. <u>ວຽກລວມ :</u>

- ສືບຕໍ່ປະສານສົມທົບກັບກະຊວງການເງິນ ຕາມໃບແຈ້ງການຂອງ ສ ນ ຍ ກ່ຽວກັບ ຂໍ່ານລາ

ຄານ້ຳປະປາ ຈາກ 550 ກີບ/ມ3 ມາເປັນ 750 ກີບ/ມ3.

- ພິວພັນຊອກຫາແຫ່ງທຶນ 3,5 ລ້ານໂດລາ ມາກໍ່ສ້າງໂຮງງານຜະລິດນ້ຳປະປາຢູ່ດົງໝາກຄາຍ 20.000 ມ^{3}ຕໍ່ມື້ ເພື່ອຮັບໃຊ້ປະຊາຊົນໃນກຳແພງນະຄອນວຽງຈັນ.
- **ສະເໜີຂໍ້ທຶນສຳຫຼວດອອກແບບລະບົບນ້ຳປະປາຕາມແຜນການ ຂອງກຳແພງນະຄອນ 4 ຈຸດ ຄື: ເທດສະບານເມືອງສັງທອງ,ເທດສະບານເມືອງປາກງື່ມ,ເຂດໂຕກເພີ່ງແລະເຂດຫ້ວຍຈຸ່ມ.**
- **ສືບຕໍ່ປະຕິບັດໂຄງການຫຼຸດຜ່ອນນ້ຳສູນເສັຍຕາມແຜນງານ ທີ່ LYSA ເຮັດໄວ້ແລ້ວ.**
- **ສືບຕໍ່ປະຕິບັດໂຄງການ ຮ່ວມມືກັບສາກົນ : AFD (ຝະຣັ່ງ), ອົງການ JICA , Belgigue, World Bank.**

* ວຽກງານການຜະລິດນ້ຳ ແລະ ການບໍລິການ ປີ 2003

ລ/ດ	ລາຍການ	ຫ/ໜ	ແຜນການ ປີ 2003	ໝາຍເຫດ
1	2	3	4	5
I.	<u>ພາກ ການຜະລິດ</u> -			
1	ນ້ຳຜະລິດ	ມ^3	41.814.085	
2	ນ້ຳຈຳໜ່າຍ	-"-	29.688.000	

3	% ນ້ຳເສັຍ	%	29,00	
4	ຕິດຕັ້ງນ້ຳເຂົ້າໃໝ່	ໜ່ວຍ	1.386	
5	ສ້ອມແປງ ພາຍນອກ	ບ່ອນ	3.662	
6	ລວມ ຈຳນວນໝໍ້ແທກນ້ຳ	ໜ່ວຍ	45.797	

* ວຽກງານການເງິນ ປີ 2003

ລ/ດ	ລາຍການ	ຫ/ໜ	ແຜນການ ປີ 2003	ໝາຍເຫດ
1	2	3	4	5
I.	ລາຍຮັບທຸລະກິດ	ກີບ	19.894.924.970	
II.	ລາຍຈ່າຍທຸລະກິດ	ກີບ	21.077.147.956	
III.	ກຳໄລ - ຂາດທຶນ	ກີບ	1.182.222.986	
IV.	ພັນທະງົບປະມານ	ກີບ	1.435.606.666	

VI. ຂໍ້ສະເໜີຕໍ່ຂັ້ນເທິງ

1) ສະເໜີຂັ້ນເທິງຊ່ວຍປະສານກັບອົງການທີ່ກ່ຽວຂ້ອງຕ່າງໆເພື່ອຫາວິທີແກ້ໄຂບັນຫາ ແລະ ຂໍ້ຫຍຸ້ງຍາກໃນການດຳເນີນທຸລະກິດ ເຊັ່ນ: ໜີ້ສິນຂອງລັດ, ກົດເກນລາຄາ, ການເສັຍພາສີອາກອນ.
2) ສະເໜີຂັ້ນເທິງຊ່ວຍປະສານງານກັບພາກສ່ວນທີ່ກ່ຽວຂ້ອງໃນການຊອກຫາແຫ່ງທຶນມາກໍ່ສ້າງ ລະບົບໂຮງງານຜະລິດນ້ຳປະປາເພີ້ມ.
3) ສະເໜີກົມຄຸ້ມຄອງຊັບສິນພິຈາລະນາການຫັນເງິນກູ້ມາເປັນທຶນ(ສຳລັບບ້ວງເງິນຊ່ວຍເຫຼືອ ຂອງ ຝຣັ່ງ) ຕາມທີ່ໄດ້ສະເໜີໄປແລ້ວ.

ວຽງຈັນ,ວັນທີ 25 / 03 / 2003

ຜູ້ອຳນວຍການ

ທ່ານ ດາວເພັດ ບົວພາ

- **ການແຂ່ງຮູບພາບໂປສເຕີໃນໂຮງຮຽນເດັກນ້ອຍ**

ຜ່ານມາເຫັນວ່າ ພວກເຮົາໄດ້ເອົາໃຈໃສ່ໃນການແກ້ໄຂບັນຫາການໃຊ້ນ້ຳປະປາຢ່າງ ປະຫຍັດ ໃນໄລຍະສັ້ນເທົ່ານັ້ນ, ເພື່ອເປັນການອະນຸລັກ ແລະ ປະຫຍັດນ້ຳປະປາ ໃນໄລ ຍະຍາວ ພວກເຮົາຄວນເອົາໃຈໃສ່ຕື່ມໃນການປູກຈິດສຳນຶກ ໃຫ້ແກ່ລຸ້ນເຍົາວະຊົນ ທີ່ ພວມສຶກສາ ຊຶ່ງເລີ້ມແຕ່ໂຮງຮຽນປະຖົມຂຶ້ນມາ ໂດຍອາດໃຫ້ເຂົາເຈົ້າເຂົ້າໃຈກ່ຽວກັບຄຸນ ນະພາບການຜະລິດນ້ຳປະປາ ໄດ້ມາແບບໃດ ແລະໃຫ້ເຂົາເຈົ້າຮູ້ກ່ຽວກັບນ້ຳ ແລະ ການ ອະນຸລັກນ້ຳໄວ້ໃຊ້ໃນຕໍ່ໜ້າ ຊຶ່ງມັນຈະມີຜົນປະໂຫຍດແກ່ຕົນເອງ ແລະ ສັງຄົມອີກດ້ວຍ. ດັ່ງນັ້ນການແຂ່ງຂັນການບອນໃດໜຶ່ງ ຫຼືການແຂ່ງຂັນຮູບພາບ ເພື່ອສະທ້ອນໃຫ້ເຫັນການ ນຳໃຊ້ນ້ຳຢ່າງປະຫຍັດນັ້ນ ຈະເຮັດໃຫ້ເຍົາວະຊົນລາວ ມີຄວາມເຂົ້າໃຈກ່ຽວກັບລະບົບ ຂອງນ້ຳປະປາ ແລະ ຄຸນປະໂຫຍດຂອງມັນ ຊຶ່ງເຍົາວະຊົນດັ່ງກ່າວນີ້ອາດເປັນຊ່ຶແນະໃຫ້ ຄອບຄົວຂອງເຂົາເຈົ້າມີຄວາມຮູ້ສຶກໃນການໃຊ້ນ້ຳຢ່າງປະຫຍັດ ຫຼືເມື່ອເຂົາເຈົ້າໃຫຍ່ຂຶ້ນ ມາ ເຂົາເຈົ້າກໍ່ຈະກາຍເປັນຜູ້ນຳຄອບຄົວ ຊຶ່ງຈະເປັນຜູ້ສືບຕໍ່ ແລະ ນຳພາລູກຫຼານອີກກ່ຽວ ກັບການໃຊ້ນ້ຳຢ່າງປະຫຍັດ.

- **ການສ້າງຈິດສຳນຶກ ໃຫ້ມີສ່ວນຮ່ວມໃນອົງການຂອງລັດບໍລິຫານ, ສະຖາບັນຕ່າງໆໃນການ ປະຫຍັດນ້ຳ ແລະ ຄຸ້ມຄອງນ້ຳ**

- ການສົ່ງບິນເກັບເງິນຄ່ານ້ຳໃນແຕ່ລະຄັ້ງ ໃຫ້ແກ່ພາກສ່ວນຊົມໃຊ້ນ້ຳດັ່ງກ່າວຂ້າງເທິງ ພວກເຮົາຄວນແຈ້ງລະອຽດກ່ຽວກັບການຄິດໄລ່ລາຄານ້ຳ.
- ຄວນໃຫ້ມີການແຍກການນຳໃຊ້ໜ້ີແທການນ້ຳຮ່ວມກັນ ລະຫວ່າງ ຫ້ອງການລັດກັບຄົວ ເຮືອນລັດ ທີ່ເຮັດວຽກນຳກັນເຊັ່ນ: ຄົວເຮືອນກັບຫໍພັກ, ເຮືອນພັກລວມ, ຫ້ອງການ.
- ຄວນມີການປະຊາສຳພັນແຈ້ງ ອອກອາກາດທາງວິທະຍຸ, ໂທລະທັດ ຫຼືໜັງສືພິມ, ວາ ລະສານຢ່າງເປັນປະຈຳ .
- ຄວນມີການຈັດພິມປຶ້ມຄູ່ມື, ຮູບພາບໂປສເຕີ ທີ່ສະແດງເຖິງຄວາມໝາຍກ່ຽວກັບການ ອະນຸລັກນ້ຳແບບທາງອ້ອມ ໃຫ້ແກ່ພາກສ່ວນດັ່ງກ່າວໄດ້ເຂົ້າໃຈ ແລະ ເພື່ອເຮັດໃຫ້ຜູ້ນຳໃຊ້ ນ້ຳ ເກີດຈິດສຳນຶກອະນຸລັກ ແລະ ຄຸ້ມຄອງນ້ຳຊ່ວຍກັນໃນຕໍ່ໜ້າ.
- ພະນັກງານທີ່ລົງໄປເກັບເງິນຄ່ານ້ຳ ໃນແຕ່ລະເດືອນຄວນສ່ອງແສງ ອະທິບາຍໃຫ້ແກ່ ຜູ້ຮັບບິນເກັບນ້ຳມີສະຕິຄືນ ກ່ຽວກັບການນຳໃຊ້ນ້ຳຜ່ານມາທີ່ບໍ່ສົມເຫດສົມຜົນ ເພື່ອໃຫ້ເຂົາ ເຈົ້າຕື່ນຕົວ ແລະ ມີການປັບປຸງໃນອົງການຈັດຕັ້ງຂອງເຂົາເຈົ້າ.
- ຈາກສາຍເຫດທີ່ທາງບໍລິສັດ ນ້ຳປະປາ ເຫັນທີ່ມາຂອງການໃຊ້ນ້ຳບໍ່ປະຫຍັດ ໃນພາກສ່ວນອົງການລັດ, ຫ້ອງການລັດຕ່າງໆ ທາງບໍລິສັດຄວນເອີ້ນພາກສ່ວນຕົວແທນດັ່ງ

ກ່າວ ມາປຶກສາຫາວິທີທາງແກ້ໄຂນຳກັນໂດຍສົມເຫດສົມຜົນ ແລະ ຄວນອະທິບາຍບັນຫາ ໃຫ້ເຂົາເຈົ້າ ເຂົ້າໃຈເປັນຢ່າງດີ.

- ທາງບໍລິສັດ ນ້ຳປະປາ ຄວນຈະບໍລິການນ້ຳຢ່າງຕໍ່ເນື່ອງລຸນຕິດ ທີ່ເປັນໄປໄດ້ຕະຫຼອດ 24 ຊົ່ວໂມງ, ຖ້າຫາກມີການສ້ອມແປງຈຸດໃດ, ປ່ຽນຖ່າຍ ຫຼືມີບັນຫາຂັດຂ້ອງກ່ຽວກັບນ້ຳ ທີ່ພົວພັນກັບເຂດນັ້ນໆ ທາງບໍລິສັດ ນ້ຳປະປາຄວນແຈ້ງບອກໃຫ້ປະຊາຊົນຮັບຊາບກ່ອນ ລ່ວງໜ້າ ເພື່ອນໃຫ້ເຂົາເຈົ້າໄດ້ມີເວລາກັກເກັບນ້ຳໄວ້ໃຊ້ ເພື່ອຫຼີກເວັ້ນການເປີດ-ປິດກອກ ນ້ຳໄວ້ແບບຫຼິ້ງລືມ.

5.5 ກົດລະບຽບສຳລັບຜູ້ໃຊ້ນ້ຳຂອງສະຖາບັນ,ອົງການຂອງລັດ

1. ຫົວໜ້າສະຖາບັນ,ອົງການຂອງລັດນັ້ນໆຕ້ອງອະທິບາຍກ່ຽວກັບການປະຢັດນ້ຳ
2. ສະຖາບັນ,ອົງການຂອງລັດຕ້ອງກຳນົດຂອບເຂດບໍລິມາດການໃຊ້ນ້ຳຂອງຕົນຕາມບໍລິ ມາດຕົວຈິງຂອງສະຖາບັນ.
3. ສະຖາບັນ,ອົງການຂອງລັດຕ້ອງກຳນົດແຈ້ງຈຳນວນເງິນທີ່ຕ້ອງຈ່າຍຄ່ານ້ຳສູງສຸດ
4. ພະນັກງານຂອງລັດທີ່ໃຊ້ນ້ຳບໍລິເວນສະຖາບັນ,ອົງການນັ້ນຕ້ອງມີໜ້ີແທກນ້ຳແລະຈ່າຍ ຄ່ານ້ຳ
5. ຖ້າຈຳນວນເງິນຄ່ານ້ຳເກີນຕາມທາງການກຳນົດໄວ້ຄະນະຮັບຜິດຊອບອົງການນັ້ນຕ້ອງ ຮັບຜິດຊອບຄ່າໃຊ້ຈ່າຍເງິນຄ່ານ້ຳທົ່ນ້ຳທີ່ເກີນໄປນັ້ນ
6. ບໍ່ອະນຸຍາດໃຊ້ນ້ຳປະປາເພື່ອປ່ອຍໃສ່ສະປາ
7. ຕ້ອງຈັດຕັ້ງສອ້ມແປງ,ບຳລຸງຮັກສາອຸປະກອນກ່ຽວກັບນ້ຳປະປາໃຫ້ໄວເພື່ອຫຼຸດຜ່ອນຄ່າ ຄ່າໃຊ້ຈ່າຍ
8. ຖ້າບຸກຄົນໃດລັກຕໍ່ນ້ຳແບບຜິດກົດລະບຽບຂອງສະຖາບັນຕ້ອງຖືກປັບໃໝ
9. ການຕິດຕັ້ງທໍ່ນ້ຳປະປາໃນອາຄານ;ສຳນັກງານຄວນຖືກຕ້ອງຕາມເຕັກນິກທີທາງບໍລິສັດ ນ້ຳປະປາວາງອອກ
10. ບຸກຄົນໃດ;ຄອບຄົບໃດຢາກເພີ້ມເຕີມການຕໍ່ທໍ່ນ້ຳປະປາຕ້ອງຜ່ານການເຫັນດີຂອງຫົວ ໜ້າສະຖາບັນອົງການນັ້ນໆແລະຈາກລັດວິສາຫະກິດນ້ຳປະປາ .

CONTENTS OF REPORT

1. Introduction

2. Current status of water use in Vientiane capital city

2.1 Household and Non-household Water Use

2.2 The Water Consumption of the Second Party of Non-Household Consumers

2.3 Water Consumption Per Capita

3. Current Status of Customs Relations

3.1 Types of Claims Made by Customers

3.2 Recommendations from the NPVC Made for Claims

4. Current Water Tariff Structure

4.1 Current Water Tariff Structure

4.2 Comparison of Water Price with Other Cities

4.3 Comments of Customers on Water Price:

5. NPVC Challenges for WC/WDM

5.1 Engineering Point of View

5.2 Quality of Water Supply Service in Future

5.3 Water Tariff

5.4 Promotion and Better Customers Relations

5.5 Rule and Regulation for Institutional and State Organizations as Customers

1. Introduction

Water Conservation/Water Demand Management (WC/WDM)

As the socio-economic situation has achieved considerable growth and the living conditions have been improved, water from the Mekong River is purified through the treatment process in line with the WHO drinking water standards. Water is closely linked with the livelihood of urban people and it is of great significance for daily living, as well as to socio-economic development. In parallel with the gradual population growth and socio-economic development in Vientiane Capital City, the clean water demand is also increasing. The water system is, however, an infrastructure that the Party and Government are constantly seeking funds to build and develop, in order to meet the demands of society. The mobilization of funds is not always sufficient for the development of the water system. Consequently, the conservation of water, and its economical and wise use, is necessary for the whole population and it is an essential requirement that all stakeholders with interests in the water supply cooperate, and together ensure that the water is supplied thoroughly and constantly.

Generally, the water demand has not been defined in detail. The underlying assumptions have been based on the amount of water consumed through the water distribution system and meters. The water consumption depends on:

Weather conditions,
Living standards,
Type and system of waste water drainage,
Water tariff,
Availability of private sources of water for consumption, and
Method of water supply.

The water consumption depends on weather conditions, the human body requiring about 3-10 litters of water per day for regular consumption. Based on the data available in the Design Manual for Water Supply and Treatment in South Asia, India, 1991, the need for household consumption is presented as follows:

Purpose of Water Consumption	Quantity (litre/person/day)
Drinking	5
Cooking	3
Cleaning	18
Bathing	20
Washing dishes	15
Washing clothes	20
Total:	81 (excluding water waste)

Chicken farm	15-20	litre/day/100 heads
School	15-30	litre/day/student
Dormitory	90-140	litre/day/student
Hospital	220-230	litre/day/bed
Hotel	80-120	litre/day/room
Restaurant	60-90	litre/day/seat
Office	25-40	litre/day/person

As shown on the table above, the daily water demand is about 81 litres per person. Since Lao is a country situate in a tropical environment, people may take bath several times a day. Therefore, the rate of daily water consumption may increase up to 120 litres per person.

The Necessity of WC/WDM

The actual demand for daily water consumption per capita depends on the status and living standards of each person or family.

The scale of investment on improving and developing a water supply system is usually huge. At the same time the costs for operation and maintenance of the water supply system are also required. In

order to reduce the huge government investment on the development of the water supply system, and to conserve water to ensure a stable water supply, it is time that we, the Vientiane capital city residents, should help to protect the water system and to economise the consumption of water.

According to the JICA Study, the improvement and development of a potable water supply system will be completed by the end of 2007. Until then, the residents of Vientiane Capital City will face water shortage. In order to alleviate such situation, cooperation between the various parties concerned is required, to help in protecting and economizing the use of water and to ensure that the daily water production volume can be delivered to the area lacking sufficient water. Attention needs to be paid to water conservation in particular, in the way that water is used suitably to the pourpose and avoid water loss unnecessarily through leakage. When consumers found water leakage, he/she shall inform the NPVC to ensure that the leak can be fixed immediately. According to a survey carried out on water consumption and UFW, the rate of UFW is notably high, and presently the water supply enterprise is emphasizing the need for reduction of UFW through deteriorating pipes or leakage.

We are all aware that water supply is valuable in many aspects regarding hygiene, convenience and that the costs associated with every drop of water delivered to consumers bears a production cost and benefit for the livelihood of the population. Water saving reflects savings for the government expenditure which subsidizes the loss of business operations of the water supply enterprise.

The Goal and Objectives of WC/WDM

The goals and objectives of the WC/WDM are:

- To ensure that all citizens have access to clean water from water supply system,
- To reduce the costs of water for household spending or the state budget,
- To reduce government investment in the development of the water system,
- To economize and conserve water consumption.

Unaccounted for Water (UFW)

It is simple to solve the UFW problem, attention has to be paid on the following factors:
UFW in the water system is the responsibility of the NPVC to fix:
- broken pipes (old pipes or where construction is carried out near the water pipes)
- underground water leakage,

Water consumers are to be responsible for maintenance when leakage occurs within their households and should be fixed quickly so as to reduce the wastage in their household. Cases of household wastage are as follows:

- Leaving taps on allowing water to flow freely
- un-economical water use,
- water leaking in households (damaged or aging water pipes, and related fittings).

Leakage, Wastage and the Consumer

The incidents of water leakage in households are common and sometimes consumers do not understand that water leakage in the household is a part of increased household expenditure. The fixing of water leakage is actually beneficial to consumers as well as to the society as a whole and despite the value of wastage being small, attention should focus on fixing leakages to reduce water loss, so that consumers become aware of their responsibilities to address this issue. Water loss due to aging pipes or fittings, and due to uneconomical use, means a loss of expenditure directly and indirectly to the consumer (directly, when the consumer has to pay for the wastage, and indirectly, when the government or the water supply enterprise has to pay for it).

The Status of Mutual Understanding between Water Consumers and the NPVC

The NPVC is a state business unit that wholly funded by the government through state budgetary funds, loans from financial institutions and grants provided by international donors.

The NPVC is responsible for the production and supply of water for the daily living of the residents, and to enhance their socio-economic activities. Through the production process, water is delivered to consumers through the transmission and distribution pipes, and until the reaches the consumer's water meters, the cost of maintenance and replacing aging materials is the responsibility of the NPVC. The maintenance of the pipe systems from the consumer's water meters to the areas of the house is the responsibility of consumers. Consumers have a direct responsibility for the consumption of water and maintenance of water pipes within their households. The consumers have to pay for any maintenance occurring within the area in the consumer's responsibility. If the consumer has any difficulties, they can then contact the NPVC who will then carry out the necessary maintenance, but at the expense of the consumer.

In the past, some consumers thought that the costs for maintenance in their households were the responsibility of the water supply enterprise, or that the water price did not have any effect on his/her status, thus, did not pay attention to the maintenance. Such misunderstandings could be corrected for short term, but in the long run, it is worth fixing the leaking points immediately in order to reduce water losses, as well as unnecessary expenditure.

2. Current status of water use in Vientiane capital city

The total water consumption in Vientiane amounts to 2,423,334 m^3 /month, or equivalent to 80,778 m^3 /day, and there are totally 43,449 connections, based on the statistical data as of March 2003 by the NPVC.

The NPVC classifies water users into two main categories as follows:

a. Domestic water use (in general dwelling areas)
b. Non-domestic water use (in state offices and business sectors)

2.1. Domestic and Non-domestic Water Use

The total domestic water consumption was 1,352,886 m^3 /month, equivalent to 45,097 m^3 /day, or 56% of the total consumption in Vientiane Capital City, and the total domestic connection was 37,578, equivalent to 86.5% of the total number of connections (43,449 sets) within NPVC service area as of March 2003.

The Non-domestic water consumption is classified into 4 categories:

- Offices and state institutions,
- Companies, State business enterprises, factories, business operators class 1-6,
- Drinking water plants, hotels, motels, restaurants, swimming pools,
- Embassies, International Organizations, foreigners and those who operate businesses

The total non-domestic water consumption was 1,070,448 m^3 /month, equivalent to 35,682 m^3 /day, or 44,20% of the total water consumed in the capital city as of March 2003.

The Water Consumption of the Non-Domestic Consumers

The NPVC classified non-domestic water consumption into 4 categories as follows:

1) State offices and institutions,
2) Companies, State enterprises, factories, business groups class 1-6,
3) Drinking water plants, hotels, motels, restaurants, swimming pools,
4) Embassies, international organizations, foreigners and those who operate business in Lao.

- **Number of Connections in Each Category:**

- First category (state offices and institutions).
  The total water meters amount to 878 units, equal to 2% of the total water meters used in Vientiane Capital City.

- Second category (Companies, state enterprises, factories, business class 1-6)
  The total water meters amounted to 4,140 units, equal to 9.5% of the total water meters used in Vientiane Capital City.

- Third category (Drinking water, hotels, motels, restaurants, swimming pools)
  The total water meters amounted to 427 units, equal to 1% of the total water meters used in Vientiane Capital City.

- Fourth category (embassies, international organizations, foreigners and those who operate businesses in Lao).
  The total water meters amounted to 420 units, equal to 1% of the total water meters used in Vientiane Capital City, if including the water meters in the second party of non-domestic equal to 5,865 units, equivalent to 13.5% of total water meters used in Vientiane Capital City.

Water Consumption of Non-Domestic Consumers
(Quantity of Water Consumption by Each Category of Customers)

- Water consumption of non-domestic consumers as mentioned is classified into 11 sub-categories as follows:

1) Water consumption of offices and state institutions amounted to a total of 251,442 m^3 /month equivalent to 7,982 m^3 /day, or 19.8 % of the total water consumption in Vientiane Capital City.
2) Total water consumption in the army amounted to 141,521 m^3 /month, or 4,718 m^3 /day, or 13.20 % of the total water consumption in Vientiane Capital City.
3) Total water consumption of various trade sectors amounted to 252,525 m^3 /month, or 8,385 m^3 /day, equivalent to 23.5% of the total water consumption in Vientiane Capital City.
4) Total water consumption of various factories and companies amounted to 200,148 m^3 /month, equivalent to 6,672 m^3 /day, or 18.7% of the total water consumption in Vientiane Capital City.
5) Total water consumption of schools amounted to 117,895 m^3 /month, equivalent to 3,930 m^3 /day, or 11% of the total water consumption in Vientiane Capital City.
6) Total water consumption of schools amounted to 117,895 m^3 /month, equivalent to 3,930 m^3 /day, or 11% of the total water consumption in Vientiane Capital City.
7) Total water consumption of embassies amounted to 10,233 m^3 /month, or equivalent to 1.7% of the total water consumption in Vientiane Capital City.
8) Total water consumption of banks amounted to 4,092 m^3 /month, equivalent to 137 m^3 /day, or 0.4 % of the total water consumption in Vientiane Capital City.
9) Total water consumption of restaurants amounted to 9,370 m^3 /month, equivalent to 313 m^3 /day, or 0.9 % of the total water consumption in Vientiane Capital City.
10) Total water consumption of the services sector amounted to 11,061 m^3 /month, equivalent to 369 m^3 /day, or 1% of the total water consumption in Vientiane Capital City.
11) Total water consumption of foreigners amounted to 13,157 m^3 /month, equivalent to 439 m^3 /day, or 1.2% of the total water consumption in Vientiane Capital City.

The above mentioned data is based on the collection on water consumption of non-domestic category by the NPVC of Vientiane Capital City in March 2003.

2.2. Per Capita Water Consumption

- **Comparison of Water Consumption in Main Cities of Southeast Asian Countries (Based on Statistics 1995)**

No.	Countries	Districts	Water Consumption Litre/person/ day	Water Production m^3 /person/ day	Average Water Price US$/ m^3
1	Maldive	Mali	16	0.03	4.86
2	Cambodia	Phnompenh	32	0.12	0.15
3	Vietnam	Hanoi	45	0.22	0.11
4	Myanmar	Rangoon	67	0.12	0.46
5	Hongkong	Hongkong	112	0.40	0.56
6	Thailand	Chiangmai	135	0.24	0.30
7	Indonesia	Jakarta	135	0.11	0.61
8	Vietnam	Ho Chi Minh	136	0.15	0.13
9	China	Shanghai	143	0.58	0.07
10	Lao	Vientiane	172	0.26	0.13
11	Mongolia	Ulanbator	177	0.23	0.10
12	Singapore	Singapore	183	0.46	0.55
13	Malaysia	Kualalumpur	200	0.35	0.34
14	Philippines	Manila	202	0.26	0.23
15	South Korea	Seoul	209	0.47	0.28
16	India	Delhi	209	0.24	0.03
17	North Korea	Pyongyang	244	0.51	0.21
18	Taiwan	Taipei	262	0.72	0.39
19	Thailand	Bangkok	265	0.53	0.31

3. Current Status of Customer Relations

3.1. Types of Claims Made by Customers

The NPVC is a state enterprise which has the duty to produce clean, hygienic water with high quality, to serve the society throughout Vientiane. Water is a vital factor for each human being, and water supply is a significant sector of the national economy as it contributes directly to the socio-economic development and national development, supports production, and provides good health to support the livelihood of the population.

Water supply is clean and is, purified through the many processes of production technology, with the use of a huge government budget, the building of its technical-material bases the use imported raw materials and spare parts in exchange for foreign currencies. The production of water, requires mainly electric power and the man power of staff–workers for the production of clean water, makes the naturally flowing water becomes clean water with quality and meets generally accepted the hygienic principles.

Each drop of water bears an economic value and is valuable for all human beings, we can sense the ownership of the issues, we will know how to use it economically.

Therefore, it is necessary to provide information, and building an awareness of the responsible use of water to protect and economize water use.

- Meter readers and collecting water tariff staff should not know only how to read figures on the water meter and presenting the bill to customers. As these staff are in direct contact with the consumers, the staff should also be aware of the water consumption role of the customers and be able to explain these issues to the consumers in an effort to reduce water consumption.

* It is impossible to avoid direct and indirect claims made by customers such as:

- Where a water zone has low water pressure and water can not be delivered, and where air trapped in the transmission system has caused incorrect metering, has caused customers to complain and be dissatisfied with the water service.

* Where a customer does not follow the correct procedure of payment for the water service, and when the water supplier disconnects the connection, the consumer may say that the water meter reading and note taking was incorrect, and that it was done on estimated basis.

- Where water transmission is interrupted due to maintenance of aging-leaking water pipes, the enterprise shall notify customers in advance by 24 hours.

- electricity intermittence,
- low water pressure,

- trapped air in water distribution pipes,

- In these cases customers complain that the water service was not convenient and not timely.
- In classifying customer categories also, some customers have complained that the water in his/her household was not used by a foreigner, and yet it appeared that they had been charged at this rate.
- In some cases, customers think that the enterprise pumps water from the source and then delivers the water through the pipes as a service to all citizens. These customers misunderstand that the water supply enterprise does not invest anything in producing water and that there is only a minimal cost associated with the production of water.

Current Water Pressure Status

Generally speaking the current status of water pressure in the water pipes is considered insufficient for some zones due to many reasons such as: the production of water at the two plants, namely Kaolieo and Chinaimo are already operating at an overloaded capacity, and are at their limits of capacity. Also, the elevated reservoirs at various locations cannot store water at night because the daily water consumption volume is getting higher and at the same time, some offices use water uneconomically and allow uncontrolled water flow.

Therefore, it make some zone away from the center of the town lack of sufficient water for consumption such as: in Ban Huaihong zone, Nongteng, Dongdok, Dongmakkhai, Ban Khamhoung and the 150-bed Hospital, Chommany, Km 5 and some other zones.

- **Shortage of Tools for Managing UFW**

1. Aluminum, iron and PVC pipes driller,
2. Pipe Locator (Non Metallic),
3. Asphalt and concrete pave road cutter,
4. Aluminum, iron and PVC pipes cutter,
5. Hand help pressure gauges,
6. Meter testing on bench,
7. 1 set of 4 KW electric generator,
8. 2 sets of water pump with 100l/mn capacity,
9. One small excavator,
10. 2 dump trucks,
11. 2 sets of 4 -ton pick up,
12. 1 set of 2 -ton pick up,
13. Trip pot,

14. Concrete driller.

Water Quality:

- Water is the utmost important for all human beings and, therefore drinking water should be good quality and safe for human consumption. Everyone should have the right to access clean water produced according to generally accepted hygienic principles. Therefore, NPVC water treatment plant has been strict in terms of treating water from unclean sources with highest turbidity in Lao, sometimes reaching 2,000-4,000 NTU. Although, we have been able to treat and disinfect it and make it become safe and clean, free from disease and chemical contaminants, like water supply that NPVC use nowadays. NPVC water supply has turbidity rate of 0.0-0.9 NTU only. Besides the control and testing of water quality by scientists over a 24 hour period, the water supply is of good quality, in line with drinking water standards as laid down by the Department of Food and Medicine of the Lao P.D.R. In addition, there are inspections and collection of water samples from different locations for analysis by modern tools. These tests are conducted every week to detect disease, and show the population that the water supply is safe to drink. "Water for the people", is the slogan NPVC all bear in mind and NPVC put all efforts to ensure that each drop of water is clean and meets the accepted standard, and that the staff working in the water laboratory are proud of their work and work incessantly to develop the water quality. We are ready to become an efficient water service provider in terms of providing services to the society, and are prepared to commit our energies to all the Lao people.

Therefore, NPVC call for all people to use water economically, with responsibility when using water for drinking, bathing, washing or for other purposes, and NPVC are striving to teach people to turn taps off as soon as the task is completed. It is also recommended to inspect households for water leakages or broken pipes, and to build an awareness to future generations on how to save water, as the slogan says: use water with good thinking, help the economy and then life will be prosperous ahead if we use water economically. NPVC will be able to save money and NPVC will save the resources of our country. Because NPVC use electricity in water production, NPVC use water from its source, use chemical products and other materials, thus to make water clean, there is a huge cost. If you live in lower zone, you may have water more than needed for consumption, if you are at higher elevation, there may not be water available, if you economize on water use, water will be able to be delivered to places which suffer from water shortage. This is a sort of humanity to help each other human beings.

If any one finds water leakage along the roadsides, please notify the water supply provider immediately by phone or notify other agencies concerned.

Types of Water Meters and Water Pipes

I.Types of water meters. So far there have been many types, brands of water meters in Vientiane, currently there are 7 different types such as:

1.1. Water meter CDC brand, used before 1980

1.2. Water meter Kent brand, used before 1980

1.3. Water meter Slum Burger brand, used before 1980

1.4. Water meter Kimmon brand, used in 1980

1.5. Water meter Ning Bo brand, used in 1982

1.6. Water meter Ichi brand, used in 1985

1.7. Water meter Asahi brand, used in 1985

2. The said water meters had different diameters: 15 mm, 20mm, 40 mm, 50 mm, 800 mm and 100 mm.

3. Each size of water meteris made by a different manufacturer, each has different parts, which has caused difficulty in ordering parts for replacement.

4. The data collection of each brand and made of water meters installed and replaced for customers each time has not been continuous and each year, the data collection was not accurate, even now the data collection is not yet accurate.

II. Types of Water Pipes

Since the foundation of the water supply enterprise of Vientiane, a number of types of pipes have been used, to date there has been 8 types such as:

2.1.Solid Aluminum water pipe has been used since 1962.

2.2.Concrete water pipe has been used since 1962.

2.3.Iron plate water pipe has been used since 1962.

2.4.Solid iron water pipe has been used since 1979.

2.5.PVC pipe has been used since 1987.

2.6.PVC has been used since 1989.

2.7.PB pipe has been used since 1989.

2.8.PE pipe has been used since 1993.

III. Types of Fittings.

All types has been in used to join and when repairing leaking pipes in pipelines, many different types of fittings have been used and some types could not be supplied as industrial standard, thus those have been adjusted or hand made to fit like central aluminum for PVC or central aluminum for concrete and others.

3.2. Recommendations From the NPVC Made for Claims

Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

_____

Vientiane Capital City No. _____/NCC
NPVC of Capital City Vientiane, date_____

NOTICE

The Director General of the NPVC of the capital city has the honor to inform all customers in Vientiane Capital City that to date the two major water production plants such as: Kaolieo Water Treatment Plant is able to produce water supply with a capacity of about 20,000 m^3/day and Chinaimo Water Treatment Plant is able to produce about 80,000 m^3/day. The production volume is at full capacity at each of the two plants, and is not able to provide sufficient water supply to meet the need of customers in some zones on the outskirts of the township of Vientiane Capital City because the population growth rate and urban development is increasing quickly. According to the production plan, both plants can provide sufficient water till 1999 and a new plant should have been built in the year 2000. Due to a lack of funds for the investment, the problem of water shortage will occurs.

Therefore, the service and consumption of water during this time must have appropriate measures to economize the use of water, and to make the capacity sufficient for daily use as follows:

1.The NPVC will limit and reduce water loss, Unaccounted for Water (UFW) and leakage in water pipelines.

: - Replacement of aging and deteriorating pipes;
- Replacement of old and defected water meters;
- Provision of water transmission service by water-tank trucks.

2.Domestic water consumers, state offices, ministries and governmental organizations, university dormitories, schools, hospitals, factories and others shall be patrolled to economize water use, and ensuring that water is not left running. To build reservoirs of a suitable size to store water when it flows and to be used in times of shortage. Control of passive leakage in house connections (between the meter and the house), it is forbidden to use water pumps tapped directly from water mains, or to let water flow into the basin, and from there water can be pumped in order to avoid water shortages in the surrounding areas during the pumping of water.

4. Current Water Tariff Structure

4.1. Current Water Tariff Structure

- Water tariff impact on economizing water use.

Water tariff has an impact on business operation, society and the state economic base in general. In particular, there is an impact on water use, and when water price is low, consumers are able to pay for without thinking of economical use of water. Therefore, it is worth revising the present water tariff.

❖Statistics of water tariff during the period of 10 years (1994-2003)

Water Tariff at Each Period	Average Price kip/m^3
1/1994-3/1995	92
4/1995-6/1996	135
7/1996-5/1998	162
6/1998-3/2001	195
4/2001-10/2001	387
11/2001- now	550

❖Current water tariff structure at average of 550 kip/ m^3

CATEGORY	Content of Water Users Group	Consumption Limit m^3/month	Price Kip/m^3
I	Domestic and State Administrative Offices	0-5 6-12 21-50 >50	219 263 329 383
II	Trade and General Business	0-5 6-20 21-50 >50	549 602 636 670
III	Business Using Water as Raw Material	0-50 51-100 >100	855 1216 1360
IV	Embassies and Foreigners	0-10 >10	6184 7668

- ❖ Customer category: customer classification is based on different income categories.
- ↘ 1st category: Domestic and state administrative offices = staff personnel, army, police force, citizens, state organizations (individual and collective)
- ↘ 2nd category: Those who trade and do general business = state enterprise, private, factories and traders.
- ↘ 3rd category: Business, trade using water as a raw material = beer factory, ice factories, soft drinks factories, hotels, motels, swimming pools, restaurants…
- ↘ 4th category: Embassies, individual foreigners = embassies, international organizations, foreign companies, private foreign houses.

4.2. Comparison of Water Price with Other Cities

Comparison of the water price with other countries, water price in Vientiane in comparison with other countries in Asia, it can be seen that the water price is very low in all consumers categories.

4.3. Comments of Customers on Water Price:

- Comments of Business Customers:
Water price is suitable and they have control on economizing water use also, because they have to pay more if use more, pay less if they use water economically.

- Comments of Domestic Customers:
Water price is relatively low comparing with electricity tariff. The average household size is about 6 people, and water is used mainly for cooking, washing, watering gardens, and washing cars. The average payment for water is about 10,000-15,000 kip/month. However, the average payment for electricity amounts to 150,000-200,000 kip per month. Some customers see that water price is low and they use water without economical attention. In some zones where water pressure is low, water supply is not stable, consumers frequently complain that when water is available, payment is not a problem.

- Comments of Offices, State Organizations:
- For customers at offices, state organizations and households using water from the offices. Their comments are: payment for water is dependent on state budget, not from their own pockets, economizing water is not in their mind at all. On one hand, the government has not issued any regulation or measures to strictly control those who use water with government budget. On the other hand, the NPVC do not encourage their employees to make them understand about water production, service and consumption process, and how to consume water effectively and economically.

5. NPVC Challenges for WC/WDM

5.1. Engineering Point of View

When talking about the city water supply service, everybody should understand that the service provides a clean, hygienic water, which consumers can access 24 hours per day with sufficient water pressure. Therefore the water sector is an important entity for the society. If the general society criticizes the NPVC in a negative way, the organisation will loose their reputation for the operation of the water supply enterprise, and will loose confidence from higher management in term of implementation.

Aim and Target:

Methodology to reduce UFW in pipe systems is of great significance for the water supply enterprise which has to pay special attention to, and should have an adequate methodology to minimize UFW. The main aim is to reduce production costs such as: electricity costs, chemical costs, and labor and other expenditures. In addition, it is a generation of additional income in water sales and increase efficiency in servicing water for the society with more effectiveness and the saved water will be sold to other zones thoroughly and have sufficient pressure. On the other hand, NPVC can reduce the investment in the development of water production plant that means defer it to a later stage due to abundant production for smooth supply.

Therefore, in order to attain the said aim we shall have short, medium and long term plans to reduce UFW in the entire water system. The management and reduction of UFW in pipe systems is the most important matter that special attention must be paid to by the water supply enterprise and shall have proper methodology to minimize UFW.

UNACCOUNTED FOR WATER (UFW)

It is a difference or remainder between water quantity produced from the plant than delivered to the pipe and water quantity being noted then put into billing system; UFW has been classified into two parts such as:

PHYSICAL LOSS

Comprising leakage from water reservoir, main transmission pipe, distribution pipe, in house connection and water pipe fittings such as: joint, curve, water gate, drainage gate, fire hydrants and others.

NON PHYSICAL LOSS

Which are mainly those of technically abnormal found in water meter system such as: imbalance of water meter, defected water meter, inadequate meter size comparing with volume of consumption and low quality and cheap water meter. Incorrect installation prior to the establishment of payment documents, installation completed but without water meter, no IT billing code and incorrect printing of IT billing, water meter reading does not suit actual figures due to estimation or guessing - illegible water meter such as: obscure water meter, broken and unclear dial, water meter embedded underground, covered by soil, water meter without tin fitting at both sides. Moreover there has been illegal water use, not passing through water meter, attempts to turn over water meters or attempts to make water meters

defected such as: using pliers to press and bend propeller axes, tie propellers with string or metal coil, attach a steel to water meter, generally speaking, customers try to seek ways to minimize their payment for consumed water as much as possible.

PARTICULARITIES OF LEAKAGE

Water leakage in pipe system at a particular location varies dependent on actual situation and its surrounding comprising 3 particulars as follows:

- Visible Leak

It is water that flows from the leakage up to the ground surface and it is easy to detect the location of physical loss and can be fixed promptly.

- Semi-visible Leak

It is underground water leak that is semi-visible which has to be checked by eyes in detail because such leakage is found in deep hole, water gate, vent gate, drain gate and fire hydrants. It may be found sometimes at water channel, drainage canal where water pipes pass by.

- Invisible Leak

It is underground water leakage that can not be seen by eyes, it is difficult to detect because we do not know exactly where the location of physical loss is; sometimes water leaks at a location and flows out at another location depending on the location and particularities of the soil, sometimes water penetrates through the soil and flows into water canals that needs adequate instruments to help in detecting physical loss.

CAUSE OF LEAKS

Water leakage in the pipe system occurs from different causes such as:

- Improper Design

It means incorrect design relative to technical specifications and impedes effectiveness of road conditions, culverts and bridge installation across streams, drainage canal including new installation of water supply to the village and others those cause water pipe to be easily broken or leaking.

- Poor Workmanship

It means technicians, workers with insufficient skill to install and lay pipes, those who have not been trained or been trained but not follow technical specifications which can be seen in culvert installation, the works have been just completed and then there have been frequent water leakage.

- Poor Quality Materials

Poor quality of water pipes have low price, not subject to inspection and procurement procedures and become a cause of frequent water leakage.

- Traffic Load

Water pipes laying across the road or at road sides are affected by vibration caused by the traffic load which occurs by heavy trucks traffic and cause the soil go shrink against water pipes, thus, they are broken frequently.

- Aging and Deterioration

It is certain that after years of being in use, water pipes and fittings deteriorate and can not resist internal pressure and external impact and this is also a cause of easy breaking or leaking from water pipes.

- Infrastructure

Urban improvement and renovation made by the Government as well as urban infrastructure building is a part that causes water pipes to break and leak frequently - such as: maintenance and development of roads, telephone lines and installation of underground and high voltage transmission line.

- pH Value of Water

If pH value of water decreases to under standard, it causes water become corrosive, then there will be sedimentation segregated at the inner side of the water pipe called as corrosion and began to develop outward, after years, the pipes are susceptible to frequent leakage.

- Underground Corrosive Water

Soil characteristics varied in different zones, in some areas underground water becomes acidic that means more acid in underground water is segregated in water pipes from outside to inside of water pipes as mentioned above.

METHODOLOGY TO REDUCE UFW

Reduction of UFW is an important matter and most complicated in terms of implementation, if we let the UFW rate grow, we shall account for more budget to cope with the management and reduction of UFW as we have to take actions as follows:

- Pre-Requisite Actions

Major pre-requisite actions to control UFW shall be well elaborated and considered for management as follows:

- Flow Meter

Installation of flow meter to know the total volume of water delivered from the plant, flow meter shall work all the time, accurate, precise and recording shall be done hourly, daily in order to know the volume delivered monthly and annually.

- Customer's Meter

It is worth determining the characteristics and quality of each size and type of water meter in detail; NPVC shall carry out research and study their data to adequately suit the actual conditions of such as: water quality and water source for water supply production. It is important to ensure compliance with the standards as set forth.

- Pipe and Fittings

Pipe and fittings used in new installation of water to house and passive leakage control, replacement of old pipe system and construction as well as water pipe development shall be determined in detail to suit international standards.

- Strategy

Macro level agency shall pay active attention to the management and reduction of UFW at nation wide, each province shall organize trainings and exchange of experience to improve and use new technology to suit the situation we are faced with presently. Therefore, Macro level organization shall have detailed plan including short and long terms and assign to local authorities to implement while the macro level organization shall carry out constant monitoring and evaluation.

ACTIONS TO REDUCE PHYSICAL LOSSES

Reduction of physical loss is the most difficult and complicated action that we need to rely on employing skilled and qualified personnel to plan and undertake to protect water leakage in water pipe system which shall be carried out the things in many aspects such as:

- Leak Detection

Leak detection shall be carried out at the same time in two aspects such as: surface and underground leak detection, each has its simplicity and convenience such as: Acoustic Method, Measurement Method, Leak Noise Correlation.

- Surface Leak is easy to detect, we just walk and observe the pipe system, using experience and we can detect leakage.

- Underground Leak is difficult to detect, we need to use instruments and tools to fulfill the detection; this method has detailed procedures to carry out technical system and survey methodology to detect underground leakage. Therefore, prior to carrying out underground leak detect it should be known that its technical aspects such as: What does water leakage mean? How does water leakage sound like? What are the schedules and methodology of leak detection? What is its technical effectiveness? How to do and choose to make it suitable for the actual situation of our country?

- Passive Leakage Control

Generally, this is the simplest methodology of UFW control, when it is seen that water leakage appears on the ground surface then the maintenance and fixing can be made immediately and timely. We will know about location of physical loss as follows:

- Visible leakage which flows onto the ground surface; customers notify or inform.
- Notification by residents at various locations.
- Notification by NPVC staff, especially meter reading staff (IT billing staff),
- Notification by field survey staff after carrying out patrol of pipeline at various sites.

- Protection of Pipeline

This is also an important task in regard to control and manages UFW in water pipes which shall be carried out as follows:

- Mapping system shall be updated all the time such as location of water pipe and fittings to better management and maintenance.
- Carrying out daily patrol of pipelines in areas where construction of infrastructure is being carried out especially in urban areas in order to protect water pipes from being damaged by construction such as: construction of road, underground electric line and underground telephone lines.

- Design and construction of water works facilities shall take into account technical principles and international standards such as: installation of culverts above or under streams, canals or drainage system to be in use.
- Replacement of old pipe shall be done as routine work, water pipes are aging and deteriorating, they will be faced with frequent break and leak. This will require huge amount of budget, NPVC shall have detailed annual plan, which pipes and fittings to be replaced shall have high quality and effectiveness according to international and at the same time the quality control of field work shall receive special attention in order to protect any occurrence of future problems.
- Adjustment of water pressure is a methodology to help the reduction of UFW, it is simple and capable of putting into quick operation such as: reduction of the pressure of water transmission and install pressure reduce valves at critical location where water pressure is high.
- Water reservoir is another important task that NPVC have to pay attention to monitoring and control the system, generally, patrol of reservoir leakage or reservoir overflow due to defected floating valves shall be carried out twice per year.

ACTIONS TO REDUCE NON-PHYSICAL LOSS

Major problems occurred in this area is within the customer's water meter system of each household that we shall have following methodology to control:

- Field Customer Survey

The objectives of customer field survey at each household is to control and inspect technical abnormality such as:

- defective water meter, illegible water meter due to broken or obscured face, water meter embedded underground.
- detection of leakage in house connection at joints, curve, valves, in-house pipe, pipe fitting and customer's water meter in each household.
- detection of illegal use not passing through water meter, upside down water meter or attempts to do anything to damage water meter and others; all matters detected shall be reported to agencies concerned for immediate solution.

- Big Consumer Survey

Big customer is a customer who consumes much water or consumes more than 2,000 m^3 per month like: offices, ministries, hotels, hospitals and other plants; in this sector much physical loss has been detected, water has been used uneconomically, in particular, in state organizations using Government budget to pay for annual water tariff. The aim of this work is similar to that of 6.3.1, the difference is that it requires regular control, best is once per week. Here, attention would be paid to installation of water meters not in line with technical standards such as: lacking short water pipe, or short water pipe does not suit the standard, unsuitable size of water meter relative to the customer's consumption, big water meter, but low level of water consumption, small water meter but huge water consumption (adequate size for big consumer). Therefore, the accuracy of water meter has not been precise.

- Replacement of Defective Meters

Generally, old water meters being used over 8 years may not be accurate and precise. Therefore, it is necessary to have detailed plan for periodical replacement and at the same time inaccessible or hardly accessible water meters shall be removed and placed at suitable location for the sake of easy reading and note taking.

- Water Meter Tests and Field Survey

Each water meter is like cash register; therefore, agencies in charge for shall pay attention to strict management such as:

- before installing or replacing any water meter, it shall be tested in laboratory to assess accuracy and preciseness of water meter in line with standard that the flow velocity inside the meter is to be not too slow and not too fast;
- test water meter at site by mobile flow meter when it is suspected that the figures of a water meter is abnormal or receive customer's complaint that they pay expensive water tariff, that case: mobile flow testing shall be carried out at site;
- collect data on each type and size of water meter and period of time being in use to plan for replacement.

- Upgrade IT billing System and Customer Management

IT billing system is an important aspect of management and reduction of UFW, figures reading must accurately respond to IT billing in a timely manner so as to minimize or avoid customers' claim, thus improvement is recommended here.

- Classification of Domestic Consumer and State Agencies or Offices

Through survey being conducted to collect data from water consumers in Vientiane Capital City, it is observed that some state agencies and offices share water use such as:

- In some state agencies and offices and some families dwelling in the proximity of state offices, water use is abnormally high, to clearly see that state agencies and offices use water economically and suitably to the need. NPVC shall separate domestic water consumption within the proximity of state offices from water used by the offices and agencies and shall separated accounts of water tariff from each other; this will enhance domestic consumers to economize their water use and will not drain water for waste because they know they will pay for water tariff and on the other hand, it is a way to reduce the spending on water tariff used by the state agencies and offices.

5.2 Quality of Water Supply Service in Future

- Quality of Water Service to Customers

1. Receive clients with good practice of public relation.
2. Produce clean and safe water for the people.
3. Survey, measure and design in line with technical specifications and in a timely manner.
4. Carry out price calculation according to the principle as defined and in a timely manner.
5. Install water meter to households; replace broken pipes along road side according to technical specifications and in a timely manner.
6. Take accurate note of figures shown on customer's water meter; carry out regular reports on defected and damaged water meters efficiently.
7. Collect water tariff honestly, the collected water tariff shall be transferred to the cash account according to the rule as set forth.
8. Documentation cycle shall have accurate time schedule, how much time needed for a document to be considered by a particular service concerned; who has the right to sign it.
9. Each time of payment made by a customer, he/she shall receive a receipt as a witness for payment.
10. Strictly implement official working hours.

5.3 Water Tariff

- System of Water Price in the Future.

❖ Goal and objectives of pricing structure.

↘ The main goal of the NPVC is to provide service for the public with clean water supply, no discrimination on whether poor or normal person, he/she shall have the right to use water supply.

↘ Ensure that the NPVC is able to operate and become financially autonomous.

↘ Ensure that the enterprise commit its obligations to the state as stipulated in the regulations and laws.

❖ Water Pricing Structure (has 3 main parts).

1) Production and Service Cost:

A. Major raw materials and expenditure such as: calcium monoxide, chemical decontaminants, electricity fee.

B. Salary and other welfare

C. Basic immovable assets depreciation according to its original value, which has not yet reflected present value of the immovable assets and can not be reinvested. Therefore, it is a main cause for financial status of the NPVC. It can not carry out investment and development of water supply system.

2) Financial expenditure (loan interest): Presently the ratio of loan per capital assets is high, thus, the enterprise has to assume the burden of paying high interest rate and it is included in water price structure.

3) Normative profit and business tax

Directive of Water Pricing Structure:

Category	Description	Scope of use	Price Kip/m^3	Annual % increase	2004 ➨	2007
I	Domestics and state administrative offices	1-30 > 30	605 835	10 % 15 %	10 % 15 %	
II	Trade, business, embassies, foreigners residences	1-50 > 50	855 1035	15 % 20 %	15 % 20 %	
	Average price		750			

- Consideration on Domestic Consumers and Low Income Groups:

The directive of classifying into two categories has certain impacts on consumers as follows:

1. For household consumers and state organizations: the price is higher, thus, made the consumers economize water use and pay attention to the payment due. In addition, this type of customer covers high percentage including water meters and water volumes required for consumption.

2. For the second category customers, business and organizations, foreign individuals. Normally, this type of customers is well aware of their water use, thus, minimum impact occurs to economizing water. This type of customers covers low percentage including water meters and water volume required for consumption.

- Consideration on Household Consumers and Low Income Groups

The poor people with low income are able to pay for the current prevailing water pricing structure, for instance: average income earners of 100,000 kip/month, with water consumption of 15m^3/month has to pay 3,725 kip/month. It means that the payment for water shares only 3-5% of the income. Thus, it can be said: the poor can pay for this water pricing structure.

If we look at the only aspect of business, this structure is not economic, it is a subsidized pricing structure. If we look at the social aspect, it can be said that the society gains much benefit, which contributes to make better livelihood as a whole.

➨ The impact of current water price, the majority sees that water price is low, and the ability to use and make payment is plentiful, thus there occurs an attitude of using water uneconomically. Lacking spirit of economizing, self-autonomy, for the country and for the survival of the society.

5.4 Promotion and Better Customers Relations

- Setting targets on water saving and management of sufficient water supply for consumption:

- Save to have sufficient water supply according to the water supply development plan and ensure that the customers pay water tariff economically and with effectiveness.
- Water saving and management of sufficient water supply is also a reduction of the Lao government investment in the development of water supply system as well as to promote sustained national economy.

- Transparency of the Enterprise to Customers.

- The Annual Report of the NPVC of the Capital City

Lao People's Democratic Republic
Peace Independence Democracy Unity Prosperity

Vientiane Capital City No: 080/NPL
Communication, Transport
Post and Construction Service
Lao Water Supply State Enterprise

Summary Report on Business Operation of Year 2002
and Annual Plan of Year 2003

I. General Introduction:

Under the supervision by the Board of Directors and the CTPC Service, under the leadership of the Director General and deputy directors in collaboration with the Party Committee of the capital city, the Party Committee of the Enterprise, Mass Organizations, staff and workers have emphasized on the implementation of activities in regard to political ideology, technical subjects and all tasks as assigned by higher authority, performances achieved have detail as follows:

1/. Organization :

The Lao Water Supply State Enterprise is constituted of 1 director, 3 deputy directors, 5 services, 4 branches, 4 production plants, 2 projects, 1 construction and repair entity with total personnel of 354 persons, of which 59 women, contractual staff 68 persons, 1 party unit of 47 members, with full membership of 36 persons, transitional membership of 11 persons, of which 8 women; 317 Trade union members, of which 52 women; 138 Lao youth People's Revolutionary members, of which 38 women; 59 Lao Women's Union members.

II. Performances of Year 2002.

1. Training and Education on Political Ideology:

Each organization has implemented its political task regularly, for the director, deputy directors, heads of divisions and mass organizations have a reunion of once per two weeks, then report to the capital city constantly:

- organized technical training of some branches on some specific subject matters to the staff in the capital city and other provinces to upgrade their efficiency in management and administration gradually;
- organized education on political ideals, qualification and ethics of the revolution, mode of livelihood and working methodology of staff personnel;
- organized education on the VIIth Party's Resolution;
- organized education on all round solidarity and cooperation between Lao and Vietnam;
- organized a security unit to guard on regular basis, especially during major festive days;
- collaborated among Party-State, mass organizations to enhance political organization system to function regularly;
- conducted political reunion and carry out planning and extraction of experience;
- improved organization structures and replace leading staff in some services to suit the actual situation;
- and organized training and study tours overseas.

2. Production and Services:

- Water produced	41,470,633 m^3
- Water sale	28,728,711 m^3
- UFW percentage	31 %
- New water installation	1,700 units
- External reparation	3,314 sites
- Removal of pipes from road No. 2 completed	100%

3. Finance:

* Total Income: 19,977,873,771 kip, 102 % relative to the plan,

4. Total Business Expenditure: 19,200,113,215 kip, 96.74% relative to the plan,

- Profit: 777,760,556 kip
- Submitted Obligations to Budget : 1,485,526,829 kip

5. Debt due to be paid and received :

- Total debt to be received : 10,127,266,619 kip
↘ of which debt from the state : 7,782,281,613 kip
- Total debt due to be paid: 5,561,200,628 kip

- Total debt due in foreign currencies : 103,331 US$

6. External Relations:

During the past the Water Supply State Enterprise has had international cooperation as follows:

6.1. Cooperation Project with France:

1)- Activity implementation of the Water Supply Network Development Project for year 2002 :

a. Development of water supply network development in the capital city.

Feasibility study project on training center construction of the water sector and hygiene, Loan Agreement No. CLA 1001-01, dated 25/10/1994.

- signed an agreement with the Office International de l'eau 24 April 2002 in an amount of 98,550 Euro.

6.2. Cooperation Project with World Bank:

It is a project to assist the provinces comprising Udomxay, Phongsaly, Luang Namtha provinces in the form that the Water Supply State Enterprise acts as a coordinator and assists in technical matters. To date the plant construction in the 3 provinces has completed. Udomxay Province still requests our enterprise to further coordinate with the World Bank and assists in business management technical matters, especially in the area of staff training.

6.3. Cooperation with JICA:

In February 2003, JICA dispatched some experts to help implement the survey of new water plants system and pipes system; this project will be completed in December 2003.

6.4. Cooperation with Belgium:

In February 2002, the Lao-Belgium cooperation project provided an amount of US$ 104,600 for different activities.

6.5. Lao- Chinese Cooperation Project:

- The Chinese party requested to cancel defer the technical economic feasibility study of PVC construction plant for temporary.

III. Assessment of Strengths and Restraints:

* Strengths:

1). There has been good solidarity and unity among the director, deputy directors including staff personnel and workers in doing the work, thus, it has built confidence to the leadership, staff and workers are active in implementing all the tasks assigned to them.

2). NPVC has improved its working methodology of each division, and its affiliates, especially, we have transformed the construction and development entity to a form of labor contract.

3). Although, the Government has not approved price adjustment accordingly, but the staff and workers effort up to produce water to serve the society regularly and implement its obligations to the Government regularly.

4). The livelihood of the staff and workers has been improved, by increasing some support to the staff and workers' salary in accordance with the current inflation rate to some extent.

5). Accelerate water tariff debt claim and others.

* Restraints:

1). Some staff and workers materialized the policy of renovation of the Government slowly due to the level of political theory of our staff and worker is relatively low.

2). Awareness to respect the rule and principle, to be responsible for the duty of some of our staff and workers is not strong.

3). Water supply to the society has been insufficient to the need in some zone, some areas because the production capacity is limited, the installation and repair in some areas did not suit to the technical standards, and was not in a timely manner.

IV. Methods of Problem Solving:

1). First of all there is a need to increase leadership in political ideology of our staff and workers to clearly understand the duty, love the duty, become more responsible, have stable thinking towards the work and duty and to understand the policy of renovation of our Party and Government in the market economic system, the policy of economizing of our Party and Government.

2). Pay attention and urgently solve the water supply system (low pressure area) and lay distribution pipe to develop water circulation and distribution system to better service to the society with effectiveness.

3). Continue to develop human resources at each technical level, computers, foreign languages to upgrade their capability in business operation, in particular, the technical staff, business operators, financial and planning staff.

4). Deploy capable staff to each division to better do business, improve management system, working methodology, reporting system and instant problem solving.

V. Annual Plan of the Lao Water Supply State Enterprise of Year 2003

1/. Overall Task:

- To continue to collaborate with the Ministry of Finance according to the notice of the Prime Minister's Office on increasing water price from 550 kip/m^3 to 750 kip/ m^3;
- To keep relations and mobilize funds sources of US $ 3.5 millions for the construction of a water production plan of 20,000 m^3 at Dongmakkhai to serve the people in Vientiane.
- To make proposal to request funds for survey and design of water supply system according to the plan of the capital city at 4 sites such as: Sangthong District, Nam Ngum District, Tok Pheung and Huay Chiem zones.
- To continue implementing the reduction of UFW project according to the plan elaborated by LYSA.
- To continue implementing international cooperation project: AFD (France), JICA (Japan), Belgium and the World Bank.

* Water Production and Service in Year 2003

No.	Description	Unit	Plan for 2003	Remark
1	2	3	4	5
I.	PRODUCTION			
1	Produced water	m^3	41,814,085	
2	Sale water	- " –	29,688,000	
3	% of Loss	%	29.00	
4	New water installation	units	1,386	
5	External repair	sites	3,662	
6	Total meters	units	45,797	

* Finance for Year 2003

No.	Description	Units	Plan for 2003	Remark
1	2	3	4	5
I.	Business Revenue	Kip	19,894,924,970	
II.	Business Expenditure	Kip	21,077,147,956	
III.	Profit-Loss	Kip	1,182,222,986	
IV.	Obligations to the budget	kip	1,435,606,666	

VI. Recommendations to Higher Ranking Authorities:

1)- To request the higher ranking authorities to help coordinating with agencies concerned seeking for methods of problem solving and overcome difficulties in business operation such as: state debt, pricing law, tax and duty payment.

2)- To request the higher ranking authorities to coordinate with agencies concerned in seeking sources of funds for the additional construction of water supply production plants.

3)- To request the Assets Management Department to consider transforming the loan to become capital (for the grant aid provided by France) as already recommended.

Vientiane, 25 March 2003
Director General

Mr.Daopheth BOUAPHA

- Posters Competition at Primary Schools

Over the past years we have paid attention to solving the problems of economizing water use only for short time, in order to conserve and economize water for the long run, we shall pay more attention on awareness building to the pioneers who are learning started from primary schools upward, we may explain to make them understand about water supply production process so that they know about water and they need to conserve water for future use, which will be beneficial for themselves and for the

society as a whole. Therefore, the posters and prose competition to reflect economizing water use will make the Lao pioneers and youth understand water system and its benefits. Then they will advice their families on using water economically or when they grow up they will become household breadwinners who will lead their descendents on economizing water use.

- Building awareness to state administrative organizations and institutions on water saving and management.

- Sending IT billing to water consumers above each time, we shall notify the water tariff calculation in detail .

- There should be separation of water meter between the state organizations and affiliated households who dwell there such as: household and dormitory, common dormitory, office.

- There shall be clear public relations on air through radio, television, newspapers, magazines… on regular basis.

- There shall be publication of handbooks, posters showing the meaning of indirect water conservation to parties concerned so that they understand and to make water users have awareness on conservation and management of water in the future.

- Monthly water tariff collectors shall explain and remind the bill receivers to have awareness on previous water use to that they improve in their organization.

- From the cause that the NPVC perceives that the source of uneconomic water use in state organizations, governmental offices, the enterprise shall call the representative of such organizations and offices to consult and seek for ways of solving the problems together reasonably and make sure to promote their proper understanding.

- The NPVC shall provide continued water supply, possibly throughout 24 hours, if there is any reparation, replacement or technical matter somewhere, the enterprise shall notify the people in that area in advance so that they have time to collect water for use and avoid open-close the tab and forget about it.

5.5 Rule and Regulation for Institutional and State Organizations as Customers

1. Head of the institution, state organizations shall explain about water saving.
2. Institutions, state organizations shall define scope of volume for consumption of their own according to actual volume of the institutions.

3. Institutions, state organizations shall clearly determine the maximum amount to be paid for water tariff.
4. Government staff using water with the institution and organization premises shall have individual customer water meter and pay for water use.
5. If the amount to be paid is over the limit approved by the organization, the committee in charge shall be responsible for the payment of the surplus amount.
6. Not allow to use water supply to drain into fish pond.
7. In order to reduce expenditure it is recommended to organize repair in-house leakage quickly.
8. If any individual use water illegally, break the rule of the institution, he/she shall be fined.
9. Installation of water supply pipe in buildings, offices shall comply with the technical specifications as set forth by the NPVC.
10. Any individual, family wishes to add installation of water pipe shall receive approval by head of that institution and the NPVC.